Microsoft Excel Objects

Some of the content in this topic may not be applicable to some languages.

Application

- Workbooks (Workbook)
  - Charts (Chart)
  - DocumentProperties (DocumentProperty)
  - VBProject
  - CustomViews (CustomView)
  - CommandBars (CommandBar)
  - HTMLProject
  - PivotCaches (PivotCache)
- Styles (Style)
  - Borders (Border)
  - Font
  - Interior
- Windows (Window)
  - Panes (Pane)
- Names (Name)
- RoutingSlip
- PublishObjects (PublishObject)
- SmartTagOptions

AddIns (AddIn)
- Answer
- AutoCorrect
- Assistant
- AutoRecover
- CellFormat
- COMAddIns (COM/)
- Debug
- Dialogs (Dialog)
- CommandBars (Com)
- ErrorCheckingOptions
- LanguageSettings
- Names (Name)
- Windows (Window)
  - Panes (Pane)
- WorksheetFunction
- RecentFiles (RecentF)
- SmartTagRecognizer
  - SmartTagRecognizer
- Speech
- SpellingOptions
- FileSearch
Legend

Object and collection
Object only

» Click arrow to expand chart

WebOptions

VBE
ODBCErrors (ODBC)
OLEDBErrors (OLE)
DefaultWebOptions
UsedObjects
Watches
Watch

IRtdServer

IRTDUpdateEvent
New Objects

Objects that have been added to Visual Basic for Applications in Microsoft Excel 2002 are listed in the following table.

Visit the Office Developer Center at MSDN Online for the latest Microsoft Excel development information, including new technical articles, downloads, samples, product news, and more.

**Objects**

- AllowEditRange
- AllowEditRanges
- AutoRecover
- CalculatedMember
- CalculatedMembers
- CellFormat
- CustomProperties
- CustomProperty
- Diagram
- DiagramNode
- DiagramNodeChildren
- DiagramNodes
- Error
- ErrorCheckingOptions
- Errors
- Graphic
- IRtdServer
- IRTDUpdateEvent
- PivotCell
- PivotItemList
- Protection
The following new events have been added to Microsoft Excel 2002. These events are listed in the following table.

<table>
<thead>
<tr>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>PivotTableCloseConnection</td>
</tr>
<tr>
<td>PivotTableOpenConnection</td>
</tr>
<tr>
<td>PivotTableUpdate</td>
</tr>
<tr>
<td>SheetPivotTableUpdate</td>
</tr>
<tr>
<td>WorkbookPivotTableCloseConnection</td>
</tr>
<tr>
<td>WorkbookPivotTableOpenConnection</td>
</tr>
</tbody>
</table>
New Methods (Alphabetic List)

In Microsoft Excel 2002, many new Visual Basic for Applications methods have been added to existing objects. These methods are listed in the following table (sorted alphabetically by method name).

Methods

- AddDataField
- AddDiagram
- AddMemberPropertyField
- AddNode
- AddPageItem
- AddSet
- BreakLink
- CalculateFullRebuild
- CanCheckIn
- CanCheckOut
- ChangePassword
- CheckAbort
- CheckIn
- CheckOut
- CloneNode
- ConnectData
- Convert
- CreateCubeFile
- DeleteAll
- Dirty
- DiscardConflict
- Disconnect
- DisconnectData
EndReview
Execute
GetPivotData
Heartbeat
MakeConnection
MoveNode
NextNode
OfflineConflict
OpenDatabase
OpenXML
PrevNode
RecheckSmartTags
RefreshData
ReplaceNode
ReplyWithChanges
RestartServers
RTD
SaveAsODC
SendForReview
ServerStart
ServerTerminate
SetCMYK
SetPasswordEncryptionOptions
Speak
SwapNode
TransferChildren
UpdateNotify
New Methods (by Object)

In Microsoft Excel 2002, many new Visual Basic for Applications methods have been added to existing objects. These methods are listed in the following table (sorted by object name).

<table>
<thead>
<tr>
<th>Objects</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>AllowEditRange</td>
<td>ChangePassword</td>
</tr>
<tr>
<td>Application</td>
<td>CalculateFullRebuild</td>
</tr>
<tr>
<td></td>
<td>CheckAbort</td>
</tr>
<tr>
<td>ColorFormat</td>
<td>SetCMYK</td>
</tr>
<tr>
<td>CubeField</td>
<td>AddMemberPropertyField</td>
</tr>
<tr>
<td>CubeFields</td>
<td>AddSet</td>
</tr>
<tr>
<td>Diagram</td>
<td>Convert</td>
</tr>
<tr>
<td></td>
<td>AddNode</td>
</tr>
<tr>
<td></td>
<td>CloneNode</td>
</tr>
<tr>
<td></td>
<td>MoveNode</td>
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<td>NextNode</td>
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<td></td>
<td>PrevNode</td>
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<td></td>
<td>ReplaceNode</td>
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<tr>
<td></td>
<td>SwapNode</td>
</tr>
<tr>
<td></td>
<td>TransferChildren</td>
</tr>
<tr>
<td>DiagramNodeChildren</td>
<td>AddNode</td>
</tr>
<tr>
<td></td>
<td>ConnectData</td>
</tr>
<tr>
<td></td>
<td>DisconnectData</td>
</tr>
<tr>
<td>IRtdServer</td>
<td>RefreshData</td>
</tr>
<tr>
<td></td>
<td>ServerStart</td>
</tr>
<tr>
<td></td>
<td>ServerTerminate</td>
</tr>
<tr>
<td>IRTDUpdateEvent</td>
<td>Disconnect</td>
</tr>
<tr>
<td></td>
<td>UpdateNotify</td>
</tr>
<tr>
<td></td>
<td>MakeConnection</td>
</tr>
<tr>
<td>PivotCache</td>
<td>SaveAsODC</td>
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<tr>
<td>--------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>PivotField</td>
<td>AddPageItem</td>
</tr>
<tr>
<td></td>
<td>AddDataField</td>
</tr>
<tr>
<td>PivotTable</td>
<td>CreateCubeFile</td>
</tr>
<tr>
<td></td>
<td>GetPivotData</td>
</tr>
<tr>
<td>QueryTable</td>
<td>SaveAsODC</td>
</tr>
<tr>
<td>Range</td>
<td>Dirty</td>
</tr>
<tr>
<td></td>
<td>Speak</td>
</tr>
<tr>
<td>RTD</td>
<td>RefreshData</td>
</tr>
<tr>
<td></td>
<td>RestartServers</td>
</tr>
<tr>
<td>Shapes</td>
<td>AddDiagram</td>
</tr>
<tr>
<td>SmartTagAction</td>
<td>Execute</td>
</tr>
<tr>
<td>Speech</td>
<td>Speak</td>
</tr>
<tr>
<td>UserAccessList</td>
<td>DeleteAll</td>
</tr>
<tr>
<td></td>
<td>BreakLink</td>
</tr>
<tr>
<td></td>
<td>CanCheckIn</td>
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<td></td>
<td>CheckIn</td>
</tr>
<tr>
<td></td>
<td>EndReview</td>
</tr>
<tr>
<td>Workbook</td>
<td>RecheckSmartTags</td>
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<tr>
<td></td>
<td>ReplyWithChanges</td>
</tr>
<tr>
<td></td>
<td>SendForReview</td>
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<tr>
<td></td>
<td>SetPasswordEncryptionOptions</td>
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<tr>
<td></td>
<td>CanCheckOut</td>
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<td></td>
<td>Checkout</td>
</tr>
<tr>
<td>Workbooks</td>
<td>DiscardConflict</td>
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<td></td>
<td>OfflineConflict</td>
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<td></td>
<td>OpenDatabase</td>
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<td></td>
<td>OpenXML</td>
</tr>
<tr>
<td>WorksheetFunction</td>
<td>RTD</td>
</tr>
</tbody>
</table>
New Properties (Alphabetic List)

In Microsoft Excel 2002, many new Visual Basic for Applications properties have been added to existing objects. These properties are listed in the following table (sorted alphabetically by property name).

Properties

ADOConnection
AllowDeletingColumns
AllowDeletingRows
AllowEdit
AllowEditRanges
AllowFiltering
AllowFormattingCells
AllowFormattingColumns
AllowFormattingRows
AllowInsertingColumns
AllowInsertingHyperlinks
AllowInsertingRows
AllowSorting
AllowUsingPivotTables
ArabicModes
AutoFormat
AutoFormatAsYouTypeReplaceHyperlinks
AutoLayout
AutomationSecurity
AutoRecover
AutoRepublish
BackgroundChecking
Black
CalculatedMembers
CalculationInterruptKey
CalculationState
CenterFooterPicture
CenterHeaderPicture
Child
Children
CLSID
ColumnItems
CurrentPageList
CustomProperties
CustomSubtotalFunction
Cyan
DatabaseSort
DataField
DataPivotField
DecimalSeparator
Diagram
DiagramNode
DictLang
Direction
DisplayAutoCorrectOptions
DisplayEmptyColumn
DisplayEmptyRow
DisplayFunctionToolTips
DisplayImmediateItems
DisplayInsertOptions
DisplayPasteOptions
DisplaySmartTags
DownloadURL
EditWebPage
EmbedSmartTags
EmptyCellReferences
EnableAutoRecover
EnableDataValueEditing
EnableFieldList
EnableItemSelection
EnableMultiplePageItems
ErrorCheckingOptions
Errors
EvaluateToError
FileDialog
FindFormat
FirstChild
FullNameURLEncoded
GenerateGetPivotData
GermanPostReform
HasDiagram
HasDiagramNode
HasMemberProperties
HeartbeatInterval
HebrewModes
HiddenItemsList
Hinstance
Hwnd
Ignore
IgnoreCaps
IgnoreFileNames
IgnoreMixedDigits
InconsistentFormula
IndicatorColorIndex
Ink
IsConnected
IsMemberProperty
IsValid
KoreanCombineAux
KoreanProcessCompound
KoreanUseAutoChangeList
FirstChild
Layout
LeftFooterPicture
LeftHeaderPicture
Magenta
MailEnvelope
MapPageSize
MDX
MissingItemsLimit
NewWorkbook
NumberAsText
OLAP
OmittedCells
OverPrint
ParentGroup
Password
PasswordEncryptionAlgorithm
PasswordEncryptionFileProperties
PasswordEncryptionKeyLength
PasswordEncryptionProvider
PivotCell
PivotCellType
PivotSelectionStandard
PrintErrors
Properties
PropertyOrder
PropertyParentField
Protection
Ready
Recognize
RemovePersonalInformation
ReplaceFormat
Reverse
RightFooterPicture
RightHeaderPicture
RobustConnect
Root
RowItems
RTD
SaveNewWebPagesAsWebArchives
Separator
ShowBubbleSize
ShowCategoryName
ShowCellBackgroundFromOLAP
ShowInFieldList
ShowPageMultipleItemLabel
ShowPercentage
ShowPivotTableFieldList
ShowSeriesName
ShowStartupDialog
ShowValue
SmartTagActions
SmartTagOptions
SmartTagRecognizers
SmartTags
SolveOrder
SourceConnectionFile
SourceDataFile
SourceNameStandard
SpeakCellOnEnter
Speech
SpellingOptions
StandardFormula
SuggestMainOnly
New Properties (by Object)

In Microsoft Excel 2002, many new Visual Basic for Applications properties have been added to existing objects. These properties are listed in the following table (sorted by object name).

<table>
<thead>
<tr>
<th>Objects</th>
<th>Properties</th>
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<tbody>
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<td>Users</td>
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<td>AutoFormatAsYouTypeReplaceHyperlinks</td>
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<td>AutomationSecurity</td>
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<td>AutoRecover</td>
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<td>CalculationInterruptKey</td>
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<td>CalculationState</td>
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<td>DecimalSeparator</td>
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<td>DisplayFunctionToolTips</td>
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<td>DisplayPasteOptions</td>
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<td>FindFormat</td>
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<td>GenerateGetPivotData</td>
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<td>Hinstance</td>
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<td>Hwnd</td>
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<td>MapPageSize</td>
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<td>NewWorkbook</td>
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<td>Ready</td>
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<td>ReplaceFormat</td>
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<td>RTD</td>
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<td>ShowStartupDialog</td>
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<td>SmartTagRecognizers</td>
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<td>Speech</td>
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<td>SpellingOptions</td>
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<td>ThisCell</td>
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<tr>
<td>Application</td>
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</tr>
</tbody>
</table>
ThousandsSeparator
UsedObjects
UseSystemSeparators
Watches

AutoCorrect
DisplayAutoCorrectOptions
AutoRecover
Time

CalculatedMember
IsValid
SolveOrder

Chart
MailEnvelope
Tab
Black
Cyan
Ink

ColorFormat
Magenta
OverPrint
TintAndShade
Yellow

CubeField
HasMemberProperties
ShowInFieldList
Separator
ShowBubbleSize
ShowCategoryName
ShowPercentage
ShowSeriesName
ShowValue
Separator
ShowBubbleSize
ShowCategoryName
ShowPercentage
ShowSeriesName
ShowValue

DefaultWebOptions
SaveNewWebPagesAsWebArchives
TargetBrowser
AutoFormat

Diagram
AutoLayout
Reverse
DiagramNode

Children
Diagram
Layout
Root
TextShape

DiagramNodeChildren
FirstChild
LastChild

Error
Ignore
BackgroundChecking
EmptyCellReferences
EvaluateToError
InconsistentFormula

ErrorCheckingOptions
IndicatorColorIndex
NumberAsText
OmittedCells
TextDate
UnlockedFormulaCells

IRTDUpdateEvent
HeartbeatInterval
CenterFooterPicture
CenterHeaderPicture
LeftFooterPicture

PageSetup
LeftHeaderPicture
PrintErrors
RightFooterPicture
RightHeaderPicture

ADOCConnection
IsConnected
MissingItemsLimit

PivotCache
OLAP
RobustConnect
SourceConnectionFile
SourceDataFile

ColumnItems
CustomSubtotalFunction

PivotCell
DataField
PivotCellType
RowItems
PivotField
  CurrentPageList
  DatabaseSort
  EnableItemSelection
  HiddenItemsList
  IsMemberProperty
  PropertyOrder
  PropertyParentField
  StandardFormula

PivotFormula
  StandardFormula

PivotItem
  SourceNameStandard
  StandardFormula
  CalculatedMembers
  DataPivotField
  DisplayEmptyColumn
  DisplayEmptyRow
  DisplayImmediateItems
  EnableDataValueEditing

PivotTable
  EnableFieldList
  MDX
  PivotSelectionStandard
  ShowCellBackgroundFromOLAP
  ShowPageMultipleItemLabel
  ViewCalculatedMembers
  VisualTotals
  AllowDeletingColumns
  AllowDeletingRows
  AllowEditRanges
  AllowFiltering
  AllowFormattingCells
  AllowFormattingColumns
  AllowFormattingRows
  AllowInsertingColumns
  AllowInsertingHyperlinks
  AllowInsertingRows
  AllowSorting
  AllowUsingPivotTables

Protection
  AutoRepublish
  EditWebPage
QueryTable
  RobustConnect
  SourceConnectionFile
  SourceDataFile
  TextFileTrailingMinusNumbers
  WebDisableRedirections

Range
  AllowEdit
  Errors
  PivotCell
  SmartTags

RTD
  ThrottleInterval

Shape
  Child
  Diagram
  DiagramNode
  HasDiagram
  HasDiagramNode
  ParentGroup
  Child
  Diagram
  DiagramNode
  HasDiagram
  HasDiagramNode
  ParentGroup

ShapeRange
  DownloadURL
  Properties
  SmartTagActions
  XML

SmartTagOptions
  DisplaySmartTags
  EmbedSmartTags

SmartTagRecognizers
  Recognize

Speech
  Direction
  SpeakCellOnEnter
  ArabicModes
  DictLang
  GermanPostReform
  HebrewModes
  IgnoreCaps
  IgnoreFileNames
<table>
<thead>
<tr>
<th><strong>SpellingOptions</strong></th>
<th>IgnoreMixedDigits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KoreanCombineAux</td>
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<td>KoreanProcessCompound</td>
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<td>KoreanUseAutoChangeList</td>
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<td>SuggestMainOnly</td>
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<td>UserDict</td>
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<td><strong>UserAccess</strong></td>
<td>AllowEdit</td>
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<td><strong>WebOptions</strong></td>
<td>TargetBrowser</td>
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<td>EnableAutoRecover</td>
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<td>PasswordEncryptionFileProperties</td>
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<td><strong>Workbook</strong></td>
<td>PasswordEncryptionProvider</td>
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<td>RemovePersonalInformation</td>
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<tr>
<td></td>
<td>ShowPivotTableFieldList</td>
</tr>
<tr>
<td></td>
<td>SmartTagOptions</td>
</tr>
<tr>
<td></td>
<td>UpdateLinks</td>
</tr>
<tr>
<td></td>
<td>WritePassword</td>
</tr>
<tr>
<td></td>
<td>CustomProperties</td>
</tr>
<tr>
<td></td>
<td>MailEnvelope</td>
</tr>
<tr>
<td><strong>Worksheet</strong></td>
<td>Protection</td>
</tr>
<tr>
<td></td>
<td>SmartTags</td>
</tr>
<tr>
<td></td>
<td>Tab</td>
</tr>
</tbody>
</table>
Saving Documents as Web Pages

In Microsoft Excel, you can save a workbook, worksheet, chart, range, query table, PivotTable report, print area, or AutoFilter range to a Web page. You can also edit HTML files directly in Excel.
Saving a Document as a Web Page

Saving a document as a Web page is the process of creating and saving an HTML file and any supporting files. To do this, use the `SaveAs` method, as shown in the following example, which saves the active workbook as C:\Reports\myfile.htm.

```vbnet
ActiveWorkbook.SaveAs _
    Filename:="C:\Reports\myfile.htm", _
    FileFormat:=xlHTML
```
Customizing the Web Page

You can customize the appearance, content, browser support, editing support, graphics formats, screen resolution, file organization, and encoding of the HTML document by setting properties of the `DefaultWebOptions` object and the `WebOptions` object. The `DefaultWebOptions` object contains application-level properties. These settings are overridden by any workbook-level property settings that have the same names (these are contained in the `WebOptions` object).

After setting the attributes, you can use the `Publish` method to save the workbook, worksheet, chart, range, query table, PivotTable report, print area, or AutoFilter range to a Web page. The following example sets various application-level properties and then sets the `AllowPNG` property of the active workbook, overriding the application-level default setting. Finally, the example saves the range as "C:\Reports\1998_Q1.htm."

```vba
With Application.DefaultWebOptions
    .RelyonVML = True
    .AllowPNG = True
    .PixelsPerInch = 96
End With
With ActiveWorkbook
    .WebOptions.AllowPNG = False
    With .PublishObjects(1)
        .FileName = "C:\Reports\1998_Q1.htm"
        .Publish
    End With
End With
```

You can also save the files directly to a Web server. The following example saves a range to a Web server, giving the Web page the URL address http://example.homepage.com/annualreport.htm.

```vba
With ActiveWorkbook
    With .WebOptions
        .RelyonVML = True
        .PixelsPerInch = 96
    End With
    With .PublishObjects(1)
        .FileName = _
    End With
End With
```
"http://example.homepage.com/annualreport.htm"
.Publish
   End With
End With
Opening an HTML Document in Microsoft Excel

To edit an HTML document in Excel, first open the document by using the `Open` method. The following example opens the file "C:\Reports\1997_Q4.htm" for editing.

```vba
Workbooks.Open Filename:="C:\Reports\1997_Q4.htm"
```

After opening the file, you can customize the appearance, content, browser support, editing support, graphics formats, screen resolution, file organization, and encoding of the HTML document by setting properties of the `DefaultWebOptions` and `WebOptions` objects.
Using Microsoft Office Web Components on Forms

You can add Microsoft Office Web Components to a form in Visual Basic or Visual Basic for Applications the same way you’d add any other ActiveX control to a user form. Note that although you can use the Property Toolbox when you’re designing a form, you cannot display the Property Toolbox from a Microsoft Office Web Component on a modal form or in a dialog box at run time. This is also true for modal forms created in design environments other than Visual Basic or Visual Basic for Applications.
Using Events with Microsoft Excel Objects

You can write event procedures in Microsoft Excel at the worksheet, chart, query table, workbook, or application level. For example, the Activate event occurs at the sheet level, and the SheetActivate event is available at both the workbook and application levels. The SheetActivate event for a workbook occurs when any sheet in the workbook is activated. At the application level, the SheetActivate event occurs when any sheet in any open workbook is activated.

Worksheet, chart sheet, and workbook event procedures are available for any open sheet or workbook. To write event procedures for an embedded chart, QueryTable object, or Application object, you must create a new object using the WithEvents keyword in a class module.

Use the EnableEvents property to enable or disable events. For example, using the Save method to save a workbook causes the BeforeSave event to occur. You can prevent this by setting the EnableEvents property to False before you call the Save method.

Application.EnableEvents = False
ActiveWorkbook.Save
Application.EnableEvents = True
Working with Shapes (Drawing Objects)

Shapes, or drawing objects, are represented by three different objects: the Shapes collection, the ShapeRange collection, and the Shape object. In general, you use the Shapes collection to create shapes and to iterate through all the shapes on a given worksheet; you use the Shape object to format or modify a single shape; and you use the ShapeRange collection to modify multiple shapes the same way you work with multiple shapes in the user interface.
Setting Properties for a Shape

Many formatting properties of shapes aren't set by properties that apply directly to the Shape or ShapeRange object. Instead, related shape attributes are grouped under secondary objects, such as the FillFormat object, which contains all the properties that relate to the shape's fill, or the LinkFormat object, which contains all the properties that are unique to linked OLE objects. To set properties for a shape, you must first return the object that represents the set of related shape attributes and then set properties of that returned object. For example, you use the Fill property to return the FillFormat object, and then you set the ForeColor property of the FillFormat object to set the fill foreground color for the specified shape, as shown in the following example.

Worksheets(1).Shapes(1).Fill.ForeColor.RGB = RGB(255, 0, 0)
Applying a Property or Method to Several Shapes at the Same Time

In the user interface, there are some operations you can perform with several shapes selected; for example, you can select several shapes and set all their individual fills at once. There are other operations you can only perform with a single shape selected; for example, you can only edit the text in a shape if a single shape is selected.

In Visual Basic, there are two ways to apply properties and methods to a set of shapes. These two ways allow you to perform any operation that you can perform on a single shape on a range of shapes, whether or not you can perform the same operation in the user interface.

- If the operation works on a multiple selected shapes in the user interface, you can perform the same operation in Visual Basic by constructing a `ShapeRange` collection that contains the shapes you want to work with, and applying the appropriate properties and methods directly to the `ShapeRange` collection.
- If the operation doesn't work on multiple selected shapes in the user interface, you can still perform the operation in Visual Basic by looping through the `Shapes` collection or through a `ShapeRange` collection that contains the shapes you want to work with, and applying the appropriate properties and methods to the individual `Shape` objects in the collection.

Many properties and methods that apply to the `Shape` object and `ShapeRange` collection fail if applied to certain kinds of shapes. For example, the `TextFrame` property fails if applied to a shape that cannot contain text. If you are not positive that each the shapes in a `ShapeRange` collection can have a certain property or method applied to it, don't apply the property or method to the `ShapeRange` collection. If you want to apply one of these properties or methods to a collection of shapes, you must loop through the collection and test each individual shape to make sure it’s an appropriate type of shape before applying to property or method to it.
Creating a ShapeRange Collection that Contains All Shapes on a Sheet

You can create a ShapeRange object that contains all the Shape objects on a sheet by selecting the shapes and then using the ShapeRange property to return a ShapeRange object containing the selected shapes.

```
Worksheets(1).Shapes.Select
Set sr = Selection.ShapeRange
```

In Microsoft Excel, the Index argument isn’t optional for the Range property of the Shapes collection, so you cannot use this property without an argument to create a ShapeRange object containing all shapes in a Shapes collection.
Applying a Property or Method to a ShapeRange Collection

If you can perform an operation on multiple selected shapes in the user interface at the same time, you can do the programmatic equivalent by constructing a ShapeRange collection and then applying the appropriate properties or methods to it. The following example constructs a shape range that contains the shapes named "Big Star" and "Little Star" on myDocument and applies a gradient fill to them.

```vba
Set myDocument =Worksheets(1)
Set myRange = myDocument.Shapes.Range(Array("Big Star", _
    "Little Star"))
myRange.Fill.PresetGradient _
    msoGradientHorizontal, 1, msoGradientBrass
```

The following are general guidelines for how properties and methods behave when they're applied to a ShapeRange collection.

- Applying a method to the collection is equivalent to applying the method to each individual Shape object in that collection.
- Setting the value of a property of the collection is equivalent to setting the value of the property of each individual shape in that range.
- A property of the collection that returns a constant returns the value of the property for an individual shape in the collection if all shapes in the collection have the same value for that property. If not all shapes in the collection have the same value for the property, it returns the "mixed" constant.
- A property of the collection that returns a simple data type (such as Long, Single, or String) returns the value of the property for an individual shape if all shapes in the collection have the same value for that property.
- The value of some properties can be returned or set only if there's exactly one shape in the collection. If there's more than one shape in the collection, a run-time error occurs. This is generally the case for returning or setting properties when the equivalent action in the user interface is possible only with a single shape (actions such as editing text in a shape or editing the points of a freeform).
The preceding guidelines also apply when you are setting properties of shapes that are grouped under secondary objects of the **ShapeRange** collection, such as the **FillFormat** object. If the secondary object represents operations that can be performed on multiple selected objects in the user interface, you will be able to return the object from a **ShapeRange** collection and set its properties. For example, you can use the **Fill** property to return the **FillFormat** object that represents the fills of all the shapes in the **ShapeRange** collection. Setting the properties of this **FillFormat** object will set the same properties for all the individual shapes in the **ShapeRange** collection.
Looping Through a Shapes or ShapeRange Collection

Even if you cannot perform an operation on several shapes in the user interface at the same time by selecting them and then using a command, you can perform the equivalent action programmatically by looping through a Shapes or ShapeRange collection that contains the shapes you want to work with, applying the appropriate properties and methods to the individual Shape objects in the collection. The following example loops through all the shapes on myDocument and changes the foreground color for each shape that’s an AutoShape.

```vba
Set myDocument = Worksheets(1)
For Each sh In myDocument.Shapes
    If sh.Type = msoAutoShape Then
        sh.Fill.ForeColor.RGB = RGB(255, 0, 0)
    End If
Next
```

The following example constructs a ShapeRange collection that contains all the currently selected shapes in the active window and sets the foreground color for each selected shape.

```vba
For Each sh in ActiveWindow.Selection.ShapeRange
    sh.Fill.ForeColor.RGB = RGB(255, 0, 0)
Next
```
Aligning, Distributing, and Grouping Shapes in a Shape Range

Use the Align and Distribute methods to position a set of shapes relative to one another or relative to the document that contains them. Use the Group method or the Regroup method to form a single grouped shape from a set of shapes.
OLE Programmatic Identifiers

You can use an OLE programmatic identifier (sometimes called a ProgID) to create an Automation object. The following tables list OLE programmatic identifiers for ActiveX controls, Microsoft Office applications, and Microsoft Office Web Components.

**ActiveX Controls**

**Microsoft Access**

**Microsoft Excel**

**Microsoft Graph**

**Microsoft Office Web Components**

**Microsoft Outlook**

**Microsoft PowerPoint**

**Microsoft Word**
# ActiveX Controls

To create the ActiveX controls listed in the following table, use the corresponding OLE programmatic identifier.

<table>
<thead>
<tr>
<th>To create this control</th>
<th>Use this identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>CheckBox</td>
<td>Forms.CheckBox.1</td>
</tr>
<tr>
<td>ComboBox</td>
<td>Forms.ComboBox.1</td>
</tr>
<tr>
<td>CommandButton</td>
<td>Forms.CommandButton.1</td>
</tr>
<tr>
<td>Frame</td>
<td>Forms.Frame.1</td>
</tr>
<tr>
<td>Image</td>
<td>Forms.Image.1</td>
</tr>
<tr>
<td>Label</td>
<td>Forms.Label.1</td>
</tr>
<tr>
<td>ListBox</td>
<td>Forms.ListBox.1</td>
</tr>
<tr>
<td>MultiPage</td>
<td>Forms.MultiPage.1</td>
</tr>
<tr>
<td>OptionButton</td>
<td>Forms.OptionButton.1</td>
</tr>
<tr>
<td>ScrollBar</td>
<td>Forms.ScrollBar.1</td>
</tr>
<tr>
<td>SpinButton</td>
<td>Forms.SpinButton.1</td>
</tr>
<tr>
<td>TabStrip</td>
<td>Forms.TabStrip.1</td>
</tr>
<tr>
<td>TextBox</td>
<td>Forms.TextBox.1</td>
</tr>
<tr>
<td>ToggleButton</td>
<td>Forms.ToggleButton.1</td>
</tr>
</tbody>
</table>
# Microsoft Access

To create the Microsoft Access objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Access available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DefaultWebOptions</td>
<td>Access.DefaultWebOptions</td>
</tr>
</tbody>
</table>
**Microsoft Excel**

To create the Microsoft Excel objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Excel available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Excel.Application, Excel.Application</td>
<td>Returns a workbook containing two worksheets; one for the chart and one for its data. The chart worksheet is the active worksheet.</td>
</tr>
<tr>
<td>Workbook</td>
<td>Excel.AddIn</td>
<td></td>
</tr>
<tr>
<td>Workbook</td>
<td>Excel.Chart, Excel.Chart</td>
<td></td>
</tr>
<tr>
<td>Workbook</td>
<td>Excel.Sheet, Excel.Sheet</td>
<td>Returns a workbook with one worksheet.</td>
</tr>
</tbody>
</table>
Microsoft Graph

To create the Microsoft Graph objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Graph available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>MSGraph.Application,</td>
</tr>
<tr>
<td></td>
<td>MSGraph.Application</td>
</tr>
<tr>
<td>Chart</td>
<td>MSGraph.Chart, MSGraph.Chart</td>
</tr>
</tbody>
</table>
Microsoft Office Web Components

To create the Microsoft Office Web Components objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Microsoft Office Web Components available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use this identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChartSpace</td>
<td>OWC10.Chart</td>
</tr>
<tr>
<td>DataSourceControl</td>
<td>OWC10.DataSourceControl</td>
</tr>
<tr>
<td>ExpandControl</td>
<td>OWC.ExpandControl</td>
</tr>
<tr>
<td>PivotTable</td>
<td>OWC10.PivotTable</td>
</tr>
<tr>
<td>RecordNavigationControl</td>
<td>OWC10.RecordNavigationControl</td>
</tr>
<tr>
<td>Spreadsheet</td>
<td>OWC10.Spreadsheet</td>
</tr>
</tbody>
</table>
Microsoft Outlook

To create the Microsoft Outlook objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Outlook available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Outlook.Application,</td>
</tr>
<tr>
<td></td>
<td>Outlook.Application</td>
</tr>
</tbody>
</table>
Microsoft PowerPoint

To create the Microsoft PowerPoint objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of PowerPoint available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>PowerPoint.Application,</td>
</tr>
<tr>
<td></td>
<td>PowerPoint.Application</td>
</tr>
</tbody>
</table>
# Microsoft Word

To create the Microsoft Word objects listed in the following table, use one of the corresponding OLE programmatic identifiers. If you use an identifier without a version number suffix, you create an object in the most recent version of Word available on the machine where the macro is running.

<table>
<thead>
<tr>
<th>To create this object</th>
<th>Use one of these identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Word.Application, Word.Application</td>
</tr>
<tr>
<td>Global</td>
<td>Word.Global</td>
</tr>
</tbody>
</table>


AddIn Object

Represented a single add-in, either installed or not installed. The AddIn object is a member of the AddIns collection. The AddIns collection contains a list of all the add-ins available to Microsoft Excel, regardless of whether they’re installed. This list corresponds to the list of add-ins displayed in the Add-Ins dialog box (Tools menu).
Using the Addin Object

Use `AddIns(index)`, where `index` is the add-in title or index number, to return a single `AddIn` object. The following example installs the Analysis Toolpak add-in.

```vba
AddIns("analysis toolpak").Installed = True
```

Don’t confuse the add-in title, which appears in the Add-Ins dialog box, with the add-in name, which is the file name of the add-in. You must spell the add-in title exactly as it’s spelled in the Add-Ins dialog box, but the capitalization doesn’t have to match.

The index number represents the position of the add-in in the Add-ins available box in the Add-Ins dialog box. The following example creates a list that contains specified properties of the available add-ins.

```vba
With Worksheets("sheet1")
  .Rows(1).Font.Bold = True
  .Range("a1:d1").Value = _
      Array("Name", "Full Name", "Title", "Installed")
  For i = 1 To AddIns.Count
    .Cells(i + 1, 1) = AddIns(i).Name
    .Cells(i + 1, 2) = AddIns(i).FullName
    .Cells(i + 1, 3) = AddIns(i).Title
    .Cells(i + 1, 4) = AddIns(i).Installed
  Next
  .Range("a1").CurrentRegion.Columns.AutoFit
End With
```
Remarks

The **Add** method adds an add-in to the list of available add-ins but doesn’t install the add-in. Set the **Installed** property of the add-in to **True** to install the add-in. To install an add-in that doesn’t appear in the list of available add-ins, you must first use the **Add** method and then set the **Installed** property. This can be done in a single step, as shown in the following example (note that you use the name of the add-in, not its title, with the **Add** method).

```
AddIns.Add("generic.xll").Installed = True
```

Use **Workbooks(index)** where *index* is the add-in filename (not title) to return a reference to the workbook corresponding to a loaded add-in. You must use the file name because loaded add-ins don’t normally appear in the **Workbooks** collection. This example sets the `wb` variable to the workbook for *Myaddin.xla*.

```
Set wb = Workbooks("myaddin.xla")
```

The following example sets the `wb` variable to the workbook for the Analysis Toolpak add-in.

```
Set wb = Workbooks(AddIns("analysis toolpak").Name)
```

If the **Installed** property returns **True**, but calls to functions in the add-in still fail, the add-in may not actually be loaded. This is because the **Addin** object represents the existence and installed state of the add-in but doesn't represent the actual contents of the add-in workbook. To guarantee that an installed add-in is loaded, you should open the add-in workbook. The following example opens the workbook for the add-in named "*My Addin*" if the add-in isn’t already present in the **Workbooks** collection.

```
On Error Resume Next ' turn off error checking
Set wbMyAddin = Workbooks(Addins("My Addin").Name)
LastError = Err
On Error Goto 0 ' restore error checking
If lastError <> 0 Then
    ' the add-in workbook isn't currently open. Manually open it.
    Set wbMyAddin = Workbooks.Open(Addins("My Addin").FullName)
End If
```
AddIns Collection Object

**Application** | **AddIns (AddIn)**

A collection of **AddIn** objects that represents all the add-ins available to Microsoft Excel, regardless of whether they’re installed. This list corresponds to the list of add-ins displayed in the **Add-Ins** dialog box (**Tools** menu).
Using the Addins Collection

Use the AddIns method to return the AddIns collection. The following example creates a list that contains the names and installed states of all the available add-ins.

```
Sub DisplayAddIns()
    Worksheets("Sheet1").Activate
    rw = 1
    For Each ad In Application.AddIns
        Worksheets("Sheet1").Cells(rw, 1) = ad.Name
        Worksheets("Sheet1").Cells(rw, 2) = ad.Installed
        rw = rw + 1
    Next
End Sub
```

Use the Add method to add an add-in to the list of available add-ins. The Add method adds an add-in to the list but doesn’t install the add-in. Set the Installed property of the add-in to True to install the add-in. To install an add-in that doesn’t appear in the list of available add-ins, you must first use the Add method and then set the Installed property. This can be done in a single step, as shown in the following example (note that you use the name of the add-in, not its title, with the Add method).

```
AddIns.Add("generic.xll").Installed = True
```

Use AddIns(index) where index is the add-in title or index number to return a single AddIn object. The following example installs the Analysis Toolpak add-in.

```
AddIns("analysis toolpak").Installed = True
```

Don’t confuse the add-in title, which appears in the Add-Ins dialog box, with the add-in name, which is the file name of the add-in. You must spell the add-in title exactly as it’s spelled in the Add-Ins dialog box, but the capitalization doesn’t have to match.
**Adjustments Object**

*Shapes (Shape)* \[ Adjustments

Contains a collection of adjustment values for the specified AutoShape, WordArt object, or connector. Each adjustment value represents one way an adjustment handle can be adjusted. Because some adjustment handles can be adjusted in two ways — for instance, some handles can be adjusted both horizontally and vertically — a shape can have more adjustment values than it has adjustment handles. A shape can have up to eight adjustments.
Using the Adjustments Object

Use the Adjustments property to return an Adjustments object. Use Adjustments(index), where index is the adjustment value’s index number, to return a single adjustment value.

Different shapes have different numbers of adjustment values, different kinds of adjustments change the geometry of a shape in different ways, and different kinds of adjustments have different ranges of valid values. For example, the following illustration shows what each of the four adjustment values for a right-arrow callout contributes to the definition of the callout’s geometry.

Note Because each adjustable shape has a different set of adjustments, the best way to verify the adjustment behavior for a specific shape is to manually create an instance of the shape, make adjustments with the macro recorder turned on, and then examine the recorded code.

The following table summarizes the ranges of valid adjustment values for different types of adjustments. In most cases, if you specify a value that’s beyond the range of valid values, the closest valid value will be assigned to the adjustment.

<table>
<thead>
<tr>
<th>Type of adjustment</th>
<th>Valid values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear (horizontal or vertical)</td>
<td>Generally the value 0.0 represents the left or top edge of the shape and the value 1.0 represents the right or bottom edge of the shape. Valid values correspond to valid adjustments you can make to the shape manually. For example, if you can only pull an adjustment handle half way across the shape manually, the maximum</td>
</tr>
</tbody>
</table>
value for the corresponding adjustment will be 0.5. For shapes such as connectors and callouts, where the values 0.0 and 1.0 represent the limits of the rectangle defined by the starting and ending points of the connector or callout line, negative numbers and numbers greater than 1.0 are valid values.

An adjustment value of 1.0 corresponds to the width of the shape. The maximum value is 0.5, or half way across the shape.

Values are expressed in degrees. If you specify a value outside the range – 180 to 180, it will be normalized to be within that range.

The following example adds a right-arrow callout to myDocument and sets adjustment values for the callout. Note that although the shape has only three adjustment handles, it has four adjustments. Adjustments three and four both correspond to the handle between the head and neck of the arrow.

Set myDocument =Worksheets(1)  
Set rac = myDocument.Shapes.AddShape(msoShapeRightArrowCallout, _  
10, 10, 250, 190)  
With rac.Adjustments  
  .Item(1) = 0.5  'adjusts width of text box  
  .Item(2) = 0.15  'adjusts width of arrow head  
  .Item(3) = 0.8  'adjusts length of arrow head  
  .Item(4) = 0.4  'adjusts width of arrow neck  
End With
AllowEditRange Object

AllowEditRanges ← AllowEditRange
← Multiple objects

Represents the cells that can be edited on a protected worksheet.
Using the AllowEditRange Object

Use the Add method or the Item property of the AllowEditRanges collection to return an AllowEditRange object.

Once an AllowEditRange object has been returned, you can use the ChangePassword method to change the password to access a range that can be edited on a protected worksheet.

In this example, Microsoft Excel allows edits to range "A1:A4" on the active worksheet, notifies the user, then changes the password for this specified range and notifies the user of this change.

Sub UseChangePassword()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet
    ' Establish a range that can allow edits on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
        Title:="Classified", _
        Range:=Range("A1:A4"), _
        Password:="secret"
    MsgBox "Cells A1 to A4 can be edited on the protected worksheet."
    ' Change the password.
    wksOne.Protection.AllowEditRanges(1).ChangePassword _
        Password:="moresecret"
    MsgBox "The password for these cells has been changed."
End Sub
AllowEditRanges Collection

Protection — AllowEditRanges
  — AllowEditRange

A collection of all the AllowEditRanges objects that represent the cells that can be edited on a protected worksheet.
Using the AllowEditRanges Collection

Use the AllowEditRanges property of the Protection object to return an AllowEditRanges collection.

Once an AllowEditRanges collection has been returned, you can use the Add method to add a range that can be edited on a protected worksheet.

In this example, Microsoft Excel allows edits to range "A1:A4" on the active worksheet and notifies the user of the title and address of the specified range.

Sub UseAllowEditRanges()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet
    
    ' Unprotect worksheet.
    wksOne.Unprotect
    
    ' Establish a range that can allow edits
    ' on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
    Title:="Classified", _
    Range:=Range("A1:A4"), _
    Password:="secret"
    
    ' Notify the user
    ' the title and address of the range.
    With wksOne.Protection.AllowEditRanges.Item(1)
        MsgBox "Title of range: " & .Title
        MsgBox "Address of range: " & .Range.Address
    End With
End Sub
**Application Object**

- Application

Multiplies objects

Represents the entire Microsoft Excel application. The `Application` object contains:

- Application-wide settings and options (many of the options in the `Options` dialog box (`Tools` menu), for example).
- Methods that return top-level objects, such as `ActiveCell`, `ActiveSheet`, and so on.
Using the Application Object

Use the **Application** property to return the **Application** object. The following example applies the **Windows** property to the **Application** object.

```vba
Application.Windows("book1.xls").Activate
```

The following example creates a Microsoft Excel workbook object in another application and then opens a workbook in Microsoft Excel.

```vba
Set xl = CreateObject("Excel.Sheet")
xl.Application.Workbooks.Open "newbook.xls"
```
Remarks

Many of the properties and methods that return the most common user-interface objects, such as the active cell (`ActiveCell` property), can be used without the `Application` object qualifier. For example, instead of writing

```
Application.ActiveCell.Font.Bold = True
```

you can write

```
ActiveCell.Font.Bold = True.
```
Areas Collection

A collection of the areas, or contiguous blocks of cells, within a selection. There’s no singular Area object; individual members of the Areas collection are Range objects. The Areas collection contains one Range object for each discrete, contiguous range of cells within the selection. If the selection contains only one area, the Areas collection contains a single Range object that corresponds to that selection.
Using the Areas Collection

Use the **Areas** property to return the **Areas** collection. The following example clears the current selection if it contains more than one area.

If Selection.Areas.Count <> 1 Then Selection.Clear

Use **Areas(index)**, where *index* is the area index number, to return a single **Range** object from the collection. The index numbers correspond to the order in which the areas were selected. The following example clears the first area in the current selection if the selection contains more than one area.

If Selection.Areas.Count <> 1 Then
   Selection.Areas(1).Clear
End If

Some operations cannot be performed on more than one area in a selection at the same time; you must loop through the individual areas in the selection and perform the operations on each area separately. The following example performs the operation named "myOperation" on the selected range if the selection contains only one area; if the selection contains multiple areas, the example performs myOperation on each individual area in the selection.

Set rangeToUse = Selection
If rangeToUse.Areas.Count = 1 Then
   myOperation rangeToUse
Else
   For Each singleArea in rangeToUse.Areas
      myOperation singleArea
   Next
End If
AutoCorrect Object

Contains Microsoft Excel AutoCorrect attributes (capitalization of names of days, correction of two initial capital letters, automatic correction list, and so on).
Using the AutoCorrect Object

Use the **AutoCorrect** property to return the **AutoCorrect** object. The following example sets Microsoft Excel to correct words that begin with two initial capital letters.

```vba
With Application.AutoCorrect
    .TwoInitialCapitals = True
    .ReplaceText = True
End With
```
AutoFilter Object

Worksheets (Worksheet) \rightarrow AutoFilter

Filters (Filter)

Represents autofiltering for the specified worksheet.
Using the AutoFilter Object

Use the **AutoFilter** property to return the **AutoFilter** object. Use the **Filters** method to return a collection of individual column filters. Use the **Range** method to return the **Range** object that represents the entire filtered range. The following example stores the address and filtering criteria for the current filtering and then applies new filters.

```vba
Dim w As Worksheet
Dim filterArray() As String
Dim currentFiltRange As String

Sub ChangeFilters()

Set w = Worksheets("Crew")
With w.AutoFilter
    currentFiltRange = .Range.Address
    With .Filters
        ReDim filterArray(1 To .Count, 1 To 3)
        For f = 1 To .Count
            With .Item(f)
                If .On Then
                    filterArray(f, 1) = .Criteria1
                    If .Operator Then
                        filterArray(f, 2) = .Operator
                        filterArray(f, 3) = .Criteria2
                    End If
                End If
            End With
        Next
    End With
End With
w.AutoFilterMode = False
w.Range("A1").AutoFilter field:=1, Criteria1:"S"
End Sub
```

To create an **AutoFilter** object for a worksheet, you must turn autofiltering on for a range on the worksheet either manually or using the **AutoFilter** method of the **Range** object. The following example uses the values stored in module-level variables in the previous example to restore the original autofiltering to the Crew
worksheet.

Sub RestoreFilters()
Set w = Worksheets("Crew")
w.AutoFilterMode = False
For col = 1 To UBound(filterArray(), 1)
    If Not IsEmpty(filterArray(col, 1)) Then
        If filterArray(col, 2) Then
            w.Range(currentFiltRange).AutoFilter field:=col,
            Criteria1:=filterArray(col, 1), _
            Operator:=filterArray(col, 2), _
            Criteria2:=filterArray(col, 3)
        Else
            w.Range(currentFiltRange).AutoFilter field:=col,
            Criteria1:=filterArray(col, 1)
        End If
    End If
End For
Next
End Sub
AutoRecover Object

AutoRecover

Represents the automatic recovery features of a workbook. Properties for the AutoRecover object determine the path and time interval for backing up all files.
Using the AutoRecover object

Use the AutoRecover property of the Application object to return an AutoRecover object.

Use the Path property of the AutoRecover object to set the path for where the AutoRecover file will be saved. The following example sets the path of the AutoRecover file to drive C.

Sub SetPath()
    Application.AutoRecover.Path = "C:\"
End Sub

Use the Time property of the AutoRecover object to set the time interval for backing up all files.

**Note**   Units for the Time property are in minutes.

Sub SetTime()
    Application.AutoRecover.Time = 5
End Sub
Axes Collection Object

- Charts (Chart)
- Axes (Axis)
  - AxisTitle
  - Border
  - Gridlines
  - TickLabels

A collection of all the **Axis** objects in the specified chart.
Using the Axes Collection

Use the **Axes** method to return the **Axes** collection. The following example displays the number of axes on embedded chart one on worksheet one.

```vba
With Worksheets(1).ChartObjects(1).Chart
    MsgBox .Axes.Count
End With
```

Use **Axes**(type, group), where type is the axis type and group is the axis group, to return a single **Axis** object. Type can be one of the following **XlAxisType** constants: **xlCategory**, **xlSeries**, or **xlValue**. Group can be one of the following **XlAxisGroup** constants: **xlPrimary** or **xlSecondary**. For more information, see the **Axes** method.

The following example sets the category axis title text on the chart sheet named "Chart1."

```vba
With Charts("chart1").Axes(xlCategory)
    .HasTitle = True
    .AxisTitle.Caption = "1994"
End With
```
**Axis Object**

- **Charts (Chart)**
- **Axes (Axis)**
  - **AxisTitle**
  - **Border**
  - **DisplayUnitLabel**
  - **Gridlines**
  - **TickLabels**

Represents a single axis in a chart. The **Axis** object is a member of the **Axes** collection.
Using the Axis Object

Use Axes(type, group) where type is the axis type and group is the axis group to return a single Axis object. Type can be one of the following XlAxisType constants: xlCategory, xlSeries, or xlValue. Group can be one of the following XlAxisGroup constants: xlPrimary or xlSecondary. For more information, see the Axes method.

The following example sets the category axis title text on the chart sheet named "Chart1."

With Charts("chart1").Axes(xlCategory)
  .HasTitle = True
  .AxisTitle.Caption = "1994"
End With
AxisTitle Object

Multiple objects

Represents a chart axis title.
Using the AxisTitle Object

Use the **AxisTitle** property to return an **AxisTitle** object. The following example activates embedded chart one, sets the value axis title text, sets the font to Bookman 10 point, and formats the word millions as italic.

```vba
Worksheets("sheet1").ChartObjects(1).Activate
With ActiveChart.Axes(xlValue)
    .HasTitle = True
    With .AxisTitle
        .Caption = "Revenue (millions)"
        .Font.Name = "bookman"
        .Font.Size = 10
        .Characters(10, 8).Font.Italic = True
    End With
End With
```
Remarks

The **AxisTitle** object doesn’t exist and cannot be used unless the **HasTitle** property for the axis is **True**.
Border Object

Multiple objects

Represents the border of an object.
Using the Border Object

Most bordered objects (all except for the Range and Style objects) have a border that’s treated as a single entity, regardless of how many sides it has. The entire border must be returned as a unit. Use the Border property to return the Border object for this kind of object. The following example activates the chart sheet named Chart1 places a dashed border around the chart area for the active chart and places a dotted border around the plot area.

Charts("chart1").Activate
With ActiveChart
    .ChartArea.Border.LineStyle = xlDash
    .PlotArea.Border.LineStyle = xlDot
End With

Range and Style objects have four discrete borders — left, right, top, and bottom — which can be returned individually or as a group. Use the Borders property to return the Borders collection, which contains all four borders and treats the borders as a unit. The following example adds a double border to cell A1 on worksheet one.

Worksheets(1).Range("A1").Borders.LineStyle = xlDouble

Use Borders(index), where index identifies the border, to return a single Border object. The following example sets the color of the bottom border of cells A1:G1.

Worksheets("Sheet1").Range("A1:G1").
    Borders(xlEdgeBottom).Color = RGB(255, 0, 0)

Index can be one of the following XlBordersIndex constants: xlDiagonalDown, xlDiagonalUp, xlEdgeBottom, xlEdgeLeft, xlEdgeRight, xlEdgeTop, xlInsideHorizontal, or xlInsideVertical.
Borders Collection

Multiple objects — Borders

Border

A collection of four Border objects that represent the four borders of a Range or Style object.
Using the Borders Collection

Use the Borders property to return the Borders collection, which contains all four borders. The following example adds a double border to cell A1 on worksheet one.

```vba
Worksheets(1).Range("A1").Borders.LineStyle = xlDouble
```

Use `Borders(index)`, where `index` identifies the border, to return a single Border object. The following example sets the color of the bottom border of cells A1:G1 to red.

```vba
Worksheets("Sheet1").Range("A1:G1").__
    Borders(xlEdgeBottom).Color = RGB(255, 0, 0)
```

`Index` can be one of the following XlBordersIndex constants: `xlDiagonalDown`, `xlDiagonalUp`, `xlEdgeBottom`, `xlEdgeLeft`, `xlEdgeRight`, or `xlEdgeTop`, `xlInsideHorizontal`, or `xlInsideVertical`. 
Remarks

You can set border properties for an individual border only with Range and Style objects. Other bordered objects, such as check boxes and chart areas, have a border that’s treated as a single entity, regardless of how many sides it has. For these objects, you must return and set properties for the entire border as a unit. For more information, see the Border object.
Show All
CalculatedFields Collection Object

A collection of PivotField objects that represents all the calculated fields in the specified PivotTable report. For example, a report that contains Revenue and Expense fields could have a calculated field named “Profit” defined as the amount in the Revenue field minus the amount in the Expense field.
Remarks

For OLAP data sources, you cannot set this collection, and it always returns Nothing.
Using the CalculatedFields Collection

Use the `CalculatedFields` method to return the `CalculatedFields` collection. The following example deletes the calculated fields from the PivotTable report named “Pivot1”.

```vba
For Each fld In _
    Worksheets(1).PivotTables("Pivot1").CalculatedFields
    fld.Delete
Next

Use `CalculatedFields(index)`, where `index` is specified field’s name or index number, to return a single `PivotField` object from the `CalculatedFields` collection.
CalculatedItems Collection Object

A collection of PivotItem objects that represent all the calculated items in the specified PivotTable report. For example, a PivotTable report that contains January, February, and March items could have a calculated item named “FirstQuarter” defined as the sum of the amounts in January, February, and March.
Using the CalculatedItems Collection

Use the `CalculatedItems` method to return the `CalculatedItems` collection. The following example creates a list of the calculated items in the first PivotTable report on worksheet one, along with their formulas.

```vba
Set pt =Worksheets(1).PivotTables(1)
For Each ci In pt.PivotFields("Sales").CalculatedItems
    r = r + 1
    With Worksheets(2)
        .Cells(r, 1).Value = ci.Name
        .Cells(r, 2).Value = ci.Formula
    End With
Next
```

Use `CalculatedFields(index)`, where `index` is the name or index number of the field, to return a single `PivotField` object from the `CalculatedFields` collection.
CalculatedMember Object

CalculatedMembers

Represents the calculated fields and calculated items for PivotTables with Online Analytical Processing (OLAP) data sources.
Using the CalculatedMember object

Use the **Add** method or the **Item** property of the **CalculatedMembers** collection to return a **CalculatedMember** object.

With a **CalculatedMember** object you can check the validity of a calculated field or item in a PivotTable using the **IsValid** property.

**Note**  The **IsValid** property will return **True** if the PivotTable is not currently connected to the data source. Use the **MakeConnection** method before testing the **IsValid** property.

The following example notifies the user if the calculated member is valid or not. This example assumes a PivotTable exists on the active worksheet that contains either a valid or invalid calculated member.

```vba
Sub CheckValidity()
    Dim pvtTable As PivotTable
    Dim pvtCache As PivotCache

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)

    ' Handle run-time error if external source is not an OLEDB data
    On Error GoTo Not_OLEDB

    ' Check connection setting and make connection if necessary.
    If pvtCache.IsConnected = False Then
        pvtCache.MakeConnection
    End If

    ' Check if calculated member is valid.
    If pvtTable.CalculatedMembers.Item(1).IsValid = True Then
        MsgBox "The calculated member is valid."
    Else
        MsgBox "The calculated member is not valid."
    End If

End Sub
```

*Not_OLEDB:*
CalculatedMembers Collection

**CalculatedMembers** → **CalculatedMember**

A collection of all the **CalculatedMember** objects on the specified PivotTable. Each **CalculatedMember** object represents a calculated field or calculated item.
Using the CalculatedMembers collection

Use the CalculatedMembers property of the PivotTable object to return a CalculatedMembers collection. The following example adds a set to a PivotTable, assuming a PivotTable exists on the active worksheet.

Sub UseCalculatedMember()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    pvtTable.CalculatedMembers.Add Name:="[Beef]", _
           Formula:="'{[Product].[All Products].Children}'", _
           Type:=xlCalculatedSet
End Sub

Note  For the Add method in the previous example, the Formula argument must have a valid MDX syntax statement. The Name argument has to be acceptable to the Online Analytical Processing (OLAP) provider and the Type argument has to be defined.
CalloutFormat Object

Shapes (Shape) ▼ CalloutFormat

Contains properties and methods that apply to line callouts.
Using the CalloutFormat Object

Use the Callout property to return a CalloutFormat object. The following example specifies the following attributes of shape three (a line callout) on myDocument: the callout will have a vertical accent bar that separates the text from the callout line; the angle between the callout line and the side of the callout text box will be 30 degrees; there will be no border around the callout text; the callout line will be attached to the top of the callout text box; and the callout line will contain two segments. For this example to work, shape three must be a callout.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Callout
    .Accent = True
    .Angle = msoCalloutAngle30
    .Border = False
    .PresetDrop msoCalloutDropTop
    .Type = msoCalloutThree
End With
CellFormat Object

- Application
- CellFormat
- Multiple objects

Represents the search criteria for the cell format.
Using the CellFormat object

Use the FindFormat or ReplaceFormat properties of the Application object to return a CellFormat object.

With a CellFormat object, you can use the Borders, Font, or Interior properties of the CellFormat object, to define the search criteria for the cell format. The following example sets the search criteria for the interior of the cell format. In this scenario, the interior of cell A1 is set to yellow, which is then found and replaced with a green interior.

Sub ChangeCellFormat()
    ' Set the interior of cell A1 to yellow.
    Range("A1").Select
    Selection.Interior.ColorIndex = 36
    MsgBox "The cell format for cell A1 is a yellow interior."

    ' Set the CellFormat object to replace yellow with green.
    With Application
        .FindFormat.Interior.ColorIndex = 36
        .ReplaceFormat.Interior.ColorIndex = 35
    End With

    ' Find and replace cell A1's yellow interior with green.
    ActiveCell.Replace What:="", Replacement:="", LookAt:=xlPart, _
        SearchOrder:=xlByRows, MatchCase:=False, SearchFormat:=True,
        ReplaceFormat:=True
    MsgBox "The cell format for cell A1 is replaced with a green int
End Sub
Characters Object

Multiple objects of the Characters and Font objects represent characters in an object that contains text. The Characters object lets you modify any sequence of characters contained in the full text string.
Using the Characters Object

Use `Characters(start, length)`, where `start` is the start character number and `length` is the number of characters, to return a `Characters` object. The following example adds text to cell B1 and then makes the second word bold.

```vba
With Worksheets("Sheet1").Range("B1")
    .Value = "New Title"
    .Characters(5, 5).Font.Bold = True
End With
```
Remarks

The **Characters** method is necessary only when you need to change some of an object’s text without affecting the rest (you cannot use the **Characters** method to format a portion of the text if the object doesn’t support rich text). To change all the text at the same time, you can usually apply the appropriate method or property directly to the object. The following example formats the contents of cell A5 as italic.

```vba
Worksheets("Sheet1").Range("A5").Font.Italic = True
```
Chart Object

Multiple objects

Represents a chart in a workbook. The chart can be either an embedded chart (contained in a ChartObject) or a separate chart sheet.
Using the Chart Object

The following properties and methods for returning a Chart object are described in this section:

- Chart property
- Charts method
- ActiveChart property
- ActiveSheet property
Chart Property

Use the Chart property to return a Chart object that represents the chart contained in a ChartObject object. The following example sets the pattern for the chart area in embedded chart one on the worksheet named "Sheet1."

Worksheets("Sheet1").ChartObjects(1).Chart._
        ChartArea.Interior.Pattern = xlLightDown
**Charts Method**

The **Charts** collection contains a **Chart** object for each chart sheet in a workbook. Use **Charts(index)**, where index is the chart-sheet index number or name, to return a single **Chart** object. The following example changes the color of series one on chart sheet one.

```vba
Charts(1).SeriesCollection(1).Interior.Color = RGB(255, 0, 0)
```

The chart index number represents the position of the chart sheet on the workbook tab bar. **Charts(1)** is the first (leftmost) chart in the workbook; **Charts(Charts.Count)** is the last (rightmost). All chart sheets are included in the index count, even if they’re hidden. The chart-sheet name is shown on the workbook tab for the chart. You can use the **Name** property to set or return the chart name.

The following example moves the chart named Sales to the end of the active workbook.

```vba
Charts("Sales").Move after:=Sheets(Sheets.Count)
```

The **Chart** object is also a member of the **Sheets** collection. The **Sheets** collection contains all the sheets in the workbook (both chart sheets and worksheets). Use **Sheets(index)**, where **index** is the sheet index number or name, to return a single sheet.
ActiveChart Property

When a chart is the active object, you can use the ActiveChart property to refer to it. A chart sheet is active if the user has selected it or it’s been activated with the **Activate** method. The following example activates chart sheet one and then sets the chart type and title.

```vbnet
Charts(1).Activate
With ActiveChart
    .Type = xlLine
    .HasTitle = True
    .ChartTitle.Text = "January Sales"
End With
```

An embedded chart is active if the user has selected it or the **ChartObject** object that it’s contained in has been activated with the **Activate** method. The following example activates embedded chart one on worksheet one and then sets the chart type and title. Notice that after the embedded chart has been activated, the code in this example is the same as that in the previous example. Using the ActiveChart property allows you to write Visual Basic code that can refer to either an embedded chart or a chart sheet (whichever is active).

```vbnet
Worksheets(1).ChartObjects(1).Activate
ActiveChart.Type = xlLine
ActiveChart.HasTitle = True
ActiveChart.ChartTitle.Text = "January Sales"
```
ActiveSheet Property

When a chart sheet is the active sheet, you can use the **ActiveSheet** property to refer to it. The following example uses the **Activate** method to activate the chart sheet named Chart1 and then sets the interior color for series one in the chart to blue.

```vba
Charts("chart1").Activate
ActiveSheet.SeriesCollection(1).Interior.ColorIndex = 5
```
ChartArea Object

- **Charts (Chart)**
- **ChartArea**
  - **Border**
  - **Font**
  - **Interior**

Represents the chart area of a chart. The chart area on a 2-D chart contains the axes, the chart title, the axis titles, and the legend. The chart area on a 3-D chart contains the chart title and the legend; it doesn’t include the plot area (the area within the chart area where the data is plotted). For information about formatting the plot area, see the **PlotArea** object.
Using the ChartArea Object

Use the ChartArea property to return the ChartArea object. The following example sets the pattern for the chart area in embedded chart one on the worksheet named "Sheet1."

Worksheets("sheet1").ChartObjects(1).Chart._
  ChartArea.Interior.Pattern = xlLightDown
ChartColorFormat Object

ChartFillFormat \textless \textbf{ChartColorFormat}

Used only with charts. Represents the color of a one-color object or the foreground or background color of an object with a gradient or patterned fill.
Using the ChartColorFormat Object

Use one of the properties listed in the following table to return a ChartColorFormat object.

<table>
<thead>
<tr>
<th>To return a ChartColorFormat object that represents this</th>
<th>Use this property</th>
<th>With this object</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background fill color (used in a shaded or patterned fill)</td>
<td>BackColor</td>
<td>ChartFillFormat</td>
</tr>
<tr>
<td>Foreground fill color (or just the fill color for a solid fill)</td>
<td>ForeColor</td>
<td>ChartFillFormat</td>
</tr>
</tbody>
</table>
ChartFillFormat Object

Multiple objects

Used only with charts. Represents fill formatting for chart elements.
Using the ChartFillFormat Object

Use the Fill property to return a ChartFillFormat object. The following example sets the foreground color, background color, and gradient for the chart area fill on chart one.

With Charts(1).ChartArea.Fill
    .Visible = True
    .ForeColor.SchemeColor = 15
    .BackColor.SchemeColor = 17
    .TwoColorGradient Style:=msoGradientHorizontal, Variant:=1
End With
ChartGroup Object

Multiple objects ↓ ChartGroup ↓ Multiple objects

Represents one or more series plotted in a chart with the same format. A chart contains one or more chart groups, each chart group contains one or more series, and each series contains one or more points. For example, a single chart might contain both a line chart group, containing all the series plotted with the line chart format, and a bar chart group, containing all the series plotted with the bar chart format. The ChartGroup object is a member of the ChartGroups collection.
Using the ChartGroup Object

Use ChartGroups(index), where index is the chart-group index number, to return a single ChartGroup object. The following example adds drop lines to chart group one on chart sheet one.

Charts(1).ChartGroups(1).HasDropLines = True

If the chart has been activated, you can use the ActiveChart property.

Charts(1).Activate
ActiveChart.ChartGroups(1).HasDropLines = True

Because the index number for a particular chart group can change if the chart format used for that group is changed, it may be easier to use one of the named chart group shortcut methods to return a particular chart group. The PieGroups method returns the collection of pie chart groups in a chart, the LineGroups method returns the collection of line chart groups, and so on. Each of these methods can be used with an index number to return a single ChartGroup object, or without an index number to return a ChartGroups collection. The following chart group methods are available:

- AreaGroups method
- BarGroups method
- ColumnGroups method
- DoughnutGroups method
- LineGroups method
- PieGroups method
ChartGroups Collection

A collection of all the ChartGroup objects in the specified chart. Each ChartGroup object represents one or more series plotted in a chart with the same format. A chart contains one or more chart groups, each chart group contains one or more series, and each series contains one or more points. For example, a single chart might contain both a line chart group, containing all the series plotted with the line chart format, and a bar chart group, containing all the series plotted with the bar chart format.
Using the ChartGroups Collection

Use the ChartGroups method to return the ChartGroups collection. The following example displays the number of chart groups on embedded chart one on worksheet one.

MsgBox Worksheets(1).ChartObjects(1).Chart.ChartGroups.Count

Use ChartGroups(index), where index is the chart-group index number, to return a single ChartGroup object. The following example adds drop lines to chart group one on chart sheet one.

Charts(1).ChartGroups(1).HasDropLines = True

If the chart has been activated, you can use ActiveChart:

Charts(1).Activate
ActiveChart.ChartGroups(1).HasDropLines = True

Because the index number for a particular chart group can change if the chart format used for that group is changed, it may be easier to use one of the named chart group shortcut methods to return a particular chart group. The PieGroups method returns the collection of pie chart groups in a chart, the LineGroups method returns the collection of line chart groups, and so on. Each of these methods can be used with an index number to return a single ChartGroup object, or without an index number to return a ChartGroups collection. The following chart group methods are available:

- **AreaGroups** method
- **BarGroups** method
- **ColumnGroups** method
- **DoughnutGroups** method
- **LineGroups** method
- **PieGroups** method
ChartObject Object

- **Worksheets (Worksheet)**
- **ChartObjects (ChartObject)**
  - **Border**
  - **Chart**
  - **Interior**
  - **PivotLayout**

Represents an embedded chart on a worksheet. The **ChartObject** object acts as a container for a **Chart** object. Properties and methods for the **ChartObject** object control the appearance and size of the embedded chart on the worksheet. The **ChartObject** object is a member of the **ChartObjects** collection. The **ChartObjects** collection contains all the embedded charts on a single sheet.
Using the ChartObject Object

Use **ChartObjects**(*index*), where *index* is the embedded chart index number or name, to return a single **ChartObject** object. The following example sets the pattern for the chart area in embedded chart one on the worksheet named "Sheet1."

```
Worksheets("Sheet1").ChartObjects(1).Chart. _
    ChartArea.Interior.Pattern = xlLightDown
```

The embedded chart name is shown in the Name box when the embedded chart is selected. Use the **Name** property to set or return the name of the **ChartObject** object. The following example puts rounded corners on the embedded chart named "Chart 1" on the worksheet named "Sheet1."

```
Worksheets("sheet1").ChartObjects("chart 1").RoundedCorners = True
```
ChartObjects Collection Object

Worksheets (Worksheet)  ChartObjects (ChartObject)
  - Border
  - Chart
  - Interior
  - PivotLayout

A collection of all the ChartObject objects on the specified chart sheet, dialog sheet, or worksheet. Each ChartObject object represents an embedded chart. The ChartObject object acts as a container for a Chart object. Properties and methods for the ChartObject object control the appearance and size of the embedded chart on the sheet.
Using the ChartObjects Collection

Use the **ChartObjects** method to return the **ChartObjects** collection. The following example deletes all the embedded charts on the worksheet named "Sheet1."

```
Worksheets("sheet1").ChartObjects.Delete
```

Use the **Add** method to create a new, empty embedded chart and add it to the collection. Use the **ChartWizard** method to add data and format the new chart. The following example creates a new embedded chart and then adds the data from cells A1:A20 as a line chart.

```
Dim ch As ChartObject
Set ch = Worksheets("sheet1").ChartObjects.Add(100, 30, 400, 250)
gallery:=xlLine, title:="New Chart"
```

Use **ChartObjects(index)**, where index is the embedded chart index number or name, to return a single **ChartObject** object. The following example sets the pattern for the chart area in embedded chart one on the worksheet named "Sheet1."

```
Worksheets("Sheet1").ChartObjects(1).Chart._
    ChartArea.Interior.Pattern = xlLightDown
```
Charts Collection

Charts  Multiple objects

A collection of all the chart sheets in the specified or active workbook. Each chart sheet is represented by a Chart object. This doesn’t include charts embedded on worksheets or dialog sheets. For information about embedded charts, see the Chart or ChartObject object.
Using the Charts Collection

Use the Charts property to return the Charts collection. The following example prints all chart sheets in the active workbook.

Charts.PrintOut

Use the Add method to create a new chart sheet and add it to the workbook. The following example adds a new chart sheet to the active workbook and places the new chart sheet immediately after the worksheet named Sheet1.

Charts.Add After:=Worksheets("Sheet1")

You can combine the Add method with the ChartWizard method to add a new chart that contains data from a worksheet. The following example adds a new line chart based on data in cells A1:A20 on the worksheet named Sheet1.

With Charts.Add
  Gallery:=xlLine, Title:="February Data"
End With

Use Charts(index), where index is the chart-sheet index number or name, to return a single Chart object. The following example changes the color of series one on chart sheet one to red.

Charts(1).SeriesCollection(1).Interior.Color = RGB(255, 0, 0)

The Sheets collection contains all the sheets in the workbook (both chart sheets and worksheets). Use Sheets(index), where index is the sheet name or number, to return a single sheet.
ChartTitle Object

Chart → ChartTitle
  → Border
  → Characters
  → Font
  → Interior

Represents the chart title.
Using the ChartTitle Object

Use the **ChartTitle** property to return the **ChartTitle** object. The following example adds a title to embedded chart one on the worksheet named "Sheet1."

```vba
With Worksheets("sheet1").ChartObjects(1).Chart
    .HasTitle = True
    .ChartTitle.Text = "February Sales"
End With
```
Remarks

The **ChartTitle** object doesn’t exist and cannot be used unless the **HasTitle** property for the chart is **True**.
Multiple objects

Represents the color of a one-color object, the foreground or background color of an object with a gradient or patterned fill, or the pointer color. You can set colors to an explicit red-green-blue value (by using the RGB property) or to a color in the color scheme (by using the SchemeColor property).
Using the ColorFormat Object

Use one of the properties listed in the following table to return a ColorFormat object.

<table>
<thead>
<tr>
<th>Use this property</th>
<th>With this object</th>
<th>To return a ColorFormat object that represents this</th>
</tr>
</thead>
<tbody>
<tr>
<td>BackColor</td>
<td>FillFormat</td>
<td>The background fill color (used in a shaded or patterned fill)</td>
</tr>
<tr>
<td>ForeColor</td>
<td>FillFormat</td>
<td>The foreground fill color (or simply the fill color for a solid fill)</td>
</tr>
<tr>
<td>BackColor</td>
<td>LineFormat</td>
<td>The background line color (used in a patterned line)</td>
</tr>
<tr>
<td>ForeColor</td>
<td>LineFormat</td>
<td>The foreground line color (or just the line color for a solid line)</td>
</tr>
<tr>
<td>ForeColor</td>
<td>ShadowFormat</td>
<td>The shadow color</td>
</tr>
<tr>
<td>ExtrusionColor</td>
<td>ThreeDFormat</td>
<td>The color of the sides of an extruded object</td>
</tr>
</tbody>
</table>

Use the **RGB** property to set a color to an explicit red-green-blue value. The following example adds a rectangle to myDocument and then sets the foreground color, background color, and gradient for the rectangle's fill.

Set  
With  myDocument.Shapes.AddShape(msoShapeRectangle, _ 90, 90, 90, 50).Fill  .ForeColor.RGB = RGB(128, 0, 0)  .BackColor.RGB = RGB(170, 170, 170)  .TwoColorGradient msoGradientHorizontal, 1  End With
Comment Object

Range ⇦ Comments (Comment)

Represents a cell comment. The Comment object is a member of the Comments collection.
Using the Comment Object

Use the `Comment` property to return a `Comment` object. The following example changes the text in the comment in cell E5.

```vba
Worksheets(1).Range("E5").Comment.Text = "reviewed on " & Date
```

Use `Comments(index)`, where `index` is the comment number, to return a single comment from the `Comments` collection. The following example hides comment two on worksheet one.

```vba
Worksheets(1).Comments(2).Visible = False
```

Use the `AddComment` method to add a comment to a range. The following example adds a comment to cell E5 on worksheet one.

```vba
With Worksheets(1).Range("e5").AddComment
    .Visible = False
    .Text = "reviewed on " & Date
End With
```
Comments Collection Object

Range → Comments (Comment)

A collection of cell comments. Each comment is represented by a Comment object.
Using the Comments Collection

Use the Comments property to return the Comments collection. The following example hides all the comments on worksheet one.

```
Set cmt = Worksheets(1).Comments
For Each c In cmt
    c.Visible = False
Next
```

Use the **AddComment** method to add a comment to a range. The following example adds a comment to cell E5 on worksheet one.

```
With Worksheets(1).Range("e5").AddComment
    .Visible = False
    .Text "reviewed on " & Date
End With
```

Use **Comments(index)**, where *index* is the comment number, to return a single comment from the Comments collection. The following example hides comment two on worksheet one.

```
Worksheets(1).Comments(2).Visible = False
```
Contains properties and methods that apply to connectors. A connector is a line that attaches two other shapes at points called connection sites. If you rearrange shapes that are connected, the geometry of the connector will be automatically adjusted so that the shapes remain connected.
Using the ConnectorFormat Object

Use the `ConnectorFormat` property to return a `ConnectorFormat` object. Use the `BeginConnect` and `EndConnect` methods to attach the ends of the connector to other shapes in the document. Use the `RerouteConnections` method to automatically find the shortest path between the two shapes connected by the connector. Use the `Connector` property to see whether a shape is a connector.

Note that you assign a size and a position when you add a connector to the `Shapes` collection, but the size and position are automatically adjusted when you attach the beginning and end of the connector to other shapes in the collection. Therefore, if you intend to attach a connector to other shapes, the initial size and position you specify are irrelevant. Likewise, you specify which connection sites on a shape to attach the connector to when you attach the connector, but using the `RerouteConnections` method after the connector is attached may change which connection sites the connector attaches to, making your original choice of connection sites irrelevant.

The following example adds two rectangles to `myDocument` and connects them with a curved connector.

```vba
Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
Set c = s.AddConnector(msoConnectorCurve, 0, 0, 0, 0)
With c.ConnectorFormat
    .BeginConnect ConnectedShape:=firstRect, ConnectionSite:=1
    .EndConnect ConnectedShape:=secondRect, ConnectionSite:=1
    c.RerouteConnections
End With
```
Remarks

Connection sites are generally numbered according to the rules presented in the following table.

<table>
<thead>
<tr>
<th>Shape type</th>
<th>Connection site numbering scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoShapes, WordArt, pictures, and OLE objects</td>
<td>The connection sites are numbered starting at the top and proceeding counterclockwise.</td>
</tr>
<tr>
<td>Freeforms</td>
<td>The connection sites are the vertices, and they correspond to the vertex numbers.</td>
</tr>
</tbody>
</table>

To figure out which number corresponds to which connection site on a complex shape, you can experiment with the shape while the macro recorder is turned on and then examine the recorded code; or you can create a shape, select it, and then run the following example. This code will number each connection site and attach a connector to it.

```vba
Set mainshape = ActiveWindow.Selection.ShapeRange(1)
With mainshape
    bx = .Left + .Width + 50
    by = .Top + .Height + 50
End With
With ActiveSheet
    For j = 1 To mainshape.ConnectionSiteCount
        With .Shapes.AddConnector(msoConnectorStraight, _
            bx, by, bx + 50, by + 50)
            .ConnectorFormat.EndConnect mainshape, j
            .ConnectorFormat.Type = msoConnectorElbow
            .Line.ForeColor.RGB = RGB(255, 0, 0)
        l = .Left
        t = .Top
        End With
        With .Shapes.AddTextbox(msoTextOrientationHorizontal, _
            l, t, 36, 14)
            .Fill.Visible = False
            .Line.Visible = False
            .TextFrame.Characters.Text = j
        End With
    Next j
```
End With
ControlFormat Object

Shape $\subseteq$ ControlFormat

Contains Microsoft Excel control properties.
Using the ControlFormat Object

Use the ControlFormat property to return a ControlFormat object. The following example sets the fill range for a list box control on worksheet one.


If the shape isn’t a control, the ControlFormat property fails; and if the control isn’t a list box, the ListFillRange property fails.
Corners Object

Chart Corners

Represents the corners of a 3-D chart. This object isn’t a collection.
Using the Corners Object

Use the Corners property to return the Corners object. The following example selects the corners of chart one.

Charts(1).Corners.Select

If the chart isn’t a 3-D chart, the Corners property fails.
CubeField Object

Multiple objects \(\text{CubeField}\) \(\text{CubeField}\)\n
Represents a hierarchy or measure field from an OLAP cube. In a PivotTable report, the CubeField object is a member of the CubeFields collection.
Using the CubeField Object

Use the **CubeField** property to return the **CubeField** object. This example creates a list of the cube field names for all the hierarchy fields in the first OLAP-based PivotTable report on Sheet1.

```vba
Set objNewSheet =Worksheets.Add
objNewSheet.Activate
intRow = 1
For Each objPF in _
    Worksheets("Sheet1").PivotTables(1).PivotFields
        If objPF.CubeField.CubeFieldType = xlHierarchy Then
            objNewSheet.Cells(intRow, 1).Value = objPF.Name
            intRow = intRow + 1
        End If
    Next objPF
```

Use **CubeFields(index)**, where *index* is the cube field’s index number, to return a single **CubeField** object. The following example determines the name of the second cube field in the first PivotTable report on the active worksheet.

```vba
strAlphaName = _
    ActiveSheet.PivotTables(1).CubeFields(2).Name
```
Show All
CubeFields Collection Object

A collection of all CubeField objects in a PivotTable report that is based on an OLAP cube. Each CubeField object represents a hierarchy or measure field from the cube.
Using the CubeFields Collection

Use the **CubeFields** property to return the **CubeFields** collection. The following example creates a list of cube field names of the data fields in the first OLAP-based PivotTable report on Sheet1.

```vba
Set objNewSheet = Worksheets.Add
intRow = 1
For Each objCubeFld In _
    Worksheets("Sheet1").PivotTables(1).**CubeFields**
    If objCubeFld.Orientation = xlDataField Then
        objNewSheet.Cells(intRow, 1).Value = objCubeFld.Name
        intRow = intRow + 1
    End If
Next objCubeFld
```

Use **CubeFields(index)**, where *index* is the cube field’s index number, to return a single **CubeField** object. The following example determines the name of the second cube field in the first PivotTable report on the active worksheet.

```vba
strAlphaName = _
    ActiveSheet.PivotTables(1).**CubeFields**(2).Name
```
CustomProperties Collection

Multiple objects

- CustomProperties
  - CustomProperty

A collection of CustomProperty objects that represent additional information. The information can be used as metadata for XML.
Using the CustomProperties collection

Use the Properties property of the SmartTag object, or the CustomProperties property of the Worksheet object, to return a CustomProperties collection.

Once a CustomProperties collection is returned, you can add metadata to worksheets and smart tags depending on which you choose to work with.

To add metadata to a worksheet, use the CustomProperties property with the Add method.

The following example demonstrates this feature. In this example, Microsoft Excel adds identifier information to the active worksheet and returns the name and value to the user.

Sub CheckCustomProperties()
    Dim wksSheet1 As Worksheet
    Set wksSheet1 = Application.ActiveSheet

        ' Add metadata to worksheet.
    wksSheet1.CustomProperties.Add _
        Name:="Market", Value:="Nasdaq"

        ' Display metadata.
    With wksSheet1.CustomProperties.Item(1)
        MsgBox .Name & vbTab & .Value
    End With
End Sub

To add metadata to a smart tag, use the Properties property with the Add method.

The following example demonstrates this feature. In this example, Microsoft Excel adds a smart tag titled "MSFT" to cell A1, then adds extra metadata called "Market" with the value of "Nasdaq" to the smart tag and then returns the value of the property to the user. This example assumes the host system is connected to the Internet when running this code sample and the checked recognizer called "Stock Ticker Symbol Recognizer" is enabled for Microsoft Excel.
Sub UseProperties()
    Dim strLink As String
    Dim strType As String

    ' Define smart tag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#stocktickerSymbol"
    strType = "stockview"

    Range("A1").Formula = "MSFT"

    ' Add a property for MSFT smart tag and define its value.
    Range("A1").SmartTags.Add(strLink).Properties.Add _
    Name:="Market", Value:="Nasdaq"

    ' Notify the user of the smart tag's value.
    MsgBox Range("A1").SmartTags.Add(strLink).Properties("Market")
End Sub
CustomProperty Object

Represents identifier information. Identifier information can be used as metadata for XML.
Using the CustomProperty object

Use the Add method or the Item property of the CustomProperties collection to return a CustomProperty object.

Once a CustomProperty object is returned, you can add metadata to worksheets using the CustomProperties property with the Add method.

The following example demonstrates this feature. In this example, Microsoft Excel adds identifier information to the active worksheet and returns the name and value to the user.

Sub CheckCustomProperties()
    Dim wksSheet1 As Worksheet
    Set wksSheet1 = Application.ActiveSheet

    ' Add metadata to worksheet.
    wksSheet1.CustomProperties.Add _
        Name:="Market", Value:="Nasdaq"

    ' Display metadata.
    With wksSheet1.CustomProperties.Item(1)
        MsgBox .Name & vbTab & .Value
    End With
End Sub
CustomView Object

Represents a custom workbook view. The `CustomView` object is a member of the `CustomViews` collection.
Using the CustomView Object

Use `CustomViews(index)`, where `index` is the name or index number of the custom view, to return a `CustomView` object. The following example shows the custom view named "Current Inventory."

```vba
ThisWorkbook.CustomViews("Current Inventory").Show
```
CustomViews Collection Object

Workbooks (Workbook) => CustomViews (CustomView)

A collection of custom workbook views. Each view is represented by a CustomView object.
Using the CustomViews Collection

Use the `CustomViews` property to return the `CustomViews` collection. Use the `Add` method to create a new custom view and add it to the `CustomViews` collection. The following example creates a new custom view named "Summary."

```vbnet
ActiveWorkbook.CustomViews.Add "Summary", True, True
```
DataLabel Object

- **Charts (Chart)**
- **SeriesCollection (Series)**
  - **DataLabels (DataLabel)**
  - **Points (Point)**
    - **DataLabel**
  - **Trendlines (Trendline)**
    - **DataLabel**

Represents the data label on a chart point or trendline. On a series, the **DataLabel** object is a member of the **DataLabels** collection. The **DataLabels** collection contains a **DataLabel** object for each point. For a series without definable points (such as an area series), the **DataLabels** collection contains a single **DataLabel** object.
Using the DataLabel Object

Use **DataLabels(index)**, where *index* is the data-label index number, to return a single **DataLabel** object. The following example sets the number format for the fifth data label in series one in embedded chart one on worksheet one.

```vba
Worksheets(1).ChartObjects(1).Chart _
  .SeriesCollection(1).DataLabels(5).NumberFormat = "0.000"
```

Use the **DataLabel** property to return the **DataLabel** object for a single point. The following example turns on the data label for the second point in series one on the chart sheet named "Chart1" and sets the data label text to "Saturday."

```vba
With Charts("chart1")
  With .SeriesCollection(1).Points(2)
    .HasDataLabel = True
    .DataLabel.Text = "Saturday"
  End With
End With
```

On a trendline, the **DataLabel** property returns the text shown with the trendline. This can be the equation, the R-squared value, or both (if both are showing). The following example sets the trendline text to show only the equation and then places the data label text in cell A1 on the worksheet named "Sheet1."

```vba
With Charts("chart1").SeriesCollection(1).Trendlines(1)
  .DisplayRSquared = False
  .DisplayEquation = True
  Worksheets("sheet1").Range("a1").Value = .DataLabel.Text
End With
```
DataLabels Collection Object

Chart SeriesCollection (Series)
  - DataLabels (DataLabel)
  - Points (Point)
  - DataLabel
  - Trendlines (Trendline)
  - DataLabel

A collection of all the DataLabel objects for the specified series. Each DataLabel object represents a data label for a point or trendline. For a series without definable points (such as an area series), the DataLabels collection contains a single data label.
Using the Datalabels Collection

Use the **DataLabels** method to return the **DataLabels** collection. The following example sets the number format for data labels on series one on chart sheet one.

```vba
With Charts(1).SeriesCollection(1)
    .HasDataLabels = True
    .DataLabels.NumberFormat = "##.##"
End With
```

Use **DataLabels(index)**, where *index* is the data-label index number, to return a single **DataLabel** object. The following example sets the number format for the fifth data label in series one in embedded chart one on worksheet one.

```vba
Worksheets(1).ChartObjects(1).Chart._
    .SeriesCollection(1).DataLabels(5).NumberFormat = "0.000"
```
DataTable Object

Represents a chart data table.
Using the DataTable Object

Use the **DataTable** property to return a **DataTable** object. The following example adds a data table with an outline border to embedded chart one.

```vbnet
With Worksheets(1).ChartObjects(1).Chart
    .HasDataTable = True
    .DataTable.HasBorderOutline = True
End With
```
DefaultWebOptions Object

Application ▼ DefaultWebOptions

Contains global application-level attributes used by Microsoft Excel when you save a document as a Web page or open a Web page. You can return or set attributes either at the application (global) level or at the workbook level. (Note that attribute values can be different from one workbook to another, depending on the attribute value at the time the workbook was saved.) Workbook-level attribute settings override application-level attribute settings. Workbook-level attributes are contained in the WebOptions object.
Using the DefaultWebOptions Object

Use the `DefaultWebOptions` property to return the `DefaultWebOptions` object. The following example checks to see whether PNG (Portable Network Graphics) is allowed as an image format and sets the `strImageFileType` variable accordingly.

```vba
Set objAppWebOptions = Application.DefaultWebOptions
With objAppWebOptions
    If .AllowPNG = True Then
        strImageFileType = "PNG"
    Else
        strImageFileType = "JPG"
    End If
End With
```
Diagram Object

Multiple objects $\leftarrow$ Diagram

$\leftarrow$ DiagramNodes

Represents a diagram.
Using the Diagram object

Use the **Diagram** property of the **Shape** object or **ShapeRange** collection to return a **Diagram** object. The following example adds a radial diagram to the active worksheet.

Sub NewDiagram()
    Dim wksActiveSheet As Worksheet
    Dim shDiagram As Shape
    Set wksActiveSheet = ActiveSheet
    Set shDiagram = wksActiveSheet.Shapes.AddDiagram(_
        Type:=msoDiagramRadial, _
        Left:=20, Top:=40, _
        Width:=400, Height:=200)
    ' Fill the diagram to make it visible to the user
    shDiagram.Fill.Visible = msoTrue
End Sub

You can also convert the current diagram to a different diagram by using the **Convert** method. **Note** If the current diagram is an organization chart (**msoDiagramOrgChart**) a run-time error will occur. In this example, a radial diagram is converted into a target diagram.

Sub NewDiagram()
    Dim wksActiveSheet As Worksheet
    Dim shDiagram As Shape
    Set wksActiveSheet = ActiveSheet
    Set shDiagram = wksActiveSheet.Shapes.AddDiagram(_
        Type:=msoDiagramRadial, _
        Left:=20, Top:=40, _
        Width:=400, Height:=200)
    ' Fill the diagram to make it visible to the user
    shDiagram.Fill.Visible = msoTrue
    ' Convert the diagram.
    shDiagram.Diagram.Convert Type:=msoDiagramTarget
End Sub

There are several types of diagrams to choose from when working with the Diagram object. Refer to the AddDiagram method to view a list of available diagram types.
DiagramNode Object

Multiple objects \rightarrow \text{DiagramNode}
\rightarrow \text{Multiple objects}

Represents a node in a diagram.
Using the DiagramNode object

Use the **AddNode** method to add a node to a diagram or to a diagram node. This example assumes the third shape in the active worksheet is a diagram and adds a node to it.

```vba
Sub AddDiagramNode()
    ActiveSheet.Shapes(3).DiagramNode.Children.AddNode
End Sub
```

Use the **Delete** method to remove a node from a diagram or diagram node. This example assumes the second shape in the active worksheet is a diagram and removes the first node from it.

```vba
Sub DeleteDiagramNode()
    ActiveSheet.Shapes(2).DiagramNode.Children(1).Delete
End Sub
```

To return a **DiagramNode** object, use one of the following:

- The **DiagramNode** object's **AddNode**, **CloneNode**, **NextNode** or **PrevNode** methods, or **Root** property
- The **DiagramNodeChildren** collection's **AddNode** or **Item** methods, or **FirstChild** or **LastChild** properties

- The **DiagramNodes** collection's **Item** method
- The **Shape** object's or **ShapeRange** collection's **DiagramNode** property

A diagram node can terminate, or contain other child diagrams, child diagram nodes, or child shapes:

- To refer to a child diagram, use the **Diagram** property.
- To refer to an individual child diagram node, use the **AddNode**, **CloneNode**, **NextNode** or **PrevNode** methods, or **Root** property.
- To refer to a collection of child diagram nodes, use the **Children** property.
- To refer to a shape, use the **Shape** or **TextShape** properties.
DiagramNodeChildren Collection

DiagramNode ⊆ DiagramNodeChildren ⊆ DiagramNode

A collection of DiagramNode objects that represents child nodes in a diagram.
Using the DiagramNodeChildren collection

Use the Children property of the DiagramNode object to return a DiagramNodeChildren collection. To add an individual child diagram node to the collection, use the AddNode method. To return individual child diagram nodes in the collection, use the FirstChild or LastChild properties, or the Item method.

This example deletes the first child of the second node in the first diagram in the worksheet. This example assumes that the first shape in the active worksheet is a diagram with at least two nodes, one with child nodes.

Sub DiagramNodeChild()
End Sub
DiagramNodes Collection

A collection of DiagramNode objects that represents all the nodes in a diagram.
Using the DiagramNodes collection

Use the Nodes property of the Diagram object to return a DiagramNodes collection. Use the Item method to select and work with a single diagram node in a diagram. This example assumes the first shape in the active worksheet is a diagram, selects the first node, and deletes it.

Sub FillDiagramNode()
    ActiveSheet.Shapes(1).Diagram.Nodes.Item(1).Delete
End Sub

Use the SelectAll method to select and work with all nodes in a diagram. This example assumes the first shape in the active worksheet is a diagram, selects all nodes, and fills them with the specified pattern.

Sub FillDiagramNodes()
    ActiveSheet.Shapes(1).Diagram.Nodes.SelectAll
    Selection.ShapeRange.Fill.Patterned msoPatternSmallConfetti
End Sub
**Dialog Object**

*Application* | *Dialogs (Dialog)*

Represents a built-in Microsoft Excel dialog box. The **Dialog** object is a member of the **Dialogs** collection. The **Dialogs** collection contains all the built-in dialog boxes in Microsoft Excel. You cannot create a new built-in dialog box or add one to the collection. The only useful thing you can do with a **Dialog** object is use it with the **Show** method to display the corresponding dialog box.
Using the Dialog Object

Use **Dialogs**(index), where index is a built-in constant identifying the dialog box, to return a single **Dialog** object. The following example runs the built-in **Open** dialog box (**File** menu). The **Show** method returns **True** if Microsoft Excel successfully opens a file; it returns **False** if the user cancels the dialog box.

```vba
dlgAnswer = Application.Dialogs(xlDialogOpen).Show
```

The Microsoft Excel Visual Basic object library includes built-in constants for many of the built-in dialog boxes. Each constant is formed from the prefix "xlDialog" followed by the name of the dialog box. For example, the **Apply Names** dialog box constant is **xlDialogApplyNames**, and the **Find File** dialog box constant is **xlDialogFindFile**. These constants are members of the **XlBuiltinDialog** enumerated type. For more information about the available constants, see [Built-in Dialog Box Argument Lists](#).
Dialogs Collection Object

A collection of all the Dialog objects in Microsoft Excel. Each Dialog object represents a built-in dialog box. You cannot create a new built-in dialog box or add one to the collection. The only useful thing you can do with a Dialog object is use it with the Show method to display the dialog corresponding dialog box.
Using the Dialogs Collection

Use the `Dialogs` property to return the `Dialogs` collection. The following example displays the number of available built-in Microsoft Excel dialog boxes.

```vba
MsgBox Application.Dialogs.Count
```

Use `Dialogs(index)`, where `index` is a built-in constant identifying the dialog box, to return a single `Dialog` object. The following example runs the built-in `File Open` dialog box.

```vba
dlgAnswer = Application.Dialogs(xlDialogOpen).Show
```

The Microsoft Excel Visual Basic object library includes built-in constants for many of the built-in dialog boxes. Each constant is formed from the prefix "xlDialog" followed by the name of the dialog box. For example, the `Apply Names` dialog box constant is `xlDialogApplyNames`, and the `Find File` dialog box constant is `xlDialogFindFile`. These constants are members of the `XlBuiltinDialog` enumerated type. For more information about the available constants, see `Built-in Dialog Box Argument Lists`. 
DisplayUnitLabel Object

Aaxes (Axis) \DisplayUnitLabel

Represents a unit label on an axis in the specified chart. Unit labels are useful for charting large values—for example, in the millions or billions. You can make the chart more readable by using a single unit label instead of large numbers at each tick mark.
Using the DisplayUnitLabel Object

Use the `DisplayUnitLabel` property to return the `DisplayUnitLabel` object. The following example sets the display label caption to "Millions" on the value axis in Chart1, and then it turns off automatic font scaling.

```vba
With Charts("Chart1").Axes(xlValue).DisplayUnitLabel
    .Caption = "Millions"
    .AutoScaleFont = False
End With
```
DownBars Object

Represents the down bars in a chart group. Down bars connect points on the first series in the chart group with lower values on the last series (the lines go down from the first series). Only 2-D line groups that contain at least two series can have down bars. This object isn’t a collection. There’s no object that represents a single down bar; you either have up bars and down bars turned on for all points in a chart group or you have them turned off.
Using the DownBars Object

Use the `DownBars` property to return the `DownBars` object. The following example turns on up and down bars for chart group one in embedded chart one on the worksheet named "Sheet5." The example then sets the up bar color to blue and the down bar color to red.

```vbnet
With Worksheets("sheet5").ChartObjects(1).Chart.ChartGroups(1)
  .HasUpDownBars = True
  .UpBars.Interior.Color = RGB(0, 0, 255)
  .DownBars.Interior.Color = RGB(255, 0, 0)
End With
```
Remarks

If the HasUpDownBars property is False, most properties of the DownBars object are disabled.
DropLines Object

Charts (Chart) – ChartGroups (ChartGroup)
  – DropLines
  – Border

Represents the drop lines in a chart group. Drop lines connect the points in the chart with the x-axis. Only line and area chart groups can have drop lines. This object isn’t a collection. There’s no object that represents a single drop line; you either have drop lines turned on for all points in a chart group or you have them turned off.
Using the DropLines Object

Use the **DropLines** property to return the **DropLines** object. The following example turns on drop lines for chart group one in embedded chart one and then sets the drop line color to red.

```vba
Worksheets("sheet1").ChartObjects(1).Activate
ActiveChart.ChartGroups(1).HasDropLines = True
ActiveChart.ChartGroups(1).DropLines.Border.ColorIndex = 3
```
Remarks

If the HasDropLines property is False, most properties of the DropLines object are disabled.
Error Object

Errors Error

Represents a spreadsheet error for a range.
Using the Error object

Use the **Item** property of the **Errors** object to return an **Error** object.

Once an **Error** object is returned, you can use the **Value** property, in conjunction with the **Errors** property to check whether a particular error checking option is enabled.

The following example creates a formula in cell A1 referencing empty cells, and then it uses **Item(index)**, where *index* identifies the error type, to display a message stating the situation.

Sub CheckEmptyCells()
    Dim rngFormula As Range
    Set rngFormula = Application.Range("A1")

    ' Place a formula referencing empty cells.
    Range("A1").Formula = "=A2+A3"
    Application.ErrorCheckingOptions.EmptyCellReferences = True

    ' Perform check to see if EmptyCellReferences check is on.
    If rngFormula.Errors.Item(xlEmptyCellReferences).Value = True Then
        MsgBox "The empty cell references error checking feature is enabled."
    Else
        MsgBox "The empty cell references error checking feature is not on."
    End If
End Sub

**Note:** Be careful not to confuse the **Error** object with error handling features of Visual Basic.
ErrorBars Object

Represented by the ErrorBars object, which is a child of the SeriesCollection and is represented by the Border object. This object represents the error bars on a chart series. Error bars indicate the degree of uncertainty for chart data. Only series in area, bar, column, line, and scatter groups on a 2-D chart can have error bars. Only series in scatter groups can have x and y error bars. This object isn’t a collection. There’s no object that represents a single error bar; you either have x error bars or y error bars turned on for all points in a series or you have them turned off.
Using the ErrorBars Object

Use the `ErrorBars` property to return the `ErrorBars` object. The following example turns on error bars for series one in embedded chart one and then sets the end style for the error bars.

```vbnet
Worksheets("sheet1").ChartObjects(1).Activate
ActiveChart.SeriesCollection(1).HasErrorBars = True
ActiveChart.SeriesCollection(1).ErrorBars.EndStyle = xlNoCap
```
Remarks

The **ErrorBar** method changes the error bar format and type.
ErrorCheckingOptions Object

Application < ErrorCheckingOptions

Represents the error-checking options for an application.
Using the ErrorCheckingOptions Object

Use the ErrorCheckingOptions property of the Application object to return an ErrorCheckingOptions object.

Reference the Item property of the Errors object to view a list of index values associated with error-checking options.

Once an ErrorCheckingOptions object is returned, you can use the following properties, which are members of the ErrorCheckingOptions object, to set or return error checking options.

- BackgroundChecking
- EmptyCellReferences
- EvaluateToError
- InconsistentFormula
- IndicatorColorIndex
- NumberAsText
- OmittedCells
- TextDate
- UnlockedFormulaCells

The following example uses the TextDate property to enable error checking for two-digit-year text dates and notifies the user.

Sub CheckTextDates()
    Dim rngFormula As Range
    Set rngFormula = Application.Range("A1")
    Range("A1").Formula = "'April 23, 00"
    Application.ErrorCheckingOptions.TextDate = True

    ' Perform check to see if 2 digit year TextDate check is on.
    If rngFormula.Errors.Item(xlTextDate).Value = True Then
        MsgBox "The text date error checking feature is enabled."
    Else
        MsgBox "The text date error checking feature is not on."
    End If
End Sub
Errors Object

```
Range └── Errors
    └── Error
```

Represents the various spreadsheet errors for a range.
Using the Errors object

Use the Errors property of the Range collection to return an Errors object.

Once an Errors object is returned, you can use the Value property of the Error object to check for particular error-checking conditions. The following example places a number as text in cell A1 and then notifies the user when the value of cell A1 contains a number as text.

Sub ErrorValue()

    ' Place a number written as text in cell A1.
    Range("A1").Formula = "'1"

    If Range("A1").Errors.Item(xlNumberAsText).Value = True Then
        MsgBox "Cell A1 has a number as text."
    Else
        MsgBox "Cell A1 is a number."
    End If

End Sub
FillFormat Object

**Shapes (Shape)** - **FillFormat**

**ColorFormat**

Represents fill formatting for a shape. A shape can have a solid, gradient, texture, pattern, picture, or semi-transparent fill.
Using the FillFormat Object

Use the Fill property to return a FillFormat object. The following example adds a rectangle to myDocument and then sets the gradient and color for the rectangle's fill.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    90, 90, 90, 80).Fill
    .ForeColor.RGB = RGB(0, 128, 128)
    .OneColorGradient msoGradientHorizontal, 1, 1
End With
Remarks

Many of the properties of the FillFormat object are read-only. To set one of these properties, you have to apply the corresponding method.
Filter Object

Worksheets (Worksheet) ▼ AutoFilter
  ▼ Filters (Filter)

Represents a filter for a single column. The Filter object is a member of the Filters collection. The Filters collection contains all the filters in an autofiltered range.
Using the Filter Object

Use Filters(index), where index is the filter title or index number, to return a single Filter object. The following example sets a variable to the value of the On property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
Set w = Worksheets("Crew")
If w.AutoFilterMode Then
    filterIsOn = w.AutoFilter.Filters(1).On
End If
```

Note that all the properties of the Filter object are read-only. To set these properties, apply autofiltering manually or using the AutoFilter method of the Range object, as shown in the following example.

```vba
Set w = Worksheets("Crew")
w.Cells.AutoFilter field:=2, Criteria1:="Crucial", _
    Operator:=xlOr, Criteria2:="Important"
```
Filters Collection Object

A collection of Filter objects that represents all the filters in an autofiltered range.
Using the Filters Collection

Use the **Filters** method to return the **Filters** collection. The following example creates a list that contains the criteria and operators for the filters in the autofiltered range on the Crew worksheet.

```vba
Dim f As Filter
Dim w As Worksheet
Const ns As String = "Not set"

Set w = Worksheets("Crew")
Set w2 = Worksheets("FilterData")
rw = 1
For Each f In w.AutoFilter.Filters
    If f.On Then
        c1 = Right(f.Criteria1, Len(f.Criteria1) - 1)
        If f.Operator Then
            op = f.Operator
            c2 = Right(f.Criteria2, Len(f.Criteria2) - 1)
        Else
            op = ns
            c2 = ns
        End If
    Else
        c1 = ns
        op = ns
        c2 = ns
    End If
    w2.Cells(rw, 1) = c1
    w2.Cells(rw, 2) = op
    w2.Cells(rw, 3) = c2
    rw = rw + 1
Next
```

Use **Filters(index)**, where *index* is the filter title or index number, to return a single **Filter** object. The following example sets a variable to the value of the **On** property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
Set w = Worksheets("Crew")
If w.AutoFilterMode Then
    filterIsOn = w.AutoFilter.Filters(1).On
End If
```
Floor Object

Charts (Chart) → Floor
   ← Border
   ← Interior

Represents the floor of a 3-D chart
Using the Floor Object

Use the Floor property to return the Floor object. The following example sets the floor color for embedded chart one to cyan. The example will fail if the chart isn’t a 3-D chart.

Worksheets("sheet1").ChartObjects(1).Activate
ActiveChart.Floor.Interior.Color = RGB(0, 255, 255)
Font Object

Multiple objects

Contains the font attributes (font name, font size, color, and so on) for an object.
Using the Font Object

Use the Font property to return the Font object. The following example formats cells A1:C5 as bold.

Worksheets("Sheet1").Range("A1:C5").Font.Bold = True

If you don’t want to format all the text in a cell or graphic the same way, use the Characters property to return a subset of the text.
FormatCondition Object

Represents a conditional format. The **FormatCondition** object is a member of the **FormatConditions** collection. The **FormatConditions** collection can contain up to three conditional formats for a given range.
Using the FormatCondition Object

Use **FormatConditions**(*index*), where *index* is the index number of the conditional format, to return a **FormatCondition** object. The following example sets format properties for an existing conditional format for cells E1:E10.

```vba
With Worksheets(1).Range("e1:e10").FormatConditions(1)
  With .Borders
    .LineStyle = xlContinuous
    .Weight = xlThin
    .ColorIndex = 6
  End With
  With .Font
    .Bold = True
    .ColorIndex = 3
  End With
End With
```
Remarks

Use the Add method to create a new conditional format. If you try to create more than three conditional formats for a single range, the Add method fails. If a range has three formats, you can use the Modify method to change one of the formats, or you can use the Delete method to delete a format and then use the Add method to create a new format.

Use the Font, Border, and Interior properties of the FormatCondition object to control the appearance of formatted cells. Some properties of these objects aren’t supported by the conditional format object model. The properties that can be used with conditional formatting are listed in the following table.

<table>
<thead>
<tr>
<th>Object</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font</td>
<td>Bold</td>
</tr>
<tr>
<td></td>
<td>Color</td>
</tr>
<tr>
<td></td>
<td>ColorIndex</td>
</tr>
<tr>
<td></td>
<td>FontStyle</td>
</tr>
<tr>
<td></td>
<td>Italic</td>
</tr>
<tr>
<td></td>
<td>Strikethrough</td>
</tr>
<tr>
<td></td>
<td>Underline</td>
</tr>
<tr>
<td></td>
<td>The accounting underline styles cannot be used.</td>
</tr>
<tr>
<td></td>
<td>Bottom</td>
</tr>
<tr>
<td></td>
<td>Color</td>
</tr>
<tr>
<td></td>
<td>Left</td>
</tr>
<tr>
<td></td>
<td>Right</td>
</tr>
</tbody>
</table>
The following border styles can be used (all others aren’t supported): `xlNone`, `xlSolid`, `xDash`, `xDot`, `xDashDot`, `xDashDotDot`, `xGray50`, `xGray75`, and `xGray25`.

The following border weights can be used (all others aren’t supported): `xWeightHairline` and `xWeightThin`.

`ColorIndex` and `PatternColorIndex`
FormatConditions Collection Object

- **Range**
  - **FormatConditions (FormatCondition)**
    - **Borders (Border)**
    - **Font**
    - **Interior**

Represents the collection of conditional formats for a single range. The **FormatConditions** collection can contain up to three conditional formats. Each format is represented by a **FormatCondition** object.
Using the FormatConditions Collection

Use the FormatConditions property to return a FormatConditions object. Use the Add method to create a new conditional format, and use the Modify method to change an existing conditional format.

The following example adds a conditional format to cells E1:E10.

```vba
With Worksheets(1).Range("e1:e10").FormatConditions
    .Add(xlCellValue, xlGreater, "=$a$1")
    With .Borders
        .LineStyle = xlContinuous
        .Weight = xlThin
        .ColorIndex = 6
    End With
    With .Font
        .Bold = True
        .ColorIndex = 3
    End With
End With
```
Remarks

If you try to create more than three conditional formats for a single range, the `Add` method fails. If a range has three formats, you can use the `Modify` method to change one of the formats, or you can use the `Delete` method to delete a format and then use the `Add` method to create a new format.

For more information about conditional formats, see the `FormatCondition` object.
FreeformBuilder Object

Shapes (Shape) \rightarrow \text{FreeformBuilder}

Represents the geometry of a freeform while it’s being built.
Using the FreeformBuilder Object

Use the **BuildFreeform** method to return a **FreeformBuilder** object. Use the **AddNodes** method to add nodes to the freeform. Use the **ConvertToShape** method to create the shape defined in the **FreeformBuilder** object and add it to the **Shapes** collection. The following example adds a freeform with four segments to **myDocument**.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes.BuildFreeform(msoEditingCorner, 360, 200)
    .AddNodes msoSegmentCurve, msoEditingCorner, _
        380, 230, 400, 250, 450, 300
    .AddNodes msoSegmentCurve, msoEditingAuto, 480, 200
    .AddNodes msoSegmentLine, msoEditingAuto, 480, 400
    .AddNodes msoSegmentLine, msoEditingAuto, 360, 200
    .ConvertToShape
End With
```
Graphic Object

Contains properties that apply to header and footer picture objects.
Using the Graphic object

There are several properties of the **PageSetup** object that return the **Graphic** object.

Use the **CenterFooterPicture**, **CenterHeaderPicture**, **LeftFooterPicture**, **LeftHeaderPicture**, **RightFooterPicture**, or **RightHeaderPicture** properties to return a **Graphic** object.

The following example adds a picture titled: Sample.jpg from the C:\ drive to the left section of the footer. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.LeftFooterPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the left footer.
    ActiveSheet.PageSetup.LeftFooter = "&G"

End Sub

**Note**  It is required that "&G" is a part of the **LeftFooter** string in order for the image to show up in the left footer.
Gridlines Object

**Charts (Chart)**

- **Axes (Axis)**
  - **Gridlines**
  - **Border**

Gridlines represent major or minor gridlines on a chart axis. Gridlines extend the tick marks on a chart axis to make it easier to see the values associated with the data markers. This object isn’t a collection. There’s no object that represents a single gridline; you either have all gridlines for an axis turned on or all of them turned off.
Using the Gridlines Object

Use the **MajorGridlines** property to return the **GridLines** object that represents the major gridlines for the axis. Use the **MinorGridlines** property to return the **GridLines** object that represents the minor gridlines. It’s possible to return both major and minor gridlines at the same time.

The following example turns on major gridlines for the category axis on the chart sheet named "Chart1" and then formats the gridlines to be blue dashed lines.

```vba
With Charts("chart1").Axes(xlCategory)
    .HasMajorGridlines = True
    .MajorGridlines.Border.Color = RGB(0, 0, 255)
    .MajorGridlines.Border.LineStyle = xlDash
End With
```
GroupShapes Collection Object

Shapes (Shape) ⊆ GroupShapes (Shape)

Represents the individual shapes within a grouped shape. Each shape is represented by a Shape object. Using the Item method with this object, you can work with single shapes within a group without having to ungroup them.
Using The GroupShapes Collection

Use the **GroupItems** property to return the **GroupShapes** collection. Use **GroupItems(index)**, where *index* is the number of the individual shape within the grouped shape, to return a single shape from the **GroupShapes** collection. The following example adds three triangles to *myDocument*, groups them, sets a color for the entire group, and then changes the color for the second triangle only.

```
Set myDocument =Worksheets(1)
With myDocument.Shapes
    .AddShape(msoShapeIsoscelesTriangle, _
        10, 10, 100, 100).Name = "shpOne"
    .AddShape(msoShapeIsoscelesTriangle, _
        150, 10, 100, 100).Name = "shpTwo"
    .AddShape(msoShapeIsoscelesTriangle, _
        300, 10, 100, 100).Name = "shpThree"
    With .Range(Array("shpOne", "shpTwo", "shpThree")).Group
        .Fill.PresetTextured msoTextureBlueTissuePaper
        GroupItems(2).Fill.PresetTextured msoTextureGreenMarble
    End With
End With
```
HiLoLines Object

- Charts (Chart)
- ChartGroups (ChartGroup)
- HiLoLines
- Border

Represents the high-low lines in a chart group. High-low lines connect the highest point with the lowest point in every category in the chart group. Only 2-D line groups can have high-low lines. This object isn’t a collection. There’s no object that represents a single high-low line; you either have high-low lines turned on for all points in a chart group or you have them turned off.
Using the HiLoLines Object

Use the **HiLoLines** property to return the **HiLoLines** object. The following example uses the **AutoFormat** method to create a high-low-close stock chart in embedded chart one (the chart must contain three series) on worksheet one. The example then makes the high-low lines blue.

```vba
Worksheets(1).ChartObjects(1).Activate
ActiveChart.AutoFormat gallery:=xlLine, format:=8
ActiveChart.ChartGroups(1).HiLoLines.Border.Color = RGB(0, 0, 255)
```
Remarks

If the HasHiLoLines property is False, most properties of the HiLoLines object are disabled.
HPageBreak Object

Represents a horizontal page break. The HPageBreak object is a member of the HPageBreaks collection.
Using the HPageBreak Object

Use `HPageBreaks(index)`, where `index` is the index number of the page break, to return an `HPageBreak` object. The following example changes the location of horizontal page break one.

`Worksheets(1).HPageBreaks(1).Location = Worksheets(1).Range("e5")`

**Note**  There is a limit of 1026 horizontal page breaks per sheet.
HPageBreaks Collection Object

Sheets → HPageBreaks (HPageBreak)

The collection of horizontal page breaks within the print area. Each horizontal page break is represented by an HPageBreak object.
Using the HPageBreaks Collection

Use the **HPageBreaks** property to return the **HPageBreaks** collection. Use the **Add** method to add a horizontal page break. The following example adds a horizontal page break above the active cell.

```vba
ActiveSheet.HPageBreaks.Add Before:=ActiveCell
```

If you add a page break that does not intersect the print area, then the newly-added **HPageBreak** object will not appear in the **HPageBreaks** collection for the print area. The contents of the collection may change if the print area is resized or redefined.

When the **Application** property, **Count** property, **Creator** property, **Item** property, **Parent** property or **Add** method is used in conjunction with the **HPageBreaks** property:

- For an automatic print area, the **HPageBreaks** property applies only to the page breaks within the print area.
- For a user-defined print area of the same range, the **HPageBreaks** property applies to all of the page breaks.

**Note**  There is a limit of 1026 horizontal page breaks per sheet.
Hyperlink Object

Multiple objects

Represents a hyperlink. The Hyperlink object is a member of the Hyperlinks collection.
Using the Hyperlink Object

Use the **Hyperlink** property to return the hyperlink for a shape (a shape can have only one hyperlink). The following example activates the hyperlink for shape one.

```vba
Worksheets(1).Shapes(1).Hyperlink.Follow NewWindow:=True
```

A range or worksheet can have more than one hyperlink. Use **Hyperlinks(index)**, where *index* is the hyperlink number, to return a single **Hyperlink** object. The following example activates hyperlink two in the range A1:B2.

```vba
Worksheets(1).Range("A1:B2").Hyperlinks(2).Follow
```
Hyperlinks Collection

Multiple objects

Hyperlinks

Hyperlink

Represents the collection of hyperlinks for a worksheet or range. Each hyperlink is represented by a Hyperlink object.
Using the Hyperlinks Collection

Use the **Hyperlinks** property to return the **Hyperlinks** collection. The following example checks the hyperlinks on worksheet one for a link that contains the word Microsoft.

```
For Each h In Worksheets(1).Hyperlinks
    If Instr(h.Name, "Microsoft") <> 0 Then h.Follow
Next
```

Use the **Add** method to create a hyperlink and add it to the **Hyperlinks** collection. The following example creates a new hyperlink for cell E5.

```
With Worksheets(1)
    .Hyperlinks.Add .Range("E5"), "http://example.microsoft.com"
End With
```
Interior Object

Multiple objects $\text{Interior}$

Represents the interior of an object.
Using the Interior Object

Use the **Interior** property to return the **Interior** object. The following example sets the color for the interior of cell A1 to red.

```vba
Worksheets("Sheet1").Range("A1").Interior.ColorIndex = 3
```
IRtdServer Object

IRtdServer

Represents an interface for a real-time data server.
Using the IRtdServer object

The IRtDServer object can only be instantiated or created by implementing the IRtDServer interface using the Implements keyword.
IRTDAupdateEvent Object

IRTDAupdateEvent

Represents real-time data update events.
Using the IRTDUpdateEvent object

To instantiate or to return an IRTDUpdateEvent object, declare a variable as an IRTDUpdateEvent object, then use that variable as a callback object.
LeaderLines Object

SeriesCollection (Series) ▼ LeaderLines ▼ Border

 Represents leader lines on a chart. Leader lines connect data labels to data points. This object isn’t a collection; there’s no object that represents a single leader line.
Using the LeaderLines Object

Use the LeaderLines property to return the LeaderLines object. The following example adds data labels and blue leader lines to series one on chart one.

```vba
With Worksheets(1).ChartObjects(1).Chart.SeriesCollection(1)
    .HasDataLabels = True
    .DataLabels.Position = xlLabelPositionBestFit
    .HasLeaderLines = True
    .LeaderLines.Border.ColorIndex = 5
End With
```
Legend Object

Charts (Chart) ┌──Legend
 │ └──Font
 │   └──Border
 │           └──Interior
 │                 └──LegendEntries (LegendEntry)
 │                         └──LegendKey

Represents the legend in a chart. Each chart can have only one legend. The Legend object contains one or more LegendEntry objects; each LegendEntry object contains a LegendKey object.
Using the Legend Object

Use the **Legend** property to return the **Legend** object. The following example sets the font style for the legend in embedded chart one on worksheet one to bold.

```plaintext
```
Remarks

The chart legend isn’t visible unless the HasLegend property is True. If this property is False, properties and methods of the Legend object will fail.
LegendEntries Collection Object

A collection of all the LegendEntry objects in the specified chart legend. Each legend entry has two parts: the text of the entry, which is the name of the series or trendline associated with the legend entry; and the entry marker, which visually links the legend entry with its associated series or trendline in the chart. The formatting properties for the entry marker and its associated series or trendline are contained in the LegendKey object.
Using the LegendEntries Collection

Use the **LegendEntries** method to return the **LegendEntries** collection. The following example loops through the collection of legend entries in embedded chart one and changes their font color.

```vba
With Worksheets("sheet1").ChartObjects(1).Chart.Legend
    For i = 1 To .LegendEntries.Count
        .LegendEntries(i).Font.ColorIndex = 5
    Next
End With
```

Use **LegendEntries(index)**, where *index* is the legend entry index number, to return a single **LegendEntry** object. You cannot return legend entries by name.

The index number represents the position of the legend entry in the legend. **LegendEntries(1)** is at the top of the legend; **LegendEntries(LegendEntries.Count)** is at the bottom. The following example changes the font style for the text of the legend entry at the top of the legend (this is usually the legend for series one) in embedded chart one to italic.

```vba
Worksheets("sheet1").ChartObjects(1).Chart._
    .Legend.LegendEntries(1).Font.Italic = True
```
LegendEntry Object

- **Charts (Chart)**
- **Legend**
  - **LegendEntries (LegendEntry)**
  - **Font**
  - **LegendKey**

Represents a legend entry in a chart legend. The `LegendEntry` object is a member of the `LegendEntries` collection. The `LegendEntries` collection contains all the `LegendEntry` objects in the legend.

Each legend entry has two parts: the text of the entry, which is the name of the series associated with the legend entry; and an entry marker, which visually links the legend entry with its associated series or trendline in the chart. Formatting properties for the entry marker and its associated series or trendline are contained in the `LegendKey` object.

The text of a legend entry cannot be changed. `LegendEntry` objects support font formatting, and they can be deleted. No pattern formatting is supported for legend entries. The position and size of entries is fixed.
Using the LegendEntry Object

Use `LegendEntries(index)`, where `index` is the legend entry index number, to return a single `LegendEntry` object. You cannot return legend entries by name.

The index number represents the position of the legend entry in the legend. `LegendEntries(1)` is at the top of the legend, and `LegendEntries(LegendEntries.Count)` is at the bottom. The following example changes the font for the text of the legend entry at the top of the legend (this is usually the legend for series one) in embedded chart one on the worksheet named "Sheet1."

```vba
Worksheets("sheet1").ChartObjects(1).Chart._ .Legend.LegendEntries(1).Font.Italic = True
```
Remarks

There’s no direct way to return the series or trendline corresponding to the legend entry.

After legend entries have been deleted, the only way to restore them is to remove and recreate the legend that contained them by setting the HasLegend property for the chart to False and then back to True.
LegendKey Object

LegendKey

- Chart
  - Legend
    - LegendEntries
      - LegendEntry
    - Font
    - LegendKey
      - Border
      - Interior

Represents a legend key in a chart legend. Each legend key is a graphic that visually links a legend entry with its associated series or trendline in the chart. The legend key is linked to its associated series or trendline in such a way that changing the formatting of one simultaneously changes the formatting of the other.
Using the LegendKey Object

Use the **LegendKey** property to return the **LegendKey** object. The following example changes the marker background color for the legend entry at the top of the legend for embedded chart one on the worksheet named "Sheet1." This simultaneously changes the format of every point in the series associated with this legend entry. The associated series must support data markers.

```vbnet
Worksheets("sheet1").ChartObjects(1).Chart._
    .Legend.LegendEntries(1).LegendKey.MarkerBackgroundColorIndex = ...
```
LineFormat Object

Shapes (Shape) LineFormat ColorFormat

Represents line and arrowhead formatting. For a line, the LineFormat object contains formatting information for the line itself; for a shape with a border, this object contains formatting information for the shape's border.
Using the LineFormat Object

Use the **Line** property to return a **LineFormat** object. The following example adds a blue, dashed line to myDocument. There’s a short, narrow oval at the line’s starting point and a long, wide triangle at its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
  .DashStyle = msoLineDashDotDot
  .ForeColor.RGB = RGB(50, 0, 128)
  .BeginArrowheadLength = msoArrowheadShort
  .BeginArrowheadStyle = msoArrowheadOval
  .BeginArrowheadWidth = msoArrowheadNarrow
  .EndArrowheadLength = msoArrowheadLong
  .EndArrowheadStyle = msoArrowheadTriangle
  .EndArrowheadWidth = msoArrowheadWide
End With
LinkFormat Object

Contains linked OLE object properties.
Using the LinkFormat Object

Use the LinkFormat property to return the LinkFormat object. The following example updates an OLE object in the Shapes collection.

Worksheets(1).Shapes(1).LinkFormat.Update

If the Shape object doesn’t represent a linked object, the LinkFormat property fails.
Name Object

**Application**  |  **Workbooks (Workbook)**  
**Names (Name)**  
**Worksheets (Worksheet)**  
**Range**  
**Name**

Represents a defined name for a range of cells. Names can be either built-in names — such as Database, Print_Area, and Auto_Open — or custom names.
Application, Workbook, and Worksheet Objects

The Name object is a member of the Names collection for the Application, Workbook, and Worksheet objects. Use Names(index), where index is the name index number or defined name, to return a single Name object.

The index number indicates the position of the name within the collection. Names are placed in alphabetic order, from a to z, and are not case-sensitive (this is the same order as is displayed in the Define Name and Apply Names dialog boxes, returned by clicking the Name command on the Insert menu). The following example displays the cell reference for the first name in the application collection.

MsgBox Names(1).RefersTo

The following example deletes the name "mySortRange" from the active workbook.

ActiveWorkbook.Names("mySortRange").Delete

Use the Name property to return or set the text of the name itself. The following example changes the name of the first Name object in the active workbook.

Names(1).Name = "stock_values"
Range Objects

Although a **Range** object can have more than one name, there’s no **Names** collection for the **Range** object. Use **Name** with a **Range** object to return the first name from the list of names (sorted alphabetically) assigned to the range. The following example sets the **Visible** property for the first name assigned to cells A1:B1 on worksheet one.

```vba
Worksheets(1).Range("a1:b1").Name.Visible = False
```
Names Collection Object

A collection of all the Name objects in the application or workbook. Each Name object represents a defined name for a range of cells. Names can be either built-in names — such as Database, Print_Area, and Auto_Open — or custom names.
Using the Names Collection

Use the **Names** property to return the **Names** collection. The following example creates a list of all the names in the active workbook, plus the addresses they refer to.

```vba
Set nms = ActiveWorkbook.Names
Set wks = Worksheets(1)
For r = 1 To nms.Count
    wks.Cells(r, 2).Value = nms(r).Name
    wks.Cells(r, 3).Value = nms(r).RefersToRange.Address
Next
```

Use the **Add** method to create a name and add it to the collection. The following example creates a new name that refers to cells A1:C20 on the worksheet named "Sheet1."

```vba
Names.Add Name:="test", RefersTo:"=sheet1!$a$1:$c$20"
```

The **RefersTo** argument must be specified in A1-style notation, including dollar signs ($) where appropriate. For example, if cell A10 is selected on Sheet1 and you define a name by using the **RefersTo** argument "+=sheet1!A1:B1", the new name actually refers to cells A10:B10 (because you specified a relative reference). To specify an absolute reference, use "=sheet1!$A$1:$B$1".

Use **Names(index)**, where **index** is the name index number or defined name, to return a single **Name** object. The following example deletes the name "mySortRange" from the active workbook.

```vba
ActiveWorkbook.Names("mySortRange").Delete
```
ODBCError Object

The ODBCError object represents an ODBC error generated by the most recent ODBC query. The ODBCError object is a member of the ODBCErrors collection. If the specified ODBC query runs without error, the ODBCErrors collection is empty. The errors in the collection are indexed in the order in which they’re generated by the ODBC data source.
Using the ODBCError Object

Use **ODBCErrors(index)**, where *index* is the index number of the error, to return a single **ODBCError** object. The following example refreshes query table one and displays the first ODBC error that occurs.

```vba
With Worksheets(1).QueryTables(1)
    .Refresh
    If Application.ODBCErrors.Count > 0 Then
        Set er = Application.ODBCErrors(1)
        MsgBox "The following error occurred:" & 
        er.ErrorString & " : " & er.SqlState
    Else
        MsgBox "Query complete: all records returned."
    End If
End With
```
**ODBCErrors Collection Object**

A collection of **ODBCErrors** objects. Each **ODBCErrors** object represents an error returned by the most recent ODBC query. If the specified ODBC query runs without error, the **ODBCErrors** collection is empty. The errors in the collection are indexed in the order in which they’re generated by the ODBC data source. You cannot add members to the collection.
Using the ODBC Errors Collection

Use the ODBC Errors property to return the ODBC Errors collection. The following example refreshes query table one and displays any ODBC errors that occur.

With Worksheets(1).QueryTables(1)
    .Refresh
    Set errs = Application.ODBCErrors
    If errs.Count > 0 Then
        Set r = .Destination.Cells(1)
        r.Value = "The following errors occurred:"
        c = 0
        For Each er In errs
            c = c + 1
            r.Offset(c, 0).Value = er.ErrorString
            r.Offset(c, 1).Value = er.SqlState
        Next
        Else
            MsgBox "Query complete: all records returned."
    End If
End With
OLEDBError Object

Represents an OLE DB error returned by the most recent OLE DB query. The OLEDBError object is a member of the OLEDBErrors collection. If the specified OLE DB query runs without error, the OLEDBErrors collection is empty. The errors in the collection are indexed in the order in which they're generated by the OLE DB provider.
Using the OLEDBError Object

Use **OLEDBErrors**(index), where index is the index number of the OLE DB error, to return a single **OLEDBError** object. The following example displays the error description and the **SqlState** property’s value for the first error returned by the most recent OLE DB query.

```vba
Set objEr = Application.OLEDBErrors(1)
MsgBox "The following error occurred:" & _
    objEr>ErrorString & " : " & objEr.SqlState
```
OLEDBErrors Collection Object

A collection of **OLEDBError** objects. Each **OLEDBError** object represents an error returned by the most recent OLE DB query. If the specified OLE DB query runs without error, the **OLEDBErrors** collection is empty. The errors in the collection are indexed in the order in which they're generated by the OLE DB provider. You cannot add members to the collection.
Using the OLEDBErrors Collection

Use the `OLEDBErrors` property to return the `OLEDBErrors` collection. The following example displays the error description and the `SqlState` property’s value for each OLE DB error in the collection.

```vba
For Each objEr in Application.OLEDBErrors
    MsgBox "The following error occurred:" & _
    objEr.ErrorString & " : " & objEr.SqlState
Next objEr
```

Use `OLEDBErrors(index)`, where `index` is the index number of the OLE DB error, to return a single `OLEDBError` object. The following example displays the error description and the `SqlState` property’s value for the first error returned by the most recent OLE DB query.

```vba
Set objEr = Application.OLEDBErrors(1)
MsgBox "The following error occurred:" & _
    objEr.ErrorString & " : " & objEr.SqlState
```
OLEFormat Object

Shape → OLEFormat

Contains OLE object properties.
Using the OLEFormat Object

Use the OLEFormat property to return the OLEFormat object. The following example activates an OLE object in the Shapes collection.

Worksheets(1).Shapes(1).OLEFormat.Activate

If the Shape object doesn’t represent a linked or embedded object, the OLEFormat property fails.
OLEObject Object

- Sheets
- OLEObjects (OLEObject)
- Borders (Border)
- Interior

Represents an ActiveX control or a linked or embedded OLE object on a worksheet. The OLEObject object is a member of the OLEObjects collection. The OLEObjects collection contains all the OLE objects on a single worksheet.
Using the OLEObject Object

Use `OLEObjects(index)`, where `index` is the name or number of the object, to return an `OLEObject` object. The following example deletes OLE object one on Sheet1.

`Worksheets("sheet1").OLEObjects(1).Delete`

The following example deletes the OLE object named “ListBox1.”

`Worksheets("sheet1").OLEObjects("ListBox1").Delete`
Remarks

The properties and methods of the **OLEObject** object are duplicated on each ActiveX control on a worksheet. This enables Visual Basic code to gain access to these properties by using the control’s name. The following example selects the check box control named "MyCheckBox," aligns it with the active cell, and then activates the control.

```vba
With MyCheckBox
  .Value = True
  .Top = ActiveCell.Top
  .Activate
End With
```

For more information, see [Using ActiveX controls on sheets](#).
OLEObjects Collection Object

Sheets ➔ OLEObjects (OLEObject)
  ➔ Borders (Border)
  ➔ Interior

A collection of all the OLEObject objects on the specified worksheet. Each OLEObject object represents an ActiveX control or a linked or embedded OLE object.
Using the OLEObjects Collection

Use the **OLEObjects** method to return the **OLEObjects** collection. The following example hides all the OLE objects on worksheet one.

```
Worksheets(1).OLEObjects.Visible = False
```

Use the **Add** method to create a new OLE object and add it to the **OLEObjects** collection. The following example creates a new OLE object representing the bitmap file Arcade.bmp and adds it to worksheet one.

```
Worksheets(1).OLEObjects.Add FileName:="arcade.gif"
```

The following example creates a new ActiveX control (a list box) and adds it to worksheet one.

```
Worksheets(1).OLEObjects.Add ClassType:="Forms.ListBox.1"
```

For more information, see [Using ActiveX controls on sheets](#).
Remarks

An ActiveX control on a sheet has two names: the name of the shape that contains the control, which you can see in the Name box when you view the sheet, and the code name for the control, which you can see in the cell to the right of (Name) in the Properties window. When you first add a control to a sheet, the shape name and code name match. However, if you change either the shape name or code name, the other is not automatically changed to match.

You use the code name of a control in the names of its event procedures. However, when you return a control from the Shapes or OLEObjects collection for a sheet, you must use the shape name, not the code name, to refer to the control by name. For example, assume that you add a check box to a sheet and that both the default shape name and the default code name are CheckBox1. If you then change the control code name by typing chkFinished next to (Name) in the Properties window, you must use chkFinished in event procedures names, but you still have to use CheckBox1 to return the control from the Shapes or OLEObject collection, as shown in the following example.

Private Sub chkFinished_Click()
    ActiveSheet.OLEObjects("CheckBox1").Object.Value = 1
End Sub
Outline Object

- Workbooks (Workbook)
- Worksheets (Worksheet)
- Outline

Represents an outline on a worksheet.
Using the Outline Object

Use the **Outline** property to return an **Outline** object. The following example sets the outline on Sheet4 so that only the first outline level is shown.

```vba
Worksheets("sheet4").Outline.ShowLevels 1
```
multiple objects

Represents the page setup description. The **PageSetup** object contains all page setup attributes (left margin, bottom margin, paper size, and so on) as properties.
Using the `PageSetup` Object

Use the `PageSetup` property to return a `PageSetup` object. The following example sets the orientation to landscape mode and then prints the worksheet.

```vba
WithWorksheets("Sheet1")
    .PageSetup.Orientation = xILandscape
    .PrintOut
End With
```

The `With` statement makes it easier and faster to set several properties at the same time. The following example sets all the margins for worksheet one.

```vba
WithWorksheets(1).PageSetup
    .LeftMargin = Application.InchesToPoints(0.5)
    .RightMargin = Application.InchesToPoints(0.75)
    .TopMargin = Application.InchesToPoints(1.5)
    .BottomMargin = Application.InchesToPoints(1)
    .HeaderMargin = Application.InchesToPoints(0.5)
    .FooterMargin = Application.InchesToPoints(0.5)
End With
```
Pane Object

Represented a pane of a window. **Pane** objects exist only for worksheets and Microsoft Excel 4.0 macro sheets. The **Pane** object is a member of the **Panes** collection. The **Panes** collection contains all of the panes shown in a single window.
Using the Pane Object

Use `Panes(index)`, where `index` is the pane index number, to return a single `Pane` object. The following example splits the window in which worksheet one is displayed and then scrolls through the pane in the lower-left corner until row five is at the top of the pane.

```vba
Worksheets(1).Activate
ActiveWindow.Split = True
ActiveWindow.Panes(3).ScrollRow = 5
```
Panes Collection Object

Windows (Window) → Panes (Pane)

A collection of all the Pane objects shown in the specified window. Pane objects exist only for worksheets and Microsoft Excel 4.0 macro sheets.
Using the Panes Collection

Use the **Panes** property to return the **Panes** collection. The following example freezes panes in the active window if the window contains more than one pane.

If ActiveWindow.Panes.Count > 1 Then _  
   ActiveWindow.FreezePanes = True

Use **Panes(index)**, where *index* is the pane index number, to return a single **Pane** object. The following example scrolls through the upper-left pane of the window in which Sheet1 is displayed.

Worksheets("sheet1").Activate
Windows(1).Panes(1).LargeScroll down:=1
Parameter Object

<table>
<thead>
<tr>
<th>Worksheets (Worksheet)</th>
<th>QueryTables (QueryTable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters (Parameter)</td>
<td></td>
</tr>
</tbody>
</table>

Represents a single parameter used in a parameter query. The Parameter object is a member of the Parameters collection.
Using the Parameter Object

Use Parameters(index), where index is the index number of the parameter, to return a single Parameter object. The following example modifies the prompt string for parameter one.

```vba
With Worksheets(1).QueryTables(1).Parameters(1)
    .SetParam xlPrompt, "Please " & .PromptString
End With
```
Parameters Collection Object

Worksheets (Worksheet) ⊂ QueryTables (QueryTable)
⊂ Parameters (Parameter)

A collection of Parameter objects for the specified query table. Each Parameter object represents a single query parameter. Every query table contains a Parameters collection, but the collection is empty unless the query table is using a parameter query.
Using the Parameters Collection

Use the **Parameters** property to return the **Parameters** collection. The following example displays the number of parameters in query table one.

```vba
MsgBox Workbooks(1).ActiveSheet.QueryTables(1).Parameters.Count
```

Use the **Add** method to create a new parameter for a query table. The following example changes the SQL statement for query table one. The clause “(city=?)” indicates that the query is a parameter query, and the value of city is set to the constant “Oakland.”

```vba
Set qt = Sheets("sheet1").QueryTables(1)
qt.Sql = "SELECT * FROM authors WHERE (city=?)"
Set param1 = qt.Parameters.Add("City Parameter", _
   xlParamTypeVarChar)
param1.SetParam xlConstant, "Oakland"
qt.Refresh
```

You cannot use the **Add** method on a URL connection query table. For URL connection query tables, Microsoft Excel creates the parameters based on the **Connection** and **PostText** properties.
Phonetic Object

Contains information about a specific phonetic text string in a cell. In Microsoft Excel 97, this object contained the formatting attributes for any phonetic text in the specified range.
Using the Phonetic Object

Using **Phonetics(index)**, where *index* is the index number of the phonetic text, to return a single **Phonetic** object. The following example sets the first phonetic text string in the active cell to "プリガナ".

```
ActiveCell.Phonetics(1).Text = "プリガナ"
```

The **Phonetic** property provides compatibility with earlier versions of Microsoft Excel. You should use **Phonetics(index)**, where *index* is the index number of the phonetic text, to return a single **Phonetic** object. To demonstrate compatibility with earlier versions of Microsoft Excel, the following example adds Furigana characters to the range A1:C4. If you add Furigana characters to a range, a new **Phonetic** object is automatically created.

```
With Range("A1:C4").Phonetic
    .CharacterType = xlHiragana
    .Alignment = xlPhoneticAlignCenter
    .Font.Name = "MS Pゴシック"
    .Font.FontStyle = "標準"
    .Font.Size = 6
    .Font.Strikethrough = False
    .Font.Underline = xlUnderlineStyleNone
    .Font.ColorIndex = xlAutomatic
    .Visible = True
End With
```
Phonetics Collection Object

**Range** - **Phonetics (Phonetic)**

A collection of all the **Phonetic** objects in the specified range. Each **Phonetic** object contains information about a specific phonetic text string.
Using the Phonetics Collection

Use the **Phonetics** property to return the **Phonetics** collection. The following example makes all phonetic text in the range A1:C4 visible.

```vba
Range("A1:C4").Phonetics.Visible = True
```

Use **Phonetics(index)**, where `index` is the index number of the phonetic text, to return a single **Phonetic** object. The following example sets the first phonetic text string in the active cell to "アリカダ"

```vba
ActiveCell.Phonetics(1).Text = "アリカダ"
```
PictureFormat Object

Shapes (Shape) \PictureFormat

Contains properties and methods that apply to pictures and OLE objects. The LinkFormat object contains properties and methods that apply to linked OLE objects only. The OLEFormat object contains properties and methods that apply to OLE objects whether or not they’re linked.
Using the PictureFormat Object

Use the **PictureFormat** property to return a **PictureFormat** object. The following example sets the brightness, contrast, and color transformation for shape one on `myDocument` and crops 18 points off the bottom of the shape. For this example to work, shape one must be either a picture or an OLE object.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1).PictureFormat
    .Brightness = 0.3
    .Contrast = 0.7
    .ColorType = msoPictureGrayScale
    .CropBottom = 18
```

```vba```
PivotCache Object

Multiple objects

\texttt{PivotCache}

\texttt{PivotTable}

Represents the memory cache for a PivotTable report. The \texttt{PivotCache} object is a member of the \texttt{PivotCaches} collection.
Using the PivotCache Object

Use the **PivotCache** method to return a **PivotCache** object for a PivotTable report (each report has only one cache). The following example causes the first PivotTable report on the first worksheet to refresh itself whenever its file is opened.

```vba
Worksheets(1).PivotTables(1).PivotCache.RefreshOnFileOpen = True
```

Use **PivotCaches(index)**, where `index` is the PivotTable cache number, to return a single **PivotCache** object from the **PivotCaches** collection for a workbook. The following example refreshes cache one.

```vba
ActiveWorkbook.PivotCaches(1).Refresh
```
PivotCaches Collection Object

Workbooks (Workbook) ＞ PivotCaches (PivotCache)

Represents the collection of memory caches from the PivotTable reports in a workbook. Each memory cache is represented by a PivotCache object.
Using the PivotCaches Collection

Use the **PivotCaches** method to return the **PivotCaches** collection. The following example sets the **RefreshOnFileOpen** property for all memory caches in the active workbook.

```vba
For Each pc In ActiveWorkbook.PivotCaches
    pc.RefreshOnFileOpen = True
Next
```
PivotCell Object

Range ← PivotCell
Multiple objects

Represents a cell in a PivotTable report.
Using the PivotCell object

Use the **PivotCell** property of the **Range** collection to return a **PivotCell** object.

Once a **PivotCell** object is returned, you can use the **PivotCellType** property to determine what type of cell a particular range is. The following example determines if cell A5 in the PivotTable is a data item and notifies the user. This example assumes that a PivotTable exists on the active worksheet and that cell A5 is contained in the PivotTable. If cell A5 is not in the PivotTable, the example handles the run-time error.

Sub CheckPivotCellType()
    On Error GoTo Not_In_PivotTable
    ' Determine if cell A5 is a data item in the PivotTable.
    If Application.Range("A5").PivotCell.PivotCellType = xlPivotCellValue
        MsgBox "The PivotCell at A5 is a data item."
    Else
        MsgBox "The PivotCell at A5 is not a data item."
    End If
    Exit Sub
    Not_In_PivotTable:
        MsgBox "The chosen cell is not in a PivotTable."
End Sub

Once a **PivotCell** object is returned, you can use the **ColumnItems** or **RowItems** property to determine the **PivotItems** collection that corresponds to the items on the column or row axis that represents the selected number. The following example uses the **ColumnItems** property of the **PivotCell** object to return a **PivotItemList** collection.

This example determines the column field that the data item of cell B5 is in. It then determines if the column field title matches "Inventory" and notifies the user. The example assumes that a PivotTable exists on the active worksheet and that column B of the worksheet contains a column field of the PivotTable.

Sub CheckColumnItems()
' Determine if there is a match between the item and column field
If Application.Range("B5").PivotCell.ColumnItems.Item(1) = "Inventory"
    MsgBox "Item in B5 is a member of the 'Inventory' column field."
Else
    MsgBox "Item in B5 is not a member of the 'Inventory' column field."
End If
End Sub
PivotField Object

Multiple objects  \(\text{PivotField}\)
  \(\text{Multiple objects}\)

Represents a field in a PivotTable report. The \text{PivotField} object is a member of the \text{PivotFields} collection. The \text{PivotFields} collection contains all the fields in a PivotTable report, including hidden fields.
Using the PivotField Object

Use **PivotFields(index)**, where *index* is the field name or index number, to return a single **PivotField** object. The following example makes the Year field a row field in the first PivotTable report on Sheet3.

```vba
Worksheets("sheet3").PivotTables(1) _
    .PivotFields("year").Orientation = xlRowField
```

In some cases, it may be easier to use one of the properties that returns a subset of the PivotTable fields. The following properties are available:

- **ColumnFields** property
- **DataFields** property
- **HiddenFields** property
- **PageFields** property
- **RowFields** property
- **VisibleFields** property
PivotFields Collection Object

Multiple objects of PivotFields

A collection of all the PivotField objects in a PivotTable report.
Using the PivotFields Collection

Use the PivotFields method of the PivotTable object to return the PivotFields collection. The following example enumerates the field names in the first PivotTable report on Sheet3.

With Worksheets("sheet3").PivotTables(1)
    For i = 1 To .PivotFields.Count
        MsgBox .PivotFields(i).Name
    Next
End With

Use PivotFields(index), where index is the field name or index number, to return a single PivotField object. The following example makes the Year field a row field in the first PivotTable report on Sheet3.

Worksheets("sheet3").PivotTables(1) _
    .PivotFields("year").Orientation = xlRowField

In some cases, it may be easier to use one of the properties that returns a subset of the PivotTable fields. The following accessor methods are available:

- ColumnFields property
- DataFields property
- HiddenFields property
- PageFields property
- RowFields property
- VisibleFields property
PivotFormula Object

PivotTables (PivotTable) \[\text{PivotFormulas (PivotFormula)}\]

Represents a formula used to calculate results in a PivotTable report.
Remarks

This object and its associated properties and methods aren’t available for OLAP data sources because calculated fields and items aren’t supported.
Using the PivotFormula Object

Use `PivotFormulas(index)`, where `index` is the formula number or string on the left side of the formula, to return the `PivotFormula` object. The following example changes the index number for formula one in the first PivotTable report on the first worksheet so that this formula will be solved after formula two.

`Worksheets(1).PivotTables(1).PivotFormulas(1).Index = 2`
PivotFormulas Collection Object

PivotTables (PivotTable) \(\leq\) PivotFormulas (PivotFormula)

Represents the collection of formulas for a PivotTable report. Each formula is represented by a PivotFormula object.
Remarks

This object and its associated properties and methods aren’t available for OLAP data sources because calculated fields and items aren’t supported.
Using the PivotFormulas Collection

Use the **PivotFormulas** method to return the **PivotFormulas** collection. The following example creates a list of PivotTable formulas for the first PivotTable report on the active worksheet.

```
For Each pf In ActiveSheet.PivotTables(1).PivotFormulas
    Cells(r, 1).Value = pf.Formula
    r = r + 1
Next
```
PivotItem Object

Represents an item in a PivotTable field. The items are the individual data entries in a field category. The PivotItem object is a member of the PivotItems collection. The PivotItems collection contains all the items in a PivotField object.
Using the PivotItem Object

Use **PivotItems**(index), where index is the item index number or name, to return a single **PivotItem** object. The following example hides all entries in the first PivotTable report on Sheet3 that contain "1998" in the Year field.

```vba
Worksheets("sheet3").PivotTables(1) _
  .PivotFields("year").PivotItems("1998").Visible = False
```
PivotItemList Collection

A collection of all the **PivotItem** objects in the specified PivotTable. Each **PivotItem** represents an item in a PivotTable field.
Using the PivotItemList collection

Use the **RowItems** or **ColumnItems** property of the **PivotCell** object to return a **PivotItemList** collection.

Once a **PivotItemList** collection is returned, you can use the **Item** method to identify a particular **PivotItem** list. The following example displays the **PivotItem** list associated with cell B5 to the user. This example assumes a PivotTable exists on the active worksheet.

```vba
Sub CheckPivotItemList()
    ' Identify contents associated with PivotItemList.
    MsgBox "Contents associated with cell B5: " & _
        Application.Range("B5").PivotCell.RowItems.Item(1)
End Sub
```
PivotItems Collection Object

**PivotTables (PivotTable)**

- **Pivot**
  - **PivotItems (PivotItem)**

A collection of all the **PivotItem** objects in a PivotTable field. The items are the individual data entries in a field category.
Using the PivotItems Collection

Use the **PivotItems** method to return the **PivotItems** collection. The following example creates an enumerated list of field names and the items contained in those fields for the first PivotTable report on Sheet4.

```vba
Worksheets("sheet4").Activate
With Worksheets("sheet3").PivotTables(1)
  c = 1
  For i = 1 To .PivotFields.Count
    r = 1
    Cells(r, c) = .PivotFields(i).Name
    r = r + 1
    For x = 1 To .PivotFields(i).PivotItems.Count
      Cells(r, c) = .PivotFields(i).PivotItems(x).Name
      r = r + 1
    Next
  c = c + 1
  Next
End With
```

Use **PivotItems(index)**, where *index* is the item index number or name, to return a single **PivotItem** object. The following example hides all entries in the first PivotTable report on Sheet3 that contain "1998" in the Year field.

```vba
Worksheets("sheet3").PivotTables(1) .PivotFields("year").PivotItems("1998").Visible = False
```
PivotLayout Object

Chart PivotLayout

Multiple objects

Represents the placement of fields in a PivotChart report.
Using the PivotLayout Object

Use the **PivotLayout** property to return a **PivotLayout** object. The following example creates a list of PivotTable field names used in the first PivotChart report.

```vba
Sub ListFieldNames
    Dim objNewSheet As Worksheet
    Dim intRow As Integer
    Dim objPF As PivotField

    Set objNewSheet =Worksheets.Add
    intRow = 1

    For Each objPF In Charts("Chart1").PivotLayout.PivotFields
        objNewSheet.Cells(intRow, 1).Value = objPF.Caption
        intRow = intRow + 1
    Next objPF

End Sub
```
PivotTable Object

Multiple objects  \(^\text{PivotTable}\)  \(^\text{Multiple objects}\)

Represents a PivotTable report on a worksheet. The \textbf{PivotTable} object is a member of the \textbf{PivotTables} collection. The \textbf{PivotTables} collection contains all the \textbf{PivotTable} objects on a single worksheet.
Using the PivotTable Object

Use **PivotTables(index)**, where *index* is the PivotTable index number or name, to return a single **PivotTable** object. The following example makes the field named year a row field in the first PivotTable report on Sheet3.

```vba
Worksheets("Sheet3").PivotTables(1) .PivotFields("Year").Orientation = xlRowField
```
Remarks

Because PivotTable report programming can be complex, it’s generally easiest to record PivotTable report actions and then revise the recorded code. To record a macro, point to Macro on the Tools menu and then click Record New Macro.
PivotTables Collection Object

- **Worksheets (Worksheet)**
- **PivotTables (PivotTable)**
  - **CubeField**
  - **CubeFields (CubeField)**
  - **Pivot**

A collection of all the **PivotTable** objects on the specified worksheet.
Using the PivotTables Collection

Use the **PivotTables** method to return the **PivotTables** collection. The following example displays the number of PivotTable reports on Sheet3.

```
MsgBox Worksheets("sheet3").PivotTables.Count
```

Use the **PivotTableWizard** method to create a new PivotTable report and add it to the collection. The following example creates a new PivotTable report from a Microsoft Excel database (contained in the range A1:C100).

```
ActiveSheet.PivotTableWizard xlDatabase, Range("A1:C100")
```

Use **PivotTables(index)**, where **index** is the PivotTable index number or name, to return a single **PivotTable** object. The following example makes the Year field a row field in the first PivotTable report on Sheet3.

```
Worksheets("sheet3").PivotTables(1).PivotFields("year").Orientation = xlRowField
```
Remarks

Because PivotTable report programming can be complex, it’s generally easiest to record PivotTable report actions and then revise the recorded code. To record a macro, point to Macro on the Tools menu and click Record New Macro.
PlotArea Object

 Represents the plot area of a chart. This is the area where your chart data is plotted. The plot area on a 2-D chart contains the data markers, gridlines, data labels, trendlines, and optional chart items placed in the chart area. The plot area on a 3-D chart contains all the above items plus the walls, floor, axes, axis titles, and tick-mark labels in the chart.

 The plot area is surrounded by the chart area. The chart area on a 2-D chart contains the axes, the chart title, the axis titles, and the legend. The chart area on a 3-D chart contains the chart title and the legend. For information about formatting the chart area, see the ChartArea object.
Using the PlotArea Object

Use the **PlotArea** property to return a **PlotArea** object. The following example activates the chart sheet named "Chart1," places a dashed border around the chart area of the active chart, and places a dotted border around the plot area.

```vba
Charts("Chart1").Activate
With ActiveChart
    .ChartArea.Border.LineStyle = xlDash
    .PlotArea.Border.LineStyle = xlDot
End With
```
Point Object

Represents a single point in a series in a chart. The **Point** object is a member of the **Points** collection. The **Points** collection contains all the points in one series.
Using the Point Object

Use **Points**(index), where index is the point index number, to return a single **Point** object. Points are numbered from left to right on the series. Points(1) is the leftmost point, and Points(Points.Count) is the rightmost point. The following example sets the marker style for the third point in series one in embedded chart one on worksheet one. The specified series must be a 2-D line, scatter, or radar series.

```vbnet
Worksheets(1).ChartObjects(1).Chart._
    SeriesCollection(1).Points(3).MarkerStyle = xlDiamond
```
Points Collection Object

A collection of all the Point objects in the specified series in a chart.
Using the Points Collection

Use the **Points** method to return the **Points** collection. The following example adds a data label to the last point on series one in embedded chart one on worksheet one.

```vba
Dim pts As Points
Set pts = Worksheets(1).ChartObjects(1).Chart. _
          SeriesCollection(1).Points
pts(pts.Count).ApplyDataLabels type:=xlShowValue
```

Use **Points**(index), where *index* is the point index number, to return a single **Point** object. Points are numbered from left to right on the series. **Points(1)** is the leftmost point, and **Points(Points.Count)** is the rightmost point. The following example sets the marker style for the third point in series one in embedded chart one on worksheet one. The specified series must be a 2-D line, scatter, or radar series.

```vba
Worksheets(1).ChartObjects(1).Chart. _
          SeriesCollection(1).Points(3).MarkerStyle = xlDiamond
```
Protection Object

Worksheet → Protection → AllowEditRanges

Represents the various types of protection options available for a worksheet.
Using the Protection object

Use the Protection property of the Worksheet object to return a Protection object.

Once a Protection object is returned, you can use its following properties, to set or return protection options.

- AllowDeletingColumns
- AllowDeletingRows
- AllowFiltering
- AllowFormattingCells
- AllowFormattingColumns
- AllowFormattingRows
- AllowInsertingColumns
- AllowInsertingHyperlinks
- AllowInsertingRows
- AllowSorting
- AllowUsingPivotTables

The following example demonstrates how to use the AllowInsertingColumns property of the Protection object, placing three numbers in the top row and protecting the worksheet. Then this example checks to see if the protection setting for allowing the insertion of columns is False and sets it to True, if necessary. Finally, it notifies the user to insert a column.

Sub SetProtection()
    Range("A1").Formula = "1"
    Range("B1").Formula = "3"
    Range("C1").Formula = "4"
    ActiveSheet.Protect

    ' Check the protection setting of the worksheet and act accordingly.
    If ActiveSheet.Protection.AllowInsertingColumns = False Then
        ActiveSheet.Protect AllowInsertingColumns:=True
        MsgBox "Insert a column between 1 and 3"
    Else
        MsgBox "Insert a column between 1 and 3"
    End If
End Sub
End Sub
PublishObject Object

- Application
  - Workbooks (Workbook)
    - PublishObjects (PublishObject)

Represents an item in a workbook that has been saved to a Web page and can be refreshed according to values specified by the properties and methods of the PublishObject object. The PublishObject object is a member of the PublishObjects collection.
Using the PublishObject Object

Use **PublishObjects(index)**, where *index* is the index number of the specified item in the workbook, to return a single **PublishObject** object. The following example sets the location where the first item in workbook three is saved.

```vba
Workbooks(3).PublishObjects(1).FileName = _
    "\\myserver\public\finacct\statemnt.htm"
```
PublishObjects Collection Object

A collection of all PublishObject objects in the workbook. Each PublishObject object represents an item in a workbook that has been saved to a Web page and can be refreshed according to values specified by the properties and methods of the object.
Using the PublishObjects Collection

Use the `PublishObjects` property to return the `PublishObjects` collection. The following example saves all static `PublishObject` objects in the active workbook to the Web page.

```vba
Set objPObj = ActiveWorkbook.PUBLISHOBJECTS
For Each objPO in objPObj
    If objPO.HTMLType = xlHTMLStatic Then
        objPO.Publish
    End If
Next objPO
```

Use `PublishObjects(index)`, where `index` is the index number of the specified item in the workbook, to return a single `PublishObject` object. The following example sets the location where the first item in workbook three is saved.

```vba
Workbooks(3).PublishObjects(1).FileName = _
    "\myserver\public\finacct\stmtnt.htm"
```
QueryTable Object

- **Worksheets (Worksheet)**
- **QueryTables (QueryTable)**
- **Parameters (Parameter)**

Represents a worksheet table built from data returned from an external data source, such as an SQL server or a Microsoft Access database. The **QueryTable** object is a member of the **QueryTables** collection.
Using the QueryTable Object

Use `QueryTables(index)`, where `index` is the index number of the query table, to return a single `QueryTable` object. The following example sets query table one so that formulas to the right of it are automatically updated whenever it’s refreshed.

`Sheets("sheet1").QueryTables(1).FillAdjacentFormulas = True`
QueryTables Collection Object

A collection of **QueryTable** objects. Each **QueryTable** object represents a worksheet table built from data returned from an external data source.
Using the QueryTables Collection

Use the **QueryTables** property to return the **QueryTables** collection. The following example displays the number of query tables on the active worksheet.

```vba
MsgBox ActiveSheet.QueryTables.Count
```

Use the **Add** method to create a new query table and add it to the **QueryTables** collection. The following example creates a new query table.

```vba
Dim qt As QueryTable
sqlstring = "select 96Sales.totals from 96Sales where profit < 5"
connstring = _
    "ODBC;DSN=96SalesData;UID=Rep21;PWD=NUyHwYQI;Database=96Sales"
With ActiveSheet.QueryTables.Add(Connection:=connstring, _
    Destination:=Range("B1"), Sql:=sqlstring)
    .Refresh
End With
```
Range Collection

Multiple objects

- Range
- Multiple objects

Represents a cell, a row, a column, a selection of cells containing one or more contiguous blocks of cells, or a 3-D range.
Using the Range Collection

The following properties and methods for returning a Range object are described in this section:

- Range property
- Cells property
- Range and Cells
- Offset property
- Union method
Range Property

Use `Range(arg)`, where `arg` names the range, to return a `Range` object that represents a single cell or a range of cells. The following example places the value of cell A1 in cell A5.

```vba
Worksheets("Sheet1").Range("A5").Value = _
    Worksheets("Sheet1").Range("A1").Value
```

The following example fills the range A1:H8 with random numbers by setting the formula for each cell in the range. When it’s used without an object qualifier (an object to the left of the period), the `Range` property returns a range on the active sheet. If the active sheet isn’t a worksheet, the method fails. Use the `Activate` method to activate a worksheet before you use the `Range` property without an explicit object qualifier.

```vba
Worksheets("Sheet1").Activate
Range("A1:H8").Formula = "=Rand()"  'Range is on the active sheet
```

The following example clears the contents of the range named Criteria.

```vba
Worksheets(1).Range("Criteria").ClearContents
```

If you use a text argument for the range address, you must specify the address in A1-style notation (you cannot use R1C1-style notation).
Cells Property

Use **Cells**(row, column) where row is the row index and column is the column index, to return a single cell. The following example sets the value of cell A1 to 24.

```vba
Worksheets(1).Cells(1, 1).Value = 24
```

The following example sets the formula for cell A2.

```vba
ActiveSheet.Cells(2, 1).Formula = "=Sum(B1:B5)"
```

Although you can also use **Range**("A1") to return cell A1, there may be times when the **Cells** property is more convenient because you can use a variable for the row or column. The following example creates column and row headings on Sheet1. Notice that after the worksheet has been activated, the **Cells** property can be used without an explicit sheet declaration (it returns a cell on the active sheet).

```vba
Sub SetUpTable()
    Worksheets("Sheet1").Activate
    For TheYear = 1 To 5
        Cells(1, TheYear + 1).Value = 1990 + TheYear
    Next TheYear
    For TheQuarter = 1 To 4
        Cells(TheQuarter + 1, 1).Value = "Q" & TheQuarter
    Next TheQuarter
End Sub
```

Although you could use Visual Basic string functions to alter A1-style references, it's much easier (and much better programming practice) to use the **Cells**(1, 1) notation.

Use expression.Cells(row, column), where expression is an expression that returns a **Range** object, and row and column are relative to the upper-left corner of the range, to return part of a range. The following example sets the formula for cell C5.

```vba
Worksheets(1).Range("C5:C10").Cells(1, 1).Formula = "=Rand()"
```
Range and Cells

Use `Range(cell1, cell2)`, where `cell1` and `cell2` are `Range` objects that specify the start and end cells, to return a `Range` object. The following example sets the border line style for cells A1:J10.

```vba
With Worksheets(1)
    .Range(.Cells(1, 1), .Cells(10, 10)).Borders.LineStyle = xlThick
End With
```

Notice the period in front of each occurrence of the `Cells` property. The period is required if the result of the preceding `With` statement is to be applied to the `Cells` property — in this case, to indicate that the cells are on worksheet one (without the period, the `Cells` property would return cells on the active sheet).
Offset Property

Use **Offset(row, column)**, where *row* and *column* are the row and column offsets, to return a range at a specified offset to another range. The following example selects the cell three rows down from and one column to the right of the cell in the upper-left corner of the current selection. You cannot select a cell that isn’t on the active sheet, so you must first activate the worksheet.

```vba
Worksheets("Sheet1").Activate
    'Can't select unless the sheet is active
Selection.Offset(3, 1).Range("A1").Select
```
**Union Method**

Use `Union(range1, range2, ...)` to return multiple-area ranges — that is, ranges composed of two or more contiguous blocks of cells. The following example creates an object defined as the union of ranges A1:B2 and C3:D4, and then selects the defined range.

```vba
Dim r1 As Range, r2 As Range, myMultiAreaRange As Range
Worksheets("sheet1").Activate
Set r1 = Range("A1:B2")
Set r2 = Range("C3:D4")
Set myMultiAreaRange = Union(r1, r2)
myMultiAreaRange.Select
```

If you work with selections that contain more than one area, the **Areas** property is very useful. It divides a multiple-area selection into individual **Range** objects and then returns the objects as a collection. You can use the **Count** property on the returned collection to check for a selection that contains more than one area, as shown in the following example.

```vba
Sub NoMultiAreaSelection()
    NumberOfSelectedAreas = Selection.Areas.Count
    If NumberOfSelectedAreas > 1 Then
        MsgBox "You cannot carry out this command " & _
        "on multi-area selections"
    End If
End Sub
```
RecentFile Object

Application ¿RecentFiles (RecentFile)

Represents a file in the list of recently used files. The RecentFile object is a member of the RecentFiles collection.
Using the RecentFile Object

Use `RecentFiles(index)`, where `index` is the file number, to return a `RecentFile` object. The following example opens file two in the list of recently used files.

```
Application.RecentFiles(2).Open
```
RecentFiles Collection Object

Application ← RecentFiles (RecentFile)

Represents the list of recently used files. Each file is represented by a RecentFile object.
Using the RecentFiles Collection

Use the **RecentFiles** property to return the **RecentFiles** collection. The following example sets the maximum number of files in the list of recently used files.

```
Application.RecentFiles.Maximum = 6
```
RoutingSlip Object

Represented by the routing slip for a workbook. The routing slip is used to send a workbook through the electronic mail system.
Using the RoutingSlip Object

Use the `RoutingSlip` property to return the `RoutingSlip` object. The following example sets the delivery style for the routing slip attached to the active workbook. For a more detailed example, see the `RoutingSlip` property.

```vba
ActiveWorkbook.HasRoutingSlip = True
ActiveWorkbook.RoutingSlip.Delivery = xlOneAfterAnother
```
Remarks

The `RoutingSlip` object doesn’t exist and cannot be returned unless the `HasRoutingSlip` property for the workbook is `True`.
RTD Object

Application \textarrow{\textup{RTD}}

Represents a real-time data object.
Using the RTD object

Use the RTD property of the Application object to return a RTD object.
Scenario Object

Represented by the `Scenario` object, which is a group of input values (called *changing cells*) that's named and saved. The `Scenario` object is a member of the `Scenarios` collection. The `Scenarios` collection contains all the defined scenarios for a worksheet.
Using the Scenario Object

Use Scenarios(index), where index is the scenario name or index number, to return a single Scenario object. The following example shows the scenario named "Typical" on the worksheet named "Options."

Worksheets("options").Scenarios("typical").Show
Scenarios Collection Object

A collection of all the Scenario objects on the specified worksheet. A scenario is a group of input values (called changing cells) that’s named and saved.
Using the Scenarios Collection

Use the **Scenarios** method to return the **Scenarios** collection. The following example creates a summary for the scenarios on the worksheet named "Options," using cells J10 and J20 as the result cells.

```vba
Worksheets("options").Scenarios.CreateSummary _
    resultCells:=Worksheets("options").Range("j10,j20")
```

Use the **Add** method to create a new scenario and add it to the collection. The following example adds a new scenario named "Typical" to the worksheet named "Options." The new scenario has two changing cells, A2 and A12, with the respective values 55 and 60.

```vba
Worksheets("options").Scenarios.Add name:="Typical", _
    changingCells:=Worksheets("options").Range("A2,A12"), _
    values:=Array("55", "60")
```

Use **Scenarios(index)**, where **index** is the scenario name or index number, to return a single **Scenario** object. The following example shows the scenario named "Typical" on the worksheet named “Options.”

```vba
Worksheets("options").Scenarios("typical").Show
```
Series Object

Series Collection (Series)

- Border
- Points (Point)
- Interior

Represents a series in a chart. The Series object is a member of the SeriesCollection collection.
Using the Series Object

Use `SeriesCollection(index)`, where `index` is the series index number or name, to return a single `Series` object. The following example sets the color of the interior for the first series in embedded chart one on Sheet1.

```vba
Worksheets("sheet1").ChartObjects(1).Chart._
    SeriesCollection(1).Interior.Color = RGB(255, 0, 0)
```

The series index number indicates the order in which the series were added to the chart. `SeriesCollection(1)` is the first series added to the chart, and `SeriesCollection(SeriesCollection.Count)` is the last one added.
**SeriesCollection Collection Object**

- **Charts (Chart)**
- **ChartGroups (ChartGroup)**
  - **SeriesCollection (Series)**
    - **Border**
    - **Points (Point)**
    - **Interior**

A collection of all the **Series** objects in the specified chart or chart group.
Using the SeriesCollection Collection

Use the **SeriesCollection** method to return the **SeriesCollection** collection. The following example adds the data in cells C1:C10 on worksheet one to an existing series in the series collection in embedded chart one.

```vba
Worksheets(1).ChartObjects(1).Chart._
    SeriesCollection.Extend Worksheets(1).Range("c1:c10")
```

Use the **Add** method to create a new series and add it to the chart. The following example adds the data from cells A1:A19 as a new series on the chart sheet named "Chart1."

```vba
Charts("chart1").SeriesCollection.Add _
    source:=Worksheets("sheet1").Range("a1:a19")
```

Use **SeriesCollection(index)**, where *index* is the series index number or name, to return a single **Series** object. The following example sets the color of the interior for the first series in embedded chart one on Sheet1.

```vba
Worksheets("sheet1").ChartObjects(1).Chart._
    SeriesCollection(1).Interior.Color = RGB(255, 0, 0)
```
SeriesLines Object

Represents series lines in a chart group. Series lines connect the data values from each series. Only 2-D stacked bar or column chart groups can have series lines. This object isn’t a collection. There’s no object that represents a single series line; you either have series lines turned on for all points in a chart group or you have them turned off.
Using the SeriesLines Object

Use the SeriesLines property to return a SeriesLines object. The following example adds series lines to chart group one in embedded chart one on worksheet one (the chart must be a 2-D stacked bar or column chart).

```vba
With Worksheets(1).ChartObjects(1).Chart.ChartGroups(1)
    .HasSeriesLines = True
    .SeriesLines.Border.Color = RGB(0, 0, 255)
End With
```
Remarks

If the `HasSeriesLines` property is `False`, most properties of the `SeriesLines` object are disabled.
ShadowFormat Object

\[
\text{Shapes (Shape)} \downarrow \text{ShadowFormat} \downarrow \text{ColorFormat}
\]

Represents shadow formatting for a shape.
Using the ShadowFormat Object

Use the Shadow property to return a ShadowFormat object. The following example adds a shadowed rectangle to myDocument. The semitransparent, blue shadow is offset 5 points to the right of the rectangle and 3 points above it.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    50, 50, 100, 200).Shadow
    .ForeColor.RGB = RGB(0, 0, 128)
    .OffsetX = 5
    .OffsetY = -3
    .Transparency = 0.5
    .Visible = True
End With
Shape Object

Multiple objects $\rightarrow$ Shape $\leftarrow$ Multiple objects

Represents an object in the drawing layer, such as an AutoShape, freeform, OLE object, or picture. The Shape object is a member of the Shapes collection. The Shapes collection contains all the shapes on a slide.

Note  There are three objects that represent shapes: the Shapes collection, which represents all the shapes on a document; the ShapeRange collection, which represents a specified subset of the shapes on a document (for example, a ShapeRange object could represent shapes one and four on the document, or it could represent all the selected shapes on the document); and the Shape object, which represents a single shape on a document. If you want to work with several shapes at the same time or with shapes within the selection, use a ShapeRange collection. For an overview of how to work with either a single shape or with more than one shape at a time, see Working with Shapes (Drawing Objects).
Using the Shape Object

This section describes how to:

- Return an existing shape.
- Return a shape within the selection.
- Return the shapes attached to the ends of a connector.
- Return a newly created freeform.
- Return a single shape from within a group.
- Return a newly formed group of shapes.
Returning an Existing Shape

Use **Shapes**(*index*), where *index* is the shape name or the index number, to return a **Shape** object that represents a shape. The following example horizontally flips shape one and the shape named Rectangle 1 on myDocument.

```
Set myDocument =Worksheets(1)
myDocument.Shapes(1).Flip msoFlipHorizontal
myDocument.Shapes("Rectangle 1").Flip msoFlipHorizontal
```

Each shape is assigned a default name when you add it to the **Shapes** collection. To give the shape a more meaningful name, use the **Name** property. The following example adds a rectangle to myDocument, gives it the name Red Square, and then sets its foreground color and line style.

```
Set myDocument =Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
   144, 144, 72, 72)
   .Name = "Red Square"
   .Fill.ForeColor.RGB = RGB(255, 0, 0)
   .Line.DashStyle = msoLineDashDot
End With
```
Returning a Shape Within the Selection

Use `Selection.ShapeRange(index)`, where `index` is the shape name or the index number, to return a `Shape` object that represents a shape within the selection. The following example sets the fill for the first shape in the selection in the active window, assuming that there’s at least one shape in the selection.

```vba
ActiveWindow.Selection.ShapeRange(1).Fill.ForeColor.RGB = _
  RGB(255, 0, 0)
```
Returning the Shapes Attached to the Ends of a Connector

To return a Shape object that represents one of the shapes attached by a connector, use the BeginConnectedShape or EndConnectedShape property.
Returning a newly created freeform

Use the `BuildFreeform` and `AddNodes` methods to define the geometry of a new freeform, and use the `ConvertToShape` method to create the freeform and return the `Shape` object that represents it.
Returning a Single Shape from Within a Group

Use `GroupItems(index)`, where `index` is the shape name or the index number within the group, to return a `Shape` object that represents a single shape in a grouped shape.
Returning a Newly Formed Group of Shapes

Use the **Group** or **Regroup** method to group a range of shapes and return a single **Shape** object that represents the newly formed group. After a group has been formed, you can work with the group the same way you work with any other shape.
ShapeNode Object

Shapes (Shape) \(\rightarrow\) ShapeNodes (ShapeNode)

Represents the geometry and the geometry-editing properties of the nodes in a user-defined freeform. Nodes include the vertices between the segments of the freeform and the control points for curved segments. The ShapeNode object is a member of the ShapeNodes collection. The ShapeNodes collection contains all the nodes in a freeform.
Using the ShapeNode Object

Use **Nodes(index)**, where *index* is the node index number, to return a single **ShapeNode** object. If node one in shape three on *myDocument* is a corner point, the following example makes it a smooth point. For this example to work, shape three must be a freeform.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Nodes(1).EditingType = msoEditingCorner Then
        .Nodes.SetEditingType 1, msoEditingSmooth
    End If
End With
```
ShapeNodes Collection Object

Shapes (Shape) ▼ ShapeNodes (ShapeNode)

A collection of all the ShapeNode objects in the specified freeform. Each ShapeNode object represents either a node between segments in a freeform or a control point for a curved segment of a freeform. You can create a freeform manually or by using the BuildFreeform and ConvertToShape methods.
Using the ShapeNodes Collection

Use the **Nodes** property to return the **ShapeNodes** collection. The following example deletes node four in shape three on `myDocument`. For this example to work, shape three must be a freeform with at least four nodes.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes(3).Nodes.Delete 4
```

Use the **Insert** method to create a new node and add it to the **ShapeNodes** collection. The following example adds a smooth node with a curved segment after node four in shape three on `myDocument`. For this example to work, shape three must be a freeform with at least four nodes.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    .Insert 4, msoSegmentCurve, msoEditingSmooth, 210, 100
End With
```

Use **Nodes(index)**, where **index** is the node index number, to return a single **ShapeNode** object. If node one in shape three on `myDocument` is a corner point, the following example makes it a smooth point. For this example to work, shape three must be a freeform.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Nodes(1).EditingType = msoEditingCorner Then
        .Nodes.SetEditingType 1, msoEditingSmooth
    End If
End With
```
ShapeRange Collection

Represented as a shape range, which is a set of shapes on a document. A shape range can contain as few as a single shape or as many as all the shapes on the document. You can include whichever shapes you want — chosen from among all the shapes on the document or all the shapes in the selection — to construct a shape range. For example, you could construct a ShapeRange collection that contains the first three shapes on a document, all the selected shapes on a document, or all the freeforms on a document.

For an overview of how to work with either a single shape or with more than one shape at a time, see Working with Shapes (Drawing Objects).
Using the ShapeRange Collection

This section describes how to:

- Return a set of shapes you specify by name or index number.
- Return all or some of the selected shapes on a document.
Returning a Set of Shapes You Specify by Name or Index Number

Use `Shapes.Range(index)`, where `index` is the name or index number of the shape or an array that contains either names or index numbers of shapes, to return a `ShapeRange` collection that represents a set of shapes on a document. You can use the `Array` function to construct an array of names or index numbers. The following example sets the fill pattern for shapes one and three on `myDocument`.

```
Set myDocument = Worksheets(1)
myDocument.Shapes.Range(Array(1, 3)).Fill.Patterned msoPatternHorizontalBrick
```

The following example sets the fill pattern for the shapes named Oval 4 and Rectangle 5 on `myDocument`.

```
Set myDocument = Worksheets(1)
Set myRange = myDocument.Shapes.Range(Array("Oval 4", "Rectangle 5"))
myRange.Fill.Patterned msoPatternHorizontalBrick
```

Although you can use the `Range` property to return any number of shapes or slides, it's simpler to use the `Item` method if you want to return only a single member of the collection. For example, `Shapes(1)` is simpler than `Shapes.Range(1)`. 
Returning All or Some of the Selected Shapes on a Document

Use the `ShapeRange` property of the `Selection` object to return all the shapes in the selection. The following example sets the fill foreground color for all the shapes in the selection in window one, assuming that there’s at least one shape in the selection.

```plaintext
Windows(1).Selection.ShapeRange.Fill.ForeColor.RGB = _
    RGB(255, 0, 255)
```

Use `Selection.ShapeRange(index)`, where `index` is the shape name or the index number, to return a single shape within the selection. The following example sets the fill foreground color for shape two in the collection of selected shapes in window one, assuming that there are at least two shapes in the selection.

```plaintext
Windows(1).Selection.ShapeRange(2).Fill.ForeColor.RGB = _
    RGB(255, 0, 255)
```
Shapes Collection

A collection of all the Shape objects on the specified sheet. Each Shape object represents an object in the drawing layer, such as an AutoShape, freeform, OLE object, or picture.

**Note** If you want to work with a subset of the shapes on a document — for example, to do something to only the AutoShapes on the document or to only the selected shapes — you must construct a ShapeRange collection that contains the shapes you want to work with. For an overview of how to work either with a single shape or with more than one shape at a time, see [Working with Shapes (Drawing Objects)](Working with Shapes (Drawing Objects)).
Using the Shapes Collection

Use the **Shapes** property to return the **Shapes** collection. The following example selects all the shapes on myDocument.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes.SelectAll
```

**Note** If you want to do something (like delete or set a property) to all the shapes on a sheet at the same time, select all the shapes and then use the **ShapeRange** property on the selection to create a **ShapeRange** object that contains all the shapes on the sheet, and then apply the appropriate property or method to the **ShapeRange** object.

Use **Shapes(index)**, where *index* is the shape’s name or index number, to return a single **Shape** object. The following example sets the fill to a preset shade for shape one on myDocument.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes(1).Fill.PresetGradient _
    msoGradientHorizontal, 1, msoGradientBrass
```

Use **Shapes.Range(index)**, where *index* is the shape’s name or index number or an array of shape names or index numbers, to return a **ShapeRange** collection that represents a subset of the **Shapes** collection. The following example sets the fill pattern for shapes one and three on myDocument.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes.Range(Array(1, 3)).Fill.Patterned _
    msoPatternHorizontalBrick
```
Remarks

An ActiveX control on a sheet has two names: the name of the shape that contains the control, which you can see in the Name box when you view the sheet, and the code name for the control, which you can see in the cell to the right of (Name) in the Properties window. When you first add a control to a sheet, the shape name and code name match. However, if you change either the shape name or code name, the other isn’t automatically changed to match.

You use the code name of a control in the names of its event procedures. However, when you return a control from the Shapes or OLEObjects collection for a sheet, you must use the shape name, not the code name, to refer to the control by name. For example, assume that you add a check box to a sheet and that both the default shape name and the default code name are CheckBox1. If you then change the control code name by typing chkFinished next to (Name) in the Properties window, you must use chkFinished in event procedures names, but you still have to use CheckBox1 to return the control from the Shapes or OLEObject collection, as shown in the following example.

Private Sub chkFinished_Click()
    ActiveSheet.OLEObjects("CheckBox1").Object.Value = 1
End Sub
Sheets Collection Object

A collection of all the sheets in the specified or active workbook. The Sheets collection can contain Chart or Worksheet objects.

The Sheets collection is useful when you want to return sheets of any type. If you need to work with sheets of only one type, see the object topic for that sheet type.
Using the Sheets Collection

Use the **Sheets** property to return the **Sheets** collection. The following example prints all sheets in the active workbook.

```vba
Sheets.PrintOut
```

Use the **Add** method to create a new sheet and add it to the collection. The following example adds two chart sheets to the active workbook, placing them after sheet two in the workbook.

```vba
Sheets.Add type:=xlChart, count:=2, after:=Sheets(2)
```

Use **Sheets(index)**, where *index* is the sheet name or index number, to return a single **Chart** or **Worksheet** object. The following example activates the sheet named "sheet1."

```vba
Sheets("sheet1").Activate
```

Use **Sheets(array)** to specify more than one sheet. The following example moves the sheets named "Sheet4" and "Sheet5" to the beginning of the workbook.

```vba
Sheets(Array("Sheet4", "Sheet5")).Move before:=Sheets(1)
```
SmartTag Object

- **SmartTags**: Represents an identifier that is assigned to a cell.
Using the SmartTag object

Use the Add method of the SmartTags collection to return a SmartTag object.

Once a SmartTag object is returned, you can store extra metadata to a smart tag by using the Add method with the Properties property.

See the following example for a demonstration of this feature. This example adds a smart tag titled "MSFT" to cell A1, then adds extra metadata called "Market" with the value of "Nasdaq" to the smart tag and then returns the value of the property to the user. This example assumes the host system is connected to the Internet.

Sub UseProperties()

    Dim strLink As String
    Dim strType As String

    ' Define SmartTag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    Range("A1").Formula = "MSFT"

    ' Add a property for MSFT smart tag and define its value.
    Range("A1").SmartTags.Add(strLink).Properties.Add _
        Name:="Market", Value:="Nasdaq"

    ' Notify the user of the smart tag's value.
    MsgBox Range("A1").SmartTags.Add(strLink).Properties("Market").V

End Sub

To view the extra metadata, use the XML property of the SmartTag object. This example, which builds upon the previous example, displays the extra metadata that was added to the smart tag in cell A1. The metadata for this smart tag represents the XML that would be passed to the action handler. This example assumes the host system is connected to the Internet.
Sub CheckXML()

Dim strLink As String
Dim strType As String

' Define SmartTag variables.
strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
strType = "stockview"

' Enable smart tags to be embedded and recognized.
ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
Application.SmartTagRecognizers.Recognize = True

Range("A1").Formula = "MSFT"

' Display the sample of the XML.
MsgBox Range("A1").SmartTags.Add(strLink).XML

End Sub
SmartTagAction Object

SmartTagActions \textleftarrow SmartTagAction

Represents the actions that can be performed with smart tags.
Using the SmartTagAction object

Use the Item property of the SmartTagActions collection to return a SmartTagAction object.

Once a SmartTagAction object has been returned, you can activate a smart tag to automatically annotate data using the Execute method. This example inserts a refreshable stock quote for the ticker symbol "MSFT" and it assumes the host system is connected to the Internet.

Sub ExecuteASmartTag()

    Dim strAction As String
    strAction = "Insert refreshable stock price"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    ' Invoke a smart tag for the Microsoft ticker symbol.
    With Range("A1")
        .Formula = "MSFT"
        .SmartTags(_
            "urn:schemas-microsoft-com:office:smarttags#stockticker"
        ).SmartTagActions(strAction).Execute
    End With

End Sub
SmartTagActions Collection

SmartTag  <SmartTagActions
  <SmartTagAction

A collection of SmartTagAction objects that represent the actions that can be performed with smart tags.
Using the SmartTagActions collection

Use the SmartTagActions property of the SmartTag object to return a SmartTagActions collection.

This example inserts a refreshable stock quote for the ticker symbol "MSFT" and it assumes the host system is connected to the Internet.

Sub ExecuteASmartTag()
    Dim strAction As String
    strAction = "Insert refreshable stock price"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    ' Invoke a smart tag for the Microsoft ticker symbol.
    With Range("A1")
        .Formula = "MSFT"
        .SmartTags(_
            "urn:schemas-microsoft-com:office:smarttags#stockticker"
        ).SmartTagActions(strAction).Execute
    End With
End Sub
SmartTagOptions Object

Workbook \rightarrow SmartTagOptions

Represents the options that can be performed with smart tags.
Using the SmartTagOptions object

Use the **SmartTagOptions** property of the **Workbook** object to return a **SmartTagOptions** object.

Once a **SmartTagOptions** object is returned, you can use the following properties to determine the display options of smart tags and whether or not to have smart tags be embedded on the active workbook.

- **EmbedSmartTags**
- **DisplaySmartTags**

This example enables the ability to embed smart tags on the active workbook and then checks the display settings for smart tags.

```vba
Sub CheckDisplayOptions()

' Enable SmartTags to be embedded on the active workbook.
ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True

' Check the display options for smart tags.
Select Case ActiveWorkbook.SmartTagOptions.DisplaySmartTags
    Case xlButtonOnly
        MsgBox "The button for smart tags will only be displayed"
    Case xlDisplayNone
        MsgBox "Nothing will be displayed for smart tags."
    Case xlIndicatorAndButton
        MsgBox "The button and indicator will be displayed for s
End Select

End Sub
```
SmartTagRecognizer Object

SmartTagRecognizers represents recognition engines which label data with types of information as you work in Microsoft Excel.
Using the SmartTagRecognizer object

Use the Item(index) property of the SmartTagRecognizers collection to return a single SmartTagRecognizer object.

Once a SmartTagRecognizer object is returned, you can determine if smart tag recognizers are enabled for the application. This example determines if smart tag recognizers are enabled and notifies the user.

Sub Check_SmartTagRecognizers()
    ' Determine if smart tag recognizers are enabled.
    If Application.SmartTagRecognizers.Item(1).Enabled = True Then
        MsgBox "Smart tag recognizers are enabled."
    Else
        MsgBox "Smart tag recognizers are not enabled."
    End If
End Sub
SmartTagRecognizers Collection

A collection of SmartTagRecognizer objects that represent recognition engines which label data with types of information as you work in Microsoft Excel.
Using the SmartTagRecognizers collection

Use the SmartTagRecognizers property of the Application object to return a SmartTagRecognizers collection.

This example displays the first smart tag recognizer item available for the application or displays a message that none exist.

Sub CheckforSmartTagRecognizers()
    ' Handle run-time error if no smart tag recognizers exist.
    On Error Goto No_SmartTag_Recognizers_In_List

    ' Notify the user of the first smart tag recognizer item.
    MsgBox "The first smart tag recognizer is: " & _
        Application.SmartTagRecognizers.Item(1)
    Exit Sub

No_SmartTag_Recognizers_In_List:
    MsgBox "No smart tag recognizers exist in list."

End Sub
SmartTags Collection

Multiple objects of SmartTag

A collection of SmartTag objects that represent the identifiers assigned to each cell.
Using the SmartTags collection

Use the SmartTags property of the Range collection or Worksheet object, to return a SmartTag collection. The following example demonstrates the use of the SmartTags property with the Add method.

This example adds a smart tag titled "MSFT" to cell A1, then adds extra metadata called "Market" with the value of "Nasdaq" to the smart tag and then returns the value of the property to the user. This example assumes the host system is connected to the Internet.

Sub UseProperties()
    Dim strLink As String
    Dim strType As String

    ' Define smart tag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    Range("A1").Formula = "MSFT"

    ' Add a property for MSFT smart tag and define it's value.
    Range("A1").SmartTags.Add(strLink).Properties.Add _
    Name:="Market", Value:="Nasdaq"

    ' Notify the user of the smart tag's value.
    MsgBox Range("A1").SmartTags.Add(strLink).Properties("Market").V
End Sub
SoundNote Object

This object should not be used. Sound notes have been removed from Microsoft Excel.
Speech Object

Application → Speech

Contains methods and properties that pertain to speech.
Using the Speech object

Use the **Speech** property of the **Application** object to return a **Speech** object.

Once a **Speech** object is returned, you can use the **Speak** method of **Speech** object to play back the contents of a string. In the following example, Microsoft Excel plays back "Hello". This example assumes speech features have been installed on the host system.

```vba
Sub UseSpeech()
    Application.Speech.Speak "Hello"
End Sub()
```

**Note**    There is a speech feature in the setup tree that pertains to Dictation and Command & Control that does not have to be installed.
SpellingOptions Object

Application SpellingOptions

Represents the various spell checking options for a worksheet.
Using the SpellingOptions object

Use the `SpellingOptions` property of the `Application` object to return a `SpellingOptions` object.

Once a `SpellingOptions` object is returned, you can use its following properties to set or return various spell checking options.

- `ArabicModes`
- `DictLang`
- `GermanPostReform`
- `HebrewModes`
- `IgnoreCaps`
- `IgnoreFileNames`
- `IgnoreMixedDigits`
- `KoreanCombineAux`
- `KoreanProcessCompound`
- `KoreanUseAutoChangeList`
- `SuggestMainOnly`
- `UserDict`

The following example uses the `IgnoreCaps` property to disable spell checking for words that have all capitalized letters. In this example, "Testt", but not "TESTT", is identified by the spell checker.

Sub IgnoreAllCAPS()

    ' Place mispelled versions of the same word in all caps and mixe
    Range("A1").Formula = "Testt"
    Range("A2").Formula = "TESTT"

    With Application.SpellingOptions
        .SuggestMainOnly = True
        .IgnoreCaps = True
    End With

    ' Run a spell check.
    Cells.CheckSpelling

End Sub
Style Object

Represented as a style description for a range. The **Style** object contains all style attributes (font, number format, alignment, and so on) as properties. There are several built-in styles, including Normal, Currency, and Percent. Using the **Style** object is a fast and efficient way to change several cell-formatting properties on multiple cells at the same time.

For the **Workbook** object, the **Style** object is a member of the **Styles** collection. The **Styles** collection contains all the defined styles for the workbook.
Using the Style Object

Use the **Style** property to return the **Style** object used with a **Range** object. The following example applies the Percent style to cells A1:A10 on Sheet1.

```vba
Worksheets("Sheet1").Range("A1:A10").Style.Name = "Percent"
```

You can change the appearance of a cell by changing properties of the style applied to that cell. Keep in mind, however, that changing a style property will affect all cells already formatted with that style.

Use **Styles(index)**, where *index* is the style index number or name, to return a single **Style** object from the workbook **Styles** collection. The following example changes the Normal style for the active workbook by setting the style’s **Bold** property.

```vba
ActiveWorkbook.Styles("Normal").Font.Bold = True
```

Styles are sorted alphabetically by style name. The style index number denotes the position of the specified style in the sorted list of style names. **Styles(1)** is the first style in the alphabetic list, and **Styles(Styles.Count)** is the last one in the list.

For more information about creating and modifying a style, see the **Styles** object.
Styles Collection

A collection of all the Style objects in the specified or active workbook. Each Style object represents a style description for a range. The Style object contains all style attributes (font, number format, alignment, and so on) as properties. There are several built-in styles — including Normal, Currency, and Percent — which are listed in the Style name box in the Style dialog box (Format menu).
Using the Styles Collection

Use the Styles property to return the Styles collection. The following example creates a list of style names on worksheet one in the active workbook.

```vba
For i = 1 To ActiveWorkbook.Styles.Count
    Worksheets(1).Cells(i, 1) = ActiveWorkbook.Styles(i).Name
Next
```

Use the **Add** method to create a new style and add it to the collection. The following example creates a new style based on the Normal style, modifies the border and font, and then applies the new style to cells A25:A30.

```vba
With ActiveWorkbook.Styles.Add(Name:="Bookman Top Border")
    .Borders(xlTop).LineStyle = xlDouble
    .Font.Bold = True
    .Font.Name = "Bookman"
End With
Worksheets(1).Range("A25:A30").Style = "Bookman Top Border"
```

Use **Styles(index)**, where *index* is the style index number or name, to return a single Style object from the workbook Styles collection. The following example changes the Normal style for the active workbook by setting its **Bold** property.

```vba
ActiveWorkbook.Styles("Normal").Font.Bold = True
```
Tab Object

Multiple objects Tab

Represents a tab in a chart or a worksheet.
Using the Tab object

Use the Tab property of the Chart object or Worksheet object to return a Tab object.

Once a Tab object is returned, you can use the ColorIndex property determine the settings of a tab for a chart or worksheet.

In the following example, Microsoft Excel determines if the worksheet's first tab color index is set to none and notifies the user.

Sub CheckTab()
    ' Determine if color index of 1st tab is set to none.
    If Worksheets(1).Tab.ColorIndex = xlColorIndexNone Then
        MsgBox "The color index is set to none for the first " & _
            "worksheet tab."
    Else
        MsgBox "The color index for the tab of the first worksheet "
            "is not set none."
    End If
End Sub
TextEffectFormat Object

Shapes (Shape) ← TextEffectFormat

Contains properties and methods that apply to WordArt objects.
Using the TextEffectFormat Object

Use the **TextEffect** property to return a **TextEffectFormat** object. The following example sets the font name and formatting for shape one on `myDocument`. For this example to work, shape one must be a WordArt object.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).TextEffect
    .FontName = "Courier New"
    .FontBold = True
    .FontItalic = True
End With
**TextFrame Object**

Shapes (Shape) | TextFrame
---|---
Characters

Represents the text frame in a Shape object. Contains the text in the text frame as well as the properties and methods that control the alignment and anchoring of the text frame.
Using the TextFrame Object

Use the TextFrame property to return a TextFrame object. The following example adds a rectangle to myDocument, adds text to the rectangle, and then sets the margins for the text frame.

```plaintext
Set myDocument =Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
  0, 0, 250, 140).TextFrame
  .Characters.Text = "Here is some test text"
  .MarginBottom = 10
  .MarginLeft = 10
  .MarginRight = 10
  .MarginTop = 10
End With
```
ThreeDFormat Object

Represents a shape's three-dimensional formatting.
Using The ThreeDFormat Object

Use the **ThreeD** property to return a **ThreeDFormat** object. The following example adds an oval to myDocument and then specifies that the oval be extruded to a depth of 50 points and that the extrusion be purple.

```vba
Set myDocument =Worksheets(1)
Set myShape = myDocument.Shapes.AddShape(msoShapeOval, _
         90, 90, 90, 40)
With myShape.ThreeD
    .Visible = True
    .Depth = 50
    .ExtrusionColor.RGB = RGB(255, 100, 255)
    ' RGB value for purple
End With
```
Remarks

You cannot apply three-dimensional formatting to some kinds of shapes, such as beveled shapes or multiple-disjoint paths. Most of the properties and methods of the ThreeDFormat object for such a shape will fail.
**TickLabels Object**

Charts (Chart) | Axes (Axis)
---|---
TickLabels | Font

Represents the tick-mark labels associated with tick marks on a chart axis. This object isn’t a collection. There’s no object that represents a single tick-mark label; you must return all the tick-mark labels as a unit.

Tick-mark label text for the category axis comes from the name of the associated category in the chart. The default tick-mark label text for the category axis is the number that indicates the position of the category relative to the left end of this axis. To change the number of unlabeled tick marks between tick-mark labels, you must change the **TickLabelSpacing** property for the category axis.

Tick-mark label text for the value axis is calculated based on the **MajorUnit**, **MinimumScale**, and **MaximumScale** properties of the value axis. To change the tick-mark label text for the value axis, you must change the values of these properties.
Using the TickLabels Object

Use the **TickLabels** property to return the **TickLabels** object. The following example sets the number format for the tick-mark labels on the value axis in embedded chart one on Sheet1.

```vba
Worksheets("sheet1").ChartObjects(1).Chart._
    .Axes(xlValue).TickLabels.NumberFormat = "0.00"
```
TreeviewControl Object

Represents the hierarchical member-selection control of a cube field. You use this object primarily for macro recording; it is not intended for any other use.
Using the TreeviewControl Object

Use the `TreeviewControl` property to return the `TreeviewControl` object. The following example sets the control to its “drilled” (expanded, or visible) status for the states of California and Maryland in the second PivotTable report on the active worksheet.

```vbnet
ActiveSheet.PivotTables("PivotTable2")
    .CubeFields(1).TreeviewControl.Drilled = _
        Array(Array("", ""), _
            Array("[state].[states].[CA]", _
                "[state].[states].[MD]"))
```
Trendline Object

Represents a trendline in a chart. A trendline shows the trend, or direction, of data in a series. The Trendline object is a member of the Trendlines collection. The Trendlines collection contains all the Trendline objects for a single series.
Using the Trendline Object

Use **Trendlines**(index), where *index* is the trendline index number, to return a single **Trendline** object. The following example changes the trendline type for the first series in embedded chart one on worksheet one. If the series has no trendline, this example will fail.

```vba
Worksheets(1).ChartObjects(1).Chart._
    SeriesCollection(1).Trendlines(1).Type = xlMovingAvg
```

The index number denotes the order in which the trendlines were added to the series. **Trendlines(1)** is the first trendline added to the series, and **Trendlines(Trendlines.Count)** is the last one added.
Trendlines Collection Object

A collection of all the Trendline objects for the specified series. Each Trendline object represents a trendline in a chart. A trendline shows the trend, or direction, of data in a series.
Using the Trendlines Collection

Use the `Trendlines` method to return the `Trendlines` collection. The following example displays the number of trendlines for series one in Chart1.

```
MsgBox Charts(1).SeriesCollection(1).Trendlines.Count
```

Use the `Add` method to create a new trendline and add it to the series. The following example adds a linear trendline to the first series in embedded chart one on Sheet1.

```
Worksheets("sheet1").ChartObjects(1).Chart.SeriesCollection(1) ._ .Trendlines.Add type:=xlLinear, name:="Linear Trend"
```

Use `Trendlines(index)`, where `index` is the trendline index number, to return a single `TrendLine` object. The following example changes the trendline type for the first series in embedded chart one on worksheet one. If the series has no trendline, this example will fail.

```
Worksheets(1).ChartObjects(1).Chart._ SeriesCollection(1).Trendlines(1).Type = xlMovingAvg
```

The index number denotes the order in which the trendlines were added to the series. `Trendlines(1)` is the first trendline added to the series, and `Trendlines(Trendlines.Count)` is the last one added.
UpBars Object

Charts (Chart)  ChartGroups (ChartGroup)
  UpBars
    Border
    Interior

Represents the up bars in a chart group. Up bars connect points on series one with higher values on the last series in the chart group (the lines go up from series one). Only 2-D line groups that contain at least two series can have up bars. This object isn’t a collection. There’s no object that represents a single up bar; you either have up bars turned on for all points in a chart group or you have them turned off.
Using the UpBars Object

Use the **UpBars** property to return the **UpBars** object. The following example turns on up and down bars for chart group one in embedded chart one on Sheet5. The example then sets the up bar color to blue and sets the down bar color to red.

```vba
With Worksheets("sheet5").ChartObjects(1).Chart.ChartGroups(1)
    .HasUpDownBars = True
    .UpBars.Interior.Color = RGB(0, 0, 255)
    .DownBars.Interior.Color = RGB(255, 0, 0)
End With
```
Remarks

If the HasUpDownBars property is False, most properties of the UpBars object are disabled.
UsedObjects Collection

Application - UsedObjects

Represents objects that have been allocated in a workbook.
Using the UsedObjects collection

Use the **UsedObjects** property of the **Application** object to return a **UsedObjects** collection.

Once a **UsedObjects** collection is returned, you can determine the quantity of used objects in a Microsoft Excel application using the **Count** property.

In this example, Microsoft Excel determines the quantity of objects that have been allocated and notifies the user. This example assumes a recalculation was performed in the application and was interrupted before finishing.

```vba
Sub CountUsedObjects()
    MsgBox "The number of used objects in this application is: " & _
        Application.UsedObjects.Count
End Sub
```
**UserAccess Object**

- **UserAccessList**
  - **UserAccess**

  Represents the user access for a protected range.
Using the UserAccess object

Use the `Add` method or the `Item` property of the `UserAccessList` collection to return a `UserAccess` object.

Once a `UserAccess` object is returned, you can determine if access is allowed for a particular range in a worksheet, using the `AllowEdit` property. The following example adds a range that can be edited on a protected worksheet and notifies the user the title of that range.

```vba
Sub UseAllowEditRanges()
    Dim wksSheet As Worksheet
    Set wksSheet = Application.ActiveSheet

    ' Add a range that can be edited on the protected worksheet.

    ' Notify the user the title of the range that can be edited.
    MsgBox wksSheet.Protection.AllowEditRanges(1).Title
End Sub
```
UserAccessList Collection

A collection of UserAccess objects that represent the user access for protected ranges.
Using the UserAccessList Collection

Use the **Users** property of the **ProtectedRange** object to return a **UserAccessList** collection.

Once a **UserAccessList** collection is returned you can use the **Count** property to determine the number of users that have access to a protected range. In the following example, Microsoft Excel notifies the user the numbers users that have access to the first protected range. This example assumes that a protected range exists on the active worksheet.

```vba
Sub UseDeleteAll()
    Dim wksSheet As Worksheet
    Set wksSheet = Application.ActiveSheet
    MsgBox wksSheet.Protection.AllowEditRanges(1).Users.Count
End Sub
```
Validation Object

Range Validation

Represents data validation for a worksheet range.
Using the Validation Object

Use the **Validation** property to return the **Validation** object. The following example changes the data validation for cell E5.

```vba
Range("e5").Validation _
    .Modify xlValidateList, xlValidAlertStop, "=$A$1:$A$10"
```

Use the **Add** method to add data validation to a range and create a new **Validation** object. The following example adds data validation to cell E5.

```vba
With Range("e5").Validation
    .Add Type:=xlValidateWholeNumber, _
        AlertStyle:=xlValidAlertInformation, _
        Minimum:="5", Maximum:="10"
    .InputTitle = "Integers"
    .ErrorTitle = "Integers"
    .InputMessage = "Enter an integer from five to ten"
    .ErrorMessage = "You must enter a number from five to ten"
End With
```
VPageBreak Object

Sheets → VPageBreaks (VPageBreak)

Represents a vertical page break. The VPageBreak object is a member of the VPageBreaks collection.
Using the VPageBreak Object

Use VPageBreaks(index), where index is the page break index number of the page break, to return a VPageBreak object. The following example changes the location of vertical page break one.

Worksheets(1).VPageBreaks(1).Location = Worksheets(1).Range("e5")
VPageBreaks Collection Object

Sheets \texttt{VPageBreaks (VPageBreak)}

A collection of vertical page breaks within the print area. Each vertical page break is represented by a \texttt{VPageBreak} object.
Using the VPageBreaks Collection

Use the **VPageBreaks** property to return the **VPageBreaks** collection. Use the **Add** method to add a vertical page break. The following example adds a vertical page break to the left of the active cell.

**ActiveSheet.VPageBreaks.Add Before:=ActiveCell**

If you add a page break that does not intersect the print area, then the newly-added **VPageBreak** object will not appear in the **VPageBreaks** collection for the print area. The contents of the collection may change if the print area is resized or redefined.

When the **Application** property, **Count** property, **Creator** property, **Item** property, **Parent** property or **Add** method is used in conjunction with the **VPageBreaks** property:

- For an automatic print area, the **VPageBreaks** property applies only to the page breaks within the print area.
- For a user-defined print area of the same range, the **VPageBreaks** property applies to all of the page breaks.
Walls Object

Charts (Chart)  \hspace{1em} Walls
  \hspace{1em} Border
  \hspace{1em} Interior

Represents the walls of a 3-D chart. This object isn’t a collection. There’s no object that represents a single wall; you must return all the walls as a unit.
Using the Walls Object

Use the **Walls** property to return the **Walls** object. The following example sets the pattern on the walls for embedded chart one on Sheet1. If the chart isn’t a 3-D chart, this example will fail.

```vba
Worksheets("Sheet1").ChartObjects(1).Chart.Walls.Interior.Pattern = xlGray75
```
Watch Object

Watch

Represents a range which is tracked when the worksheet is recalculated. The Watch object allows users to verify the accuracy of their models and debug problems they encounter. The Watch object is a member of the Watches collection.
Using the Watch object

Use the use the **Add** method or the **Item** property of the **Watches** collection to return a **Watch** object.

In the following example, Microsoft Excel creates a new **Watch** object using the **Add** method. This example creates a summation formula in cell A3, and then adds this cell to the watch facility.

Sub AddWatch()
    With Application
        .Range("A1").Formula = 1
        .Range("A2").Formula = 2
        .Range("A3").Formula = "=Sum(A1:A2)"
        .Range("A3").Select
        .Watches.Add Source:=ActiveCell
    End With
End Sub

You can specify to remove individual cells from the watch facility by using the **Delete** method of the **Watches** collection. This example deletes cell A3 on worksheet 1 of book 1 from the Watch Window. This example assumes you have added the cell A3 on sheet 1 of book 1 (using the previous example to add a **Watch** object).

Sub DeleteAWatch()
    Application.Watches(Workbooks("Book1").Sheets("Sheet1").Range("A3").Select)
End Sub

You can also specify to remove all cells from the Watch Window, by using the **Delete** method of the **Watches** collection. This example deletes all cells from the Watch Window.

Sub DeleteAllWatches()
    Application.Watches.Delete
End Sub
Watches Collection

A collection of all the Watch objects in a specified application.
Using the Watches collection

Use the Watches property of the Application object to return a Watches collection.

In the following example, Microsoft Excel creates a new Watch object using the Add method. This example creates a summation formula in cell A3, and then adds this cell to the watch facility.

Sub AddWatch()

    With Application
        .Range("A1").Formula = 1
        .Range("A2").Formula = 2
        .Range("A3").Formula = "=Sum(A1:A2)"
        .Range("A3").Select
        .Watches.Add Source:=ActiveCell
    End With

End Sub

You can specify to remove individual cells from the watch facility by using the Delete method of the Watches collection. This example deletes cell A3 on worksheet 1 of book 1 from the Watch Window. This example assumes you have added the cell A3 on sheet 1 of book 1 (using the previous example to add a Watch object).

Sub DeleteAWatch()

    Application.Watches(Workbooks("Book1").Sheets("Sheet1").Range("A3")).Delete

End Sub

You can also specify to remove all cells from the Watch Window, by using the Delete method of the Watches collection. This example deletes all cells from the Watch Window.

Sub DeleteAllWatches()

    Application.Watches.Delete

End Sub
WebOptions Object

Contains workbook-level attributes used by Microsoft Excel when you save a document as a Web page or open a Web page. You can return or set attributes either at the application (global) level or at the workbook level. (Note that attribute values can be different from one workbook to another, depending on the attribute value at the time the workbook was saved.) Workbook-level attribute settings override application-level attribute settings. Application-level attributes are contained in the DefaultWebOptions object.
Using the WebOptions Object

Use the **WebOptions** property to return the **WebOptions** object. The following example checks to see whether PNG (Portable Network Graphics) is allowed as an image format and then sets the `strImageFileType` variable accordingly.

```vba
Set objAppWebOptions = Workbooks(1).WebOptions
With objAppWebOptions
    If .AllowPNG = True Then
        strImageFileType = "PNG"
    Else
        strImageFileType = "JPG"
    End If
End With
```
Window Object

Represents a window. Many worksheet characteristics, such as scroll bars and gridlines, are actually properties of the window. The Window object is a member of the Windows collection. The Windows collection for the Application object contains all the windows in the application, whereas the Windows collection for the Workbook object contains only the windows in the specified workbook.
Using the Window Object

Use Windows(index), where index is the window name or index number, to return a single Window object. The following example maximizes the active window.

Windows(1).WindowState = xlMaximized

Note that the active window is always Windows(1).

The window caption is the text shown in the title bar at the top of the window when the window isn’t maximized. The caption is also shown in the list of open files on the bottom of the Windows menu. Use the Caption property to set or return the window caption. Changing the window caption doesn’t change the name of the workbook. The following example turns off cell gridlines for the worksheet shown in the Book1.xls:1 window.

Windows("book1.xls":1).DisplayGridlines = False
Windows Collection Object

Application → Workbooks (Workbook)
   → Windows (Window)
   → Panes (Pane)

A collection of all the Window objects in Microsoft Excel. The Windows collection for the Application object contains all the windows in the application, whereas the Windows collection for the Workbook object contains only the windows in the specified workbook.
Using the Windows Collection

Use the **Windows** property to return the **Windows** collection. The following example cascades all the windows that are currently displayed in Microsoft Excel.

```vba
Windows.Arrange arrangeStyle:=xlCascade
```

Use the **NewWindow** method to create a new window and add it to the collection. The following example creates a new window for the active workbook.

```vba
ActiveWorkbook.NewWindow
```

Use **Windows(index)**, where `index` is the window name or index number, to return a single **Window** object. The following example maximizes the active window.

```vba
Windows(1).WindowState = xlMaximized
```

Note that the active window is always **Windows(1)**.
Workbook Object

Multiple objects \texttt{Workbook} \texttt{Multiple objects}

Represents a Microsoft Excel workbook. The \texttt{Workbook} object is a member of the \texttt{Workbooks} collection. The \texttt{Workbooks} collection contains all the \texttt{Workbook} objects currently open in Microsoft Excel.
Using the Workbook Object

The following properties for returning a `Workbook` object are described in this section:

- `Workbooks` property
- `ActiveWorkbook` property
- `ThisWorkbook` property
**Workbooks Property**

Use `Workbooks(index)`, where `index` is the workbook name or index number, to return a single `Workbook` object. The following example activates workbook one.

```
Workbooks(1).Activate
```

The index number denotes the order in which the workbooks were opened or created. `Workbooks(1)` is the first workbook created, and `Workbooks(Workbooks.Count)` is the last one created. Activating a workbook doesn’t change its index number. All workbooks are included in the index count, even if they’re hidden.

The `Name` property returns the workbook name. You cannot set the name by using this property; if you need to change the name, use the `SaveAs` method to save the workbook under a different name. The following example activates Sheet1 in the workbook named Cogs.xls (the workbook must already be open in Microsoft Excel).

```
Workbooks("Cogs.xls").Worksheets("Sheet1").Activate
```
ActiveWorkbook Property

The ActiveWorkbook property returns the workbook that’s currently active. The following example sets the name of the author for the active workbook.

ActiveWorkbook.Author = "Jean Selva"
**ThisWorkbook Property**

The **ThisWorkbook** property returns the workbook where the Visual Basic code is running. In most cases, this is the same as the active workbook. However, if the Visual Basic code is part of an add-in, the **ThisWorkbook** property won’t return the active workbook. In this case, the active workbook is the workbook calling the add-in, whereas the **ThisWorkbook** property returns the add-in workbook.

If you’ll be creating an add-in from your Visual Basic code, you should use the **ThisWorkbook** property to qualify any statement that must be run on the workbook you compile into the add-in.
A collection of all the *Workbook* objects that are currently open in the Microsoft Excel application.
Using the Workbooks Collection

Use the `Workbooks` property to return the `Workbooks` collection. The following example closes all open workbooks.

`Workbooks.Close`

Use the `Add` method to create a new, empty workbook and add it to the collection. The following example adds a new, empty workbook to Microsoft Excel.

`Workbooks.Add`

Use the `Open` method to open a file. This creates a new workbook for the opened file. The following example opens the file `Array.xls` as a read-only workbook.

`Workbooks.Open FileName:="Array.xls", ReadOnly:=True`

For more information about using a single `Workbook` object, see the `Workbook` object.
Worksheet Object

Multiple objects \(\leftarrow\) \textit{Worksheet} \(\leftarrow\) Multiple objects

Represents a worksheet. The \textit{Worksheet} object is a member of the \textit{Worksheets} collection. The \textit{Worksheets} collection contains all the \textit{Worksheet} objects in a workbook.
Using the Worksheet Object

The following properties for returning a Worksheet object are described in this section:

- **Worksheets** property
- **ActiveSheet** property
Worksheets Property

Use `Worksheets(index)`, where `index` is the worksheet index number or name, to return a single `Worksheet` object. The following example hides worksheet one in the active workbook.

`Worksheets(1).Visible = False`

The worksheet index number denotes the position of the worksheet on the workbook’s tab bar. `Worksheets(1)` is the first (leftmost) worksheet in the workbook, and `Worksheets(Worksheets.Count)` is the last one. All worksheets are included in the index count, even if they’re hidden.

The worksheet name is shown on the tab for the worksheet. Use the `Name` property to set or return the worksheet name. The following example protects the scenarios on Sheet1.

`Worksheets("Sheet1").Protect password:="secret", scenarios:=True`

The `Worksheet` object is also a member of the `Sheets` collection. The `Sheets` collection contains all the sheets in the workbook (both chart sheets and worksheets).
**ActiveSheet Property**

When a worksheet is the active sheet, you can use the `ActiveSheet` property to refer to it. The following example uses the `Activate` method to activate Sheet1, sets the page orientation to landscape mode, and then prints the worksheet.

```vbnet
Worksheets("Sheet1").Activate
ActiveSheet.PageSetup.Orientation = xlLandscape
ActiveSheet.PrintOut
```
WorksheetFunction Object

Application WorksheetFunction

Used as a container for Microsoft Excel worksheet functions that can be called from Visual Basic.
Using the WorksheetFunction Object

Use the `WorksheetFunction` property to return the `WorksheetFunction` object. The following example displays the result of applying the `Min` worksheet function to the range A1:A10.

```vba
Set myRange =Worksheets("Sheet1").Range("A1:C10")
answer = Application.WorksheetFunction.Min(myRange)
MsgBox answer
```
Worksheets Collection

Worksheets

A collection of all the Worksheet objects in the specified or active workbook. Each Worksheet object represents a worksheet.
Using the Worksheets Collection

Use the **Worksheets** property to return the **Worksheets** collection. The following example moves all the worksheets to the end of the workbook.

```vba
Worksheets.Move After:=Sheets(Sheets.Count)
```

Use the **Add** method to create a new worksheet and add it to the collection. The following example adds two new worksheets before sheet one of the active workbook.

```vba
Worksheets.Add Count:=2, Before:=Sheets(1)
```

Use **Worksheets(index)**, where *index* is the worksheet index number or name, to return a single **Worksheet** object. The following example hides worksheet one in the active workbook.

```vba
Worksheets(1).Visible = False
```

The **Worksheet** object is also a member of the **Sheets** collection. The **Sheets** collection contains all the sheets in the workbook (both chart sheets and worksheets).
AcceptAllChanges Method

Accepts all changes in the specified shared workbook.

`expression.AcceptAllChanges(When, Who, Where)`

`expression` Required. An expression that returns one of the objects in the Applies To list.

**When** Optional **Variant**. Specifies when all the changes are accepted.

**Who** Optional **Variant**. Specifies by whom all the changes are accepted.

**Where** Optional **Variant**. Specifies where all the changes are accepted.
Example

This example accepts all changes in the active workbook.

ActiveWorkbook.AcceptAllChanges
Show All
Activate Method

- [Activate method as it applies to the Chart and ChartObject object.](#)

Makes the current chart the active chart.

*expression*.**Activate**

*expression*  Required. An expression that returns one of the above objects.

- [Activate method as it applies to the Worksheet object.](#)

Makes the current sheet the active sheet. Equivalent to clicking the sheet's tab.

*expression*.**Activate**

*expression*  Required. An expression that returns one of the above objects.

- [Activate method as it applies to the OLEObject object.](#)

Activates the object.

*expression*.**Activate**

*expression*  Required. An expression that returns one of the above objects.

- [Activate method as it applies to the Pane object.](#)

Activates the pane. If the pane isn't in the active window, the window that the pane belongs to will also be activated. You cannot activate a frozen pane.
expression.Activate

expression  Required. An expression that returns one of the above objects.

- **Activate method as it applies to the Range object.**
  Activates a single cell, which must be inside the current selection. To select a range of cells, use the Select method.

expression.Activate

expression  Required. An expression that returns one of the above objects.

- **Activate method as it applies to the Window object.**
  Brings the window to the front of the z-order. This won't run any Auto_Activate or Auto_Deactivate macros that might be attached to the workbook (use the RunAutoMacros method to run those macros).

expression.Activate

expression  Required. An expression that returns one of the above objects.

- **Activate method as it applies to the Workbook object.**
  Activates the first window associated with the workbook. This won't run any Auto_Activate or Auto_Deactivate macros that might be attached to the workbook (use the RunAutoMacros method to run those macros).

expression.Activate

expression  Required. An expression that returns one of the above objects.
Example

- **As it applies to the Worksheet object.**

  This example activates Sheet1.

  `Worksheets("Sheet1").Activate`

- **As it applies to the Range object.**

  This example selects cells A1:C3 on Sheet1 and then makes cell B2 the active cell.

  `Worksheets("Sheet1").Activate`
  `Range("A1:C3").Select`  
  `Range("B2").Activate`

- **As it applies to the Workbook object.**

  This example activates Book4.xls. If Book4.xls has multiple windows, the example activates the first window, Book4.xls:1.

  `Workbooks("BOOK4.XLS").Activate`
ActivateMicrosoftApp Method

Activates a Microsoft application. If the application is already running, this method activates the running application. If the application isn't running, this method starts a new instance of the application.

\[ expression.\text{ActivateMicrosoftApp}(index) \]

*expression* Required. An expression that returns an Application object.

*index* Required XlMSApplication. Specifies the Microsoft application to activate.

XlMSApplication can be one of these XlMSApplication constants.

- xlMicrosoftWord
- xlMicrosoftPowerPoint
- xlMicrosoftMail
- xlMicrosoftAccess
- xlMicrosoftFoxPro
- xlMicrosoftProject
- xlMicrosoftSchedulePlus
Example

This example starts and activates Word.

Application.**ActivateMicrosoftApp** xlMicrosoftWord
ActivateNext Method

Activates the specified window and then sends it to the back of the window z-order.

`expression.ActivateNext`

`expression` Required. An expression that returns a `Window` object.
Example

This example sends the active window to the back of the z-order.

ActiveWindow.**ActivateNext**
ActivatePrevious Method

Activates the specified window and then activates the window at the back of the window z-order.

`expression.ActivatePrevious`

`expression`  Required. An expression that returns a `Window` object.
Example

This example activates the window at the back of the z-order.

`ActiveWindow.ActivatePrevious`
Show All
Add Method

- Add method as it applies to the AddIns object.

Add a new add-in file to the list of add-ins. Returns an AddIn object.

expression.Add(FileName, CopyFile)

eexpression  Required. An expression that returns an AddIns object.

Filename  Required String. The name of the file that contains the add-in you want to add to the list in the add-in manager.

CopyFile  Optional Variant. Ignored if the add-in file is on a hard disk. True to copy the add-in to your hard disk, if the add-in is on a removable medium (a floppy disk or compact disc). False to have the add-in remain on the removable medium. If this argument is omitted, Microsoft Excel displays a dialog box and asks you to choose.
Remarks

This method doesn’t install the new add-in. You must set the **Installed** property to install the add-in.

- **Add method as it applies to the AllowEditRanges object.**

Adds a range that can be edited on a protected worksheet. Returns a **AllowEditRange** object.

expression.<code>Add(Title, Range, Password)</code>

*expression*  Required. An expression that returns an **AllowEditRanges** object.

- **Title**  Required **String**. The title of range.

- **Range**  Required **Range** object. The range allowed to be edited.

- **Password**  Optional **Variant**. The password for the range.

- **Add method as it applies to the CalculatedFields object.**

Creates a new calculated field. Returns a **PivotField** object.

expression.<code>Add(Name, Formula, UseStandardFormula)</code>

*expression*  Required. An expression that returns a **CalculatedFields** object.

- **Name**  Required **String**. The name of the field.

- **Formula**  Required **String**. The formula for the field.

- **UseStandardFormula**  Optional **Variant**. **False** (default) for upward compatibility. **True** for strings contained in any arguments that are field names, will be interpreted as having been formatted in standard U.S. English instead of local settings.

- **Add method as it applies to the CalculatedItems object.**
Creates a new calculated item. Returns a PivotItem object.

expression.Add(Name, Formula, UseStandardFormula)

expression Required. An expression that returns a CalculatedItems object.

Name Required String. The name of the item.

Formula Required String. The formula for the item.

UseStandardFormula Optional Variant. False (default) for upward compatibility. True for strings contained in any arguments that are item names, will be interpreted as having been formatted in standard U.S. English instead of local settings.

› Add method as it applies to the CalculatedMembers object.

Adds a calculated field or calculated item to a PivotTable. Returns a CalculatedMember object.

expression.Add(Name, Formula, SolveOrder, Type)

expression Required. An expression that returns a CalculatedMembers object.

Name Required String. The name of the calculated member.

Formula Required String. The formula of the calculated member.

SolveOrder Optional Variant. The solve order for the calculated member.

Type Optional Variant. The type of calculated member.
Remarks

The *Formula* argument must have a valid MDX (Multidimensional Expression) syntax statement. The *Name* argument has to be acceptable to the Online Analytical Processing (OLAP) provider and the *Type* argument has to be defined.

If you set the *Type* argument of this method to *xlCalculatedSet*, then you must call the **AddSet** method to make the new field set visible in the PivotTable.

- **Add method as it applies to the ChartObjects object.**

  Creates a new embedded chart. Returns a **ChartObject** object.

  expression.**Add(Left, Top, Width, Height)**

  expression  Required. An expression that returns a **ChartObjects** object.

  *Left, Top* Required **Double**. The initial coordinates of the new object (in points), relative to the upper-left corner of cell A1 on a worksheet or to the upper-left corner of a chart.

  *Width, Height* Required **Double**. The initial size of the new object, in points.

- **Add method as it applies to the Charts object.**

  Creates a new chart sheet. Returns a **Chart** object.

  expression.**Add(Before, After, Count)**

  expression  Required. An expression that returns a **Charts** object.

  *Before* Optional **Variant**. An object that specifies the sheet before which the new sheet is added.

  *After* Optional **Variant**. An object that specifies the sheet after which the new sheet is added.

  *Count* Optional **Variant**. The number of sheets to be added. The default value is
one.
Remarks

If *Before* and *After* are both omitted, the new chart is inserted before the active sheet.

- Add method as it applies to the **CustomProperties** object.

Adds custom property information. Returns a **CustomProperty** object.

```expression.Add(Name, Value)```

*expression* Required. An expression that returns a **CustomProperties** object.

*Name* Required **String**. The name of the custom property.

*Value* Required **Variant**. The value of the custom property.

- Add method as it applies to the **CustomViews** object.

Creates a new custom view. Returns a **CustomView** object that represents the new view.

```expression.Add(ViewName, PrintSettings, RowColSettings)```

*expression* Required. An expression that returns a **CustomViews** object.

*ViewName* Required **String**. The name of the new view.

*PrintSettings* Optional **Variant**. *True* to include print settings in the custom view.

*RowColSettings* Optional **Variant**. *True* to include settings for hidden rows and columns (including filter information) in the custom view.

- Add method as it applies to the **FormatConditions** object.

Adds a new conditional format. Returns a **FormatCondition** object that represents the new conditional format.
expression.Add(Type, Operator, Formula1, Formula2)

**expression**  Required. An expression that returns a **FormatConditions** object.

**Type**  Required **XlFormatConditionType**. Specifies whether the conditional format is based on a cell value or an expression.

XlFormatConditionType can be one of these XlFormatConditionType constants.

- **xlCellValue** The conditional format is based on a cell value.
- **xlExpression** The conditional format is based on an expression.

**Operator**  Optional Variant. The conditional format operator. Can be one of the following XlFormatConditionOperator constants: **xlBetween**, **xlEqual**, **xlGreater**, **xlGreaterEqual**, **xlLess**, **xlLessEqual**, **xlNotBetween**, or **xlNotEqual**. If **Type** is **xlExpression**, the **Operator** argument is ignored.

**Formula1**  Optional Variant. The value or expression associated with the conditional format. Can be a constant value, a string value, a cell reference, or a formula.

**Formula2**  Optional Variant. The value or expression associated with the second part of the conditional format when **Operator** is **xlBetween** or **xlNotBetween** (otherwise, this argument is ignored). Can be a constant value, a string value, a cell reference, or a formula.
Remarks

You cannot define more than three conditional formats for a range. Use the Modify method to modify an existing conditional format, or use the Delete method to delete an existing format before adding a new one.

- Add method as it applies to the HPageBreaks object.

Add method as it applies to the HPageBreaks object.

expression.Add(Before)

expression  Required. An expression that returns an HPageBreaks object.

Before  Required Object. A Range object. The range above which the new page break will be added.

- Add method as it applies to the Hyperlinks object.

Add method as it applies to the Hyperlinks object.

expression.Add(Anchor, Address, SubAddress, ScreenTip, TextToDisplay)

expression  Required. An expression that returns a Hyperlink object.

Anchor  Required Object. The anchor for the hyperlink. Can be either a Range or Shape object.

Address  Required String. The address of the hyperlink.

SubAddress  Optional Variant. The subaddress of the hyperlink.

ScreenTip  Optional Variant. The screen tip to be displayed when the mouse pointer is paused over the hyperlink.

TextToDisplay  Optional Variant. The text to be displayed for the hyperlink.
Remarks

When you specify the *TextToDisplay* argument, the text must be a string.

- Add method as it applies to the *Names* object.

Defines a new name. Returns a *Name* object.

expression.Add(Name, RefersTo, Visible, MacroType, ShortcutKey, Category, NameLocal, RefersToLocal, CategoryLocal, RefersToR1C1, RefersToR1C1Local)

expression Required. An expression that returns a *Names* object.

Name Optional *Variant*. Required if *NameLocal* isn’t specified. The text to use as the name (in the language of the macro). Names cannot include spaces and cannot look like cell references.

RefersTo Optional *Variant*. Required unless one of the other *RefersTo* arguments is specified. Describes what the name refers to (in the language of the macro, using A1-style notation). Note Nothing is returned if the reference does not exist.

Visible Optional *Variant*. *True* to define the name normally. *False* to define the name as a hidden name (that is, it doesn’t appear in either the Define Name, Paste Name, or Goto dialog box). The default value is *True*.

MacroType Optional *Variant*. The macro type, as shown in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User-defined function (<em>Function</em> procedure)</td>
</tr>
<tr>
<td>2</td>
<td>Macro (also known as <em>Sub</em> procedure)</td>
</tr>
<tr>
<td>3 or omitted</td>
<td>None (that is, the name doesn’t refer to a user-defined function or macro)</td>
</tr>
</tbody>
</table>

ShortcutKey Optional *Variant*. The macro shortcut key. Must be a single letter, such as "z" or "Z". Applies only for command macros.
**Category** Optional **Variant**. The category of the macro or function if **MacroType** is 1 or 2. The category is used in the Function Wizard. Existing categories can be referred to either by number (starting at 1) or by name (in the language of the macro). Microsoft Excel creates a new category if the specified category doesn’t already exist.

**NameLocal** Optional **Variant**. Required if **Name** isn’t specified. The text to use as the name (in the language of the user). Names cannot include spaces and cannot look like cell references.

**RefersToLocal** Optional **Variant**. Required unless one of the other **RefersTo** arguments is specified. Describes what the name refers to (in the language of the user, using A1-style notation).

**CategoryLocal** Optional **Variant**. Required if **Category** isn’t specified. Text identifying the category of a custom function in the language of the user.

**RefersToR1C1** Optional **Variant**. Required unless one of the other **RefersTo** arguments is specified. Describes what the name refers to (in the language of the macro, using R1C1-style notation).

**RefersToR1C1Local** Optional **Variant**. Required unless one of the other **RefersTo** arguments is specified. Describes what the name refers to (in the language of the user, using R1C1-style notation).

- Add method as it applies to the **OLEObjects** object.

Add a new OLE object to a sheet. Returns an **OLEObject** object.

```
expression.Add(ClassType, FileName, Link, DisplayAsIcon, IconFileName, IconIndex, IconLabel, Left, Top, Width, Height)
```

**expression** Required. An expression that returns an **OLEObjects** object.

**ClassType** Optional **Variant**. (you must specify either **ClassType** or **FileName**). A string that contains the programmatic identifier for the object to be created. If **ClassType** is specified, **FileName** and **Link** are ignored.

**FileName** Optional **Variant**. (you must specify either **ClassType** or **FileName**). A string that specifies the file to be used to create the OLE object.
**Link**  Optional **Variant. True** to have the new OLE object based on **FileName** be linked to that file. If the object isn’t linked, the object is created as a copy of the file. The default value is **False**.

**DisplayAsIcon**  Optional **Variant. True** to display the new OLE object either as an icon or as its regular picture. If this argument is **True, IconFileName** and **IconIndex** can be used to specify an icon.

**IconFileName**  Optional **Variant.** A string that specifies the file that contains the icon to be displayed. This argument is used only if **DisplayAsIcon** is **True.** If this argument isn’t specified or the file contains no icons, the default icon for the OLE class is used.

**IconIndex**  Optional **Variant.** The number of the icon in the icon file. This is used only if **DisplayAsIcon** is **True** and **IconFileName** refers to a valid file that contains icons. If an icon with the given index number doesn’t exist in the file specified by **IconFileName**, the first icon in the file is used.

**IconLabel**  Optional **Variant.** A string that specifies a label to display beneath the icon. This is used only if **DisplayAsIcon** is **True.** If this argument is omitted or is an empty string (""), no caption is displayed.

**Left, Top**  Optional **Variant.** The initial coordinates of the new object, in points, relative to the upper-left corner of cell A1 on a worksheet, or to the upper-left corner of a chart.

**Width, Height**  Optional **Variant.** The initial size of the new object, in points.

- Add method as it applies to the Parameters object.

Creates a new query parameter. Returns a **Parameter** object.

```
expression.Add(Name, iDataType)
```

**expression**  Required. An expression that returns a **Parameters** object.

**Name**  Required **String.** The name of the specified parameter. The parameter name should match the parameter clause in the SQL statement.

**iDataType**  Optional **Variant.** The data type of the parameter. Can be any
**XlParameterDataType** constant:

- xlParamTypeBigInt
- xlParamTypeBinary
- xlParamTypeBit
- xlParamTypeChar
- xlParamTypeDate
- xlParamTypeDecimal
- xlParamTypeDouble
- xlParamTypeFloat
- xlParamTypeInteger
- xlParamTypeLongVarBinary
- xlParamTypeWChar
- xlParamTypeNumeric
- xlParamTypeLongVarChar
- xlParamTypeReal
- xlParamTypeSmallInt
- xlParamTypeTime
- xlParamTypeDecimal
- xlParamTypeTimestamp
- xlParamTypeDouble
- xlParamTypeTinyInt
- xlParamTypeInteger
- xlParamTypeVarBinary
- xlParamTypeVarChar
- xlParamTypeWChar

These values correspond to ODBC data types. They indicate the type of value the ODBC driver is expecting to receive. Microsoft Excel and the ODBC driver manager will coerce the parameter value given in Microsoft Excel into the correct data type for the driver.

- **Add method as it applies to the Phonetics object.**

  Adds phonetic text to the specified cell.

  \[expression.Add(Start, Length, Text)\]

  - **expression** Required. An expression that returns a Phonetics object.
  - **Start** Required Long. The position that represents the first character in the specified cell.
**Length** Required **Long**. The number of characters from the **Start** position to the end of the text in the cell.

**Text** Required **String**. Collectively, the characters that represent the phonetic text in the cell.

- Add method as it applies to the **PivotCaches** object.

 Adds a new PivotTable cache to a **PivotCaches** collection. Returns a **PivotCache** object.

```vba
expression.Add(SourceType, SourceData)
```

*expression* Required. An expression that returns a **PivotCaches** object.

**SourceType** Required **XIPivotTableSourceType**. The source of the PivotTable cache data.

XIPivotTableSourceType can be one of these XIPivotTableSourceType constants.
- **xlConsolidation**
- **xlDatabase**
- **xlExternal**
- **xlPivotTable**
- **xlScenario**

**SourceData** Optional **Variant**. The data for the new PivotTable cache. This argument is required if **SourceType** isn’t **xlExternal**. Can be a **Range** object, an array of ranges, or a text constant that represents the name of an existing PivotTable report. For an external database, this is a two-element array. The first element is the connection string specifying the provider of the data. The second element is the SQL query string used to get the data. If you specify this argument, you must also specify **SourceType**.
Remarks

If the PivotTable cache isn’t referenced by a PivotTable object, the PivotTable cache is automatically deleted before the workbook is saved.

- **Add method as it applies to the PivotFormulas object.**

  Creates a new PivotTable formula. Returns a PivotFormula object.

  expression.**Add(Formula, UseStandardFormula)**

  expression  Required. An expression that returns one of the above objects.

  **Formula**  Required **String**. The new PivotTable formula.

  **UseStandardFormula**  Optional **Variant**. A standard PivotTable formula.

- **Add method as it applies to the PivotItems object.**

  Creates a new PivotTable item.

  expression.**Add(Name)**

  expression  Required. An expression that returns a PivotItems object.

  **Name**  Required **String**. The name of the new PivotTable item.

- **Add method as it applies to the PivotTables object.**

  Adds a new PivotTable report. Returns a PivotTable object.

  expression.**Add(PivotCache, TableDestination, TableName, ReadData, DefaultVersion)**

  expression  Required. An expression that returns a PivotTables object.

  **PivotCache**  Required **PivotCache**. The PivotTable cache on which the new PivotTable report is based. The cache provides data for the report.
**TableDestination** Required **Variant**. The cell in the upper-left corner of the PivotTable report’s destination range (the range on the worksheet where the resulting report will be placed). You must specify a destination range on the worksheet that contains the **PivotTables** object specified by *expression*.

**TableName** Optional **Variant**. The name of the new PivotTable report.

**ReadData** Optional **Variant**. **True** to create a PivotTable cache that contains all records from the external database; this cache can be very large. **False** to enable setting some of the fields as server-based page fields before the data is actually read.

**DefaultVersion** Optional **Variant**. The version of Microsoft Excel the PivotTable was originally created in.

- Add method as it applies to the **PublishObjects** object.

Create an object that represents an item in a document saved to a Web page. Such objects facilitate subsequent updates to the Web page while automated changes are being made to the document in Microsoft Excel. Returns a **PublishObject** object.

*expression*.Add(*SourceType*, *FileName*, *Sheet*, *Source*, *HtmlType*, *DivID*, *Title*)

*expression* Required. An expression that returns a **PublishObjects** object.

**SourceType** Required **XlSourceType**. The source type.

- XlSourceType can be one of these XlSourceType constants. Identifies the source object.
- **xlSourceAutoFilter** An AutoFilter range.
- **xlSourceChart** A chart.
- **xlSourcePivotTable** A PivotTable report.
- **xlSourcePrintArea** A range of cells selected for printing.
- **xlSourceQuery** A query table (external data range).
- **xlSourceRange** A range of cells.
- **xlSourceSheet** An entire worksheet.
xlSourceWorkbook  A workbook.

**FileName**  Required **String**. The URL (on the intranet or the Web) or path (local or network) to which the source object was saved.

**Sheet**  Optional **Variant**. The name of the worksheet that was saved as a Web page.

**Source**  Optional **Variant**. A unique name used to identify items that have one of the following constants as their **SourceType** argument: **xlSourceAutoFilter**, **xlSourceChart**, **xlSourcePivotTable**, **xlSourcePrintArea**, **xlSourceQuery**, or **xlSourceRange**. If **SourceType** is **xlSourceRange**, **Source** specifies a range, which can be a defined name. If **SourceType** is **xlSourceChart**, **xlSourcePivotTable**, or **xlSourceQuery**, **Source** specifies the name of a chart, PivotTable report, or query table.

**HtmlType**  Optional **Variant**. Specifies whether the item is saved as an interactive Microsoft Office Web component or as static text and images. Can be one of the **XlHTMLType** constants listed in the following table.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlSourceAutoFilter</td>
<td>An AutoFilter range</td>
</tr>
<tr>
<td>xlSourceChart</td>
<td>A chart</td>
</tr>
<tr>
<td>xlSourcePivotTable</td>
<td>A PivotTable report</td>
</tr>
<tr>
<td>xlSourcePrintArea</td>
<td>A range of cells selected for printing</td>
</tr>
<tr>
<td>xlSourceQuery</td>
<td>A query table (external data range)</td>
</tr>
<tr>
<td>xlSourceRange</td>
<td>A range of cells</td>
</tr>
<tr>
<td>xlSourceSheet</td>
<td>An entire worksheet</td>
</tr>
</tbody>
</table>

**DivID**  Optional **Variant**. The unique identifier used in the HTML DIV tag to identify the item on the Web page.

**Title**  Optional **Variant**. The title of the Web page.

- **Add method as it applies to the QueryTables object.**

Creates a new query table. Returns a **QueryTable** object that represents the new query table.
expression.Add(\textbf{Connection}, \textbf{Destination}, \textbf{Sql})

\textit{expression} Required. An expression that returns a \textbf{QueryTables} object.

\textbf{Connection} Required \textit{Variant}. The data source for the query table. Can be one of the following:

- A string containing an OLE DB or ODBC connection string. The ODBC connection string has the form "ODBC;<connection string>".
- A \textbf{QueryTable} object from which the query information is initially copied, including the connection string and the SQL text, but not including the \textbf{Destination} range. Specifying a \textbf{QueryTable} object causes the \textit{Sql} argument to be ignored.
- An ADO or DAO \textbf{Recordset} object. Data is read from the ADO or DAO recordset. Microsoft Excel retains the recordset until the query table is deleted or the connection is changed. The resulting query table cannot be edited.
- A Web query. A string in the form “URL;<url>“, where “URL;” is required but not localized and the rest of the string is used for the URL of the Web query.
- Data Finder. A string in the form “FINDER;<data finder file path>“ where “FINDER;” is required but not localized. The rest of the string is the path and file name of a Data Finder file (*.dqy or *.iqy). The file is read when the \textbf{Add} method is run; subsequent calls to the \textbf{Connection} property of the query table will return strings beginning with “ODBC;” or “URL;” as appropriate.
- A text file. A string in the form "TEXT;<text file path and name>“, where TEXT is required but not localized.

\textbf{Destination} Required \textit{Range}. The cell in the upper-left corner of the query table destination range (the range where the resulting query table will be placed). The destination range must be on the worksheet that contains the \textbf{QueryTables} object specified by \textit{expression}.

\textit{Sql} Optional \textit{Variant}. The SQL query string to be run on the ODBC data source. This argument is optional when you’re using an ODBC data source (if you don’t specify it here, you should set it by using the \textit{Sql} property of the query table before the table is refreshed). You cannot use this argument when a \textbf{QueryTable} object, text file, or ADO or DAO \textbf{Recordset} object is specified as
the data source.
Remarks

A query created by this method isn’t run until the **Refresh** method is called.

- **Add method as it applies to the RecentFiles object.**

Adds a file to the list of recently used files. Returns a **RecentFile** object.

```vba
expression.Add(Name)
```

**expression**  Required. An expression that returns a **RecentFiles** object.

**Name**  Required **String**. The file name.

- **Add method as it applies to the Scenarios object.**

Creates a new scenario and adds it to the list of scenarios that are available for the current worksheet. Returns a **Scenario** object.

```vba
expression.Add(Name, ChangingCells, Values, Comment, Locked, Hidden)
```

**expression**  Required. An expression that returns a **Scenarios** object.

**Name**  Required **String**. The scenario name.

**ChangingCells**  Required **Variant**. A **Range** object that refers to the changing cells for the scenario.

**Values**  Optional **Variant**. An array that contains the scenario values for the cells in **ChangingCells**. If this argument is omitted, the scenario values are assumed to be the current values in the cells in **ChangingCells**.

**Comment**  Optional **Variant**. A string that specifies comment text for the scenario. When a new scenario is added, the author's name and date are automatically added at the beginning of the comment text.

**Locked**  Optional **Variant**. **True** to lock the scenario to prevent changes. The default value is **True**.
**Hidden**  Optional **Variant. True** to hide the scenario. The default value is **False**.
Remarks

A scenario name must be unique; Microsoft Excel generates an error if you try to create a scenario with a name that’s already in use.

- Add method as it applies to the SeriesCollection object.

Adds one or more new series to the SeriesCollection collection.

expression.Add(Source, Rowcol, SeriesLabels, CategoryLabels, Replace)

expression  Required. An expression that returns a SeriesCollection object.

Source  Required Variant. The new data, either as a Range object or an array of data points.

Rowcol  Optional XlRowCol. Specifies whether the new values are in the rows or columns of the specified range.

XlRowCol can be one of these XlRowCol constants.

xlColumns default
xlRows

SeriesLabels  Optional Variant. Ignored if Source is an array. True if the first row or column contains the name of the data series. False if the first row or column contains the first data point of the series. If this argument is omitted, Microsoft Excel attempts to determine the location of the series name from the contents of the first row or column.

CategoryLabels  Optional Variant. Ignored if Source is an array. True if the first row or column contains the name of the category labels. False if the first row or column contains the first data point of the series. If this argument is omitted, Microsoft Excel attempts to determine the location of the category label from the contents of the first row or column.

Replace  Optional Variant. If CategoryLabels is True and Replace is True, the specified categories replace the categories that currently exist for the series. If Replace is False, the existing categories will not be replaced. The default value
is **False**.
Remarks

This method is not available for PivotChart reports.

- Add method as it applies to the Sheets and Worksheets objects.

Creates a new worksheet, chart, or macro sheet. The new worksheet becomes the active sheet.

expression.Add(Before, After, Count, Type)

expression  Required. An expression that returns one of the above objects.

Before  Optional Variant. An object that specifies the sheet before which the new sheet is added.

After  Optional Variant. An object that specifies the sheet after which the new sheet is added.

Count  Optional Variant. The number of sheets to be added. The default value is one.

Type  Optional Variant. Specifies the sheet type. Can be one of the following XlSheetType constants: xlWorksheet, xlChart, xlExcel4MacroSheet, or xlExcel4IntlMacroSheet. The default value is xlWorksheet.
Remarks

If *Before* and *After* are both omitted, the new sheet is inserted before the active sheet.

- **Add method as it applies to the SmartTags object.**

Adds a smart tag. Returns a *SmartTag* object.

`expression.Add(SmartTagType)`

*expression*  Required. An expression that returns a *SmartTags* object.

*SmartTagType*  Required *String*. The type of smart tag.

- **Add method as it applies to the Styles object.**

Creates a new style and adds it to the list of styles that are available for the current workbook. Returns a *Style* object.

`expression.Add(Name, BasedOn)`

*expression*  Required. An expression that returns a *Styles* object.

*Name*  Required *String*. The new style name.

*BasedOn*  Optional *Variant*. A *Range* object that refers to a cell that’s used as the basis for the new style. If this argument is omitted, the newly created style is based on the Normal style.
Remarks

If a style with the specified name already exists, this method redefines the existing style based on the cell specified in BasedOn. The following example redefines the Normal style based on the active cell.

ActiveWorkbook.Styles.Add Name := "Normal", _
   BasedOn := ActiveCell

» Add method as it applies to the Trendlines object.

Creates a new trendline. Returns a Trendline object.

expression.Add(Type, Order, Period, Forward, Backward, Intercept, DisplayEquation, DisplayRSquared, Name)

expression Required. An expression that returns a Trendlines object.

Type Optional XlTrendlineType. The trendline type.

XlTrendlineType can be one of these XlTrendlineType constants.
-xlExponential
-xlLinear default
-xlLogarithmic
-xlMovingAvg
-xlPolynomial
-xlPower

Order Optional Variant. Optional Variant. Required if Type is xlPolynomial. The trendline order. Must be an integer from 2 to 6, inclusive.

Period Optional Variant. Required if Type is xlMovingAvg. The trendline period. Must be an integer greater than 1 and less than the number of data points in the series you’re adding a trendline to.

Forward Optional Variant. The number of periods (or units on a scatter chart) that the trendline extends forward.
**Backward** Optional Variant. The number of periods (or units on a scatter chart) that the trendline extends backward.

**Intercept** Optional Variant. The trendline intercept. If this argument is omitted, the intercept is automatically set by the regression.

**DisplayEquation** Optional Variant. True to display the equation of the trendline on the chart (in the same data label as the R-squared value). The default value is False.

**DisplayRSquared** Optional Variant. True to display the R-squared value of the trendline on the chart (in the same data label as the equation). The default value is False.

**Name** Optional Variant. The name of the trendline as text. If this argument is omitted, Microsoft Excel generates a name.

- Add method as it applies to the UserAccessList object.

  Adds a user access list. Returns a UserAccess object.

  \[expression.Add(Name, AllowEdit)\]

  expression Required. An expression that returns a UserAccessList object.

  **Name** Required String. The name of the user access list.

  **AllowEdit** Required Boolean. True allows users on the access list to edit the editable ranges on a protected worksheet.

  Add method as it applies to the Validation object.

  Adds data validation to the specified range.

  \[expression.Add(Type, AlertStyle, Operator, Formula1, Formula2)\]

  expression Required. An expression that returns a Validation object.

  **Type** Required XIDVType. The validation type.

  XIDVType can be one of these XIDVType constants.
xlValidateCustom
xlValidateDate
xlValidateDecimal
xlValidateInputOnly
xlValidateList
xlValidateTextLength
xlValidateTime
xlValidateWholeNumber

AlertStyle  Optional  Variant.  The validation alert style. Can be one of the following XlDVAlertStyle constants: xlValidAlertInformation, xlValidAlertStop, or xlValidAlertWarning.

Operator  Optional  Variant.  The data validation operator. Can be one of the following XlFormatConditionOperator constants: xlBetween, xlEqual, xlGreater, xlGreaterEqual, xlLess, xlLessEqual, xlNotBetween, or xlNotEqual.

Formula1  Optional  Variant.  The first part of the data validation equation.

Formula2  Optional  Variant.  The second part of the data validation when Operator is xlBetween or xlNotBetween (otherwise, this argument is ignored).
Remarks

The Add method requires different arguments, depending on the validation type, as shown in the following table.

<table>
<thead>
<tr>
<th>Validation type</th>
<th>Arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlValidateCustom</td>
<td><em>Formula1</em> is required, <em>Formula2</em> is ignored.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> must contain an expression that evaluates to <em>True</em> when data entry is valid and <em>False</em> when data entry is invalid.</td>
</tr>
<tr>
<td>xlInputOnly</td>
<td><em>AlertStyle</em>, <em>Formula1</em>, or <em>Formula2</em> are used.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> is required, <em>Formula2</em> is ignored.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> must contain either a comma-delimited list of values or a worksheet reference to this list.</td>
</tr>
<tr>
<td>xlValidateList</td>
<td>One of either <em>Formula1</em> or <em>Formula2</em> must be specified, or both may be specified.</td>
</tr>
<tr>
<td>xlValidateWholeNumber,</td>
<td></td>
</tr>
<tr>
<td>xlValidateDate</td>
<td></td>
</tr>
<tr>
<td>xlValidateDecimal,</td>
<td></td>
</tr>
<tr>
<td>xlValidateTextLength, or</td>
<td></td>
</tr>
<tr>
<td>xlValidateTime</td>
<td></td>
</tr>
</tbody>
</table>

- Add method as it applies to the **VPageBreaks** object.

Adds a vertical page break. Returns a **VPageBreak** object.

```
expression.Add(Before)
```

- **expression** Required. An expression that returns a **VPageBreaks** object.

- **Before** Required **Object**. A **Range** object. The range to the left of which the new page break will be added.

- Add method as it applies to the **Watches** object.

Adds a range which is tracked when the worksheet is recalculated. Returns a **Watch** object.
expression.Add(Source)

expression  Required. An expression that returns a **Watches** object.

Source  Required **Variant**. The source for the range.

- Add method as it applies to the **Workbooks** object.

Creates a new workbook. The new workbook becomes the active workbook. Returns a **Workbook** object.

expression.Add(Template)

expression  Required. An expression that returns a **Workbooks** object.

Template  Optional **Variant**. Determines how the new workbook is created. If this argument is a string specifying the name of an existing Microsoft Excel file, the new workbook is created with the specified file as a template. If this argument is a constant, the new workbook contains a single sheet of the specified type. Can be one of the following **XlWBAtemplate** constants: **xlWBATChart**, **xlWBATExcel4IntlMacroSheet**, **xlWBATExcel4MacroSheet**, or **xlWBATWorksheet**. If this argument is omitted, Microsoft Excel creates a new workbook with a number of blank sheets (the number of sheets is set by the **SheetsInNewWorkbook** property).
Remarks

If the Template argument specifies a file, the file name can include a path.
Example

As it applies to the **AddIns** object.

This example inserts the add-in Myaddin.xla from drive A. When you run this example, Microsoft Excel copies the file A:\Myaddin.xla to the Library folder on your hard disk and adds the add-in title to the list in the **Add-Ins** dialog box.

```vba
UseAddIn()

    Set myAddIn = AddIns.Add(Filename:="A:\MYADDIN.XLA", _
                          CopyFile:=True)
    MsgBox myAddIn.Title & " has been added to the list"

End Sub
```

As it applies to the **AllowEditRanges** object.

This example allows edits to range "A1:A4" on the active worksheet, notifies the user, then changes the password for this specified range and notifies the user of this change.

```vba
Sub UseChangePassword()

    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet

    ' Protect the worksheet.
    wksOne.Protect

    ' Establish a range that can allow edits
    ' on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
          Title:="Classified", _
          Range:=Range("A1:A4"), _
          Password:="secret"

    MsgBox "Cells A1 to A4 can be edited on the protected worksheet."

    ' Change the password.
    wksOne.Protection.AllowEditRanges(1).ChangePassword _
          Password:="moresecret"

End Sub
```
MsgBox "The password for these cells has been changed."
End Sub

- As it applies to the **CalculatedFields** object.

This example adds a calculated field to the first PivotTable report on worksheet one.

```vba
Worksheets(1).PivotTables(1).CalculatedFields.Add "PxS", _
"= Product * Sales"
```

- As it applies to the **CalculatedMembers** object.

The following example adds a set to a PivotTable, assuming a PivotTable exists on the active worksheet.

```vba
Sub UseAddSet()
    Dim pvtOne As PivotTable
    Dim strAdd As String
    Dim strFormula As String
    Dim cbfOne As CubeField

    Set pvtOne = ActiveSheet.PivotTables(1)
    strAdd = "[MySet]"
    strFormula = "'{[Product].[All Products].[Food].children}'"

    ' Establish connection with data source if necessary.

    ' Add a calculated member titled "[MySet]"
    pvtOne.CalculatedMembers.Add Name:=strAdd, _
    Formula:=strFormula, Type:=xlCalculatedSet

    ' Add a set to the CubeField object.
    Set cbfOne = pvtOne.CubeFields.AddSet(Name:="[MySet]", _
    Caption:="My Set")
End Sub
```

- As it applies to the **ChartObjects** object.
This example creates a new embedded chart.

Set co = Sheets("Sheet1").ChartObjects.Add(50, 40, 200, 100)
    Gallery:=xlColumn, Format:=6, PlotBy:=xlColumns, _
    CategoryLabels:=1, SeriesLabels:=0, HasLegend:=1

As it applies to the **Charts** object.

This example creates an empty chart sheet and inserts it before the last worksheet.


As it applies to the **CustomProperties** object.

This example adds identifier information to the active worksheet and returns the name and value to the user.

Sub CheckCustomProperties()
    Dim wksSheet1 As Worksheet
    Set wksSheet1 = Application.ActiveSheet

    ' Add metadata to worksheet.
    wksSheet1.CustomProperties.Add _
        Name:="Market", Value:="Nasdaq"

    ' Display metadata.
    With wksSheet1.CustomProperties.Item(1)
        MsgBox .Name & vbTab & .Value
    End With
End Sub

As it applies to the **CustomViews** object.

This example creates a new custom view named "Summary" in the active workbook.

ActiveWorkbook.CustomViews.Add "Summary", True, True

As it applies to the **FormatConditions** object.
This example adds a conditional format to cells E1:E10.

```vba
With Worksheets(1).Range("e1:e10").FormatConditions
  .Add(xlCellValue, xlGreater, "=$a$1"
  With .Borders
    .LineStyle = xlContinuous
    .Weight = xlThin
    .ColorIndex = 6
  End With
  With .Font
    .Bold = True
    .ColorIndex = 3
  End With
End With
```

- As it applies to the **HPageBreaks** object.

This example adds a horizontal page break above cell F25 and adds a vertical page break to the left of this cell.

```vba
With Worksheets(1)
  .HPageBreaks.Add .Range("F25")
  .VPageBreaks.Add .Range("F25")
End With
```

- As it applies to the **Hyperlinks** object.

This example adds a hyperlink to cell A5.

```vba
With Worksheets(1)
  .Hyperlinks.Add Anchor:=.Range("a5"), _
  Address:="http://example.microsoft.com", _
  ScreenTip:="Microsoft Web Site", _
  TextToDisplay:="Microsoft"
End With
```

This example adds an email hyperlink to cell A5.

```vba
With Worksheets(1)
  .Hyperlinks.Add Anchor:=.Range("a5"), _
  Address:="mailto:someone@microsoft.com?subject=hello", _
  ScreenTip:="Write us today", _
  TextToDisplay:="Support"
End With
```
As it applies to the **Names** object.

This example defines a new name for the range A1:D3 on Sheet1 in the active workbook. **Note** Nothing is returned if Sheet1 does not exist.

```vba
Sub MakeRange()
    ActiveWorkbook.Names.Add _
        Name:="tempRange", _
        RefersTo:="=Sheet1!$A$1:$D$3"
End Sub
```

As it applies to the **OLEObjects** object.

This example creates a new Microsoft Word OLE object on Sheet1.

```vba
ActiveWorkbook.Worksheets("Sheet1").OLEObjects.Add _
    ClassType:="Word.Document"
```

This example adds a command button to sheet one.

```vba
Worksheets(1).OLEObjects.Add ClassType:="Forms.CommandButton.1", _
    Link:=False, DisplayAsIcon:=False, Left:=40, Top:=40, _
    Width:=150, Height:=10
```

As it applies to the **Parameters** object.

This example changes the SQL statement for query table one. The clause “(city=?)” indicates that the query is a parameter query, and the value of city is set to the constant “Oakland.”

```vba
Set qt = Sheets("sheet1").QueryTables(1)
qt.Sql = "SELECT * FROM authors  WHERE (city=?)"
Set param1 = qt.Parameters.Add("City Parameter", _
    xlParamTypeVarChar)
param1.SetParam xlConstant, "Oakland"
qt.Refresh
```

As it applies to the **Phonetics** object.

This example adds three phonetic text strings to the active cell. The example then sets the character type to Hiragana, sets the font color to blue, and sets the
As it applies to the PivotCaches object.

This example creates a new PivotTable cache based on an OLAP provider and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet.

```vba
Dim cnnConn As ADODB.Connection
Dim rstRecordset As ADODB.Recordset
Dim cmdCommand As ADODB.Command

' Open the connection.
Set cnnConn = New ADODB.Connection
With cnnConn
   .ConnectionString = _
      "Provider=Microsoft.Jet.OLEDB.4.0"
   .Open "C:\perdate\record.mdb"
End With

' Set the command text.
Set cmdCommand = New ADODB.Command
Set cmdCommand.ActiveConnection = cnnConn
With cmdCommand
   .CommandText = "Select Speed, Pressure, Time From DynoRun"
   .CommandType = adCmdText
   .Execute
End With

' Open the recordset.
Set rstRecordset = New ADODB.Recordset
Set rstRecordset.ActiveConnection = cnnConn
rstRecordset.Open cmdCommand

' Create a PivotTable cache and report.
Set objPivotCache = ActiveWorkbook.PivotCaches.Add( _
   SourceType:=xlExternal)
Set objPivotCache.Recordset = rstRecordset
```
With objPivotCache
  .CreatePivotTable TableDestination:=Range("A3"), _
    TableName:="Performance"
End With

With ActiveSheet.PivotTables("Performance")
  .SmallGrid = False
  With .PivotFields("Pressure")
    .Orientation = xlRowField
    .Position = 1
  End With
  With .PivotFields("Speed")
    .Orientation = xlColumnField
    .Position = 1
  End With
  With .PivotFields("Time")
    .Orientation = xlDataField
    .Position = 1
  End With
End With

' Close the connections and clean up.
cnnConn.Close
Set cmdCommand = Nothing
Set rstRecordSet = Nothing
Set cnnConn = Nothing

▶ As it applies to the PivotFormulas object.

This example creates a new PivotTable formula for the first PivotTable report on worksheet one.

Worksheets(1).PivotTables(1).PivotFormulas _
  .Add "Year['1998'] Apples = (Year['1997'] Apples) * 2"

▶ As it applies to the PivotItems object.

This example creates a new PivotTable item in the first PivotTable report on worksheet one.

Worksheets(1).PivotTables(1).PivotItems("Year").Add "1998"

▶ As it applies to the PivotTables object.

This example creates a new PivotTable cache based on an OLAP provider, and
then it creates a new PivotTable report based on the cache, at cell A1 on the first worksheet.

```vbnet
Dim cnnConn As ADODB.Connection
Dim rstRecordset As ADODB.Recordset
Dim cmdCommand As ADODB.Command

' Open the connection.
Set cnnConn = New ADODB.Connection
With cnnConn
  .ConnectionString = _
    "Provider=Microsoft.Jet.OLEDB.4.0"
  .Open "C:\perfdate\record.mdb"
End With

' Set the command text.
Set cmdCommand = New ADODB.Command
Set cmdCommand.ActiveConnection = cnnConn
With cmdCommand
  .CommandText = "Select Speed, Pressure, Time From DynoRun"
  .CommandType = adCmdText
  .Execute
End With

' Open the recordset.
Set rstRecordset = New ADODB.Recordset
Set rstRecordset.ActiveConnection = cnnConn
rstRecordset.Open cmdCommand

' Create PivotTable cache and report.
Set objPivotCache = ActiveWorkbook.PivotCaches.Add( _
  SourceType:=xlExternal)
Set objPivotCache.Recordset = rstRecordset

ActiveSheet.PivotTables.Add _
  PivotCache:=objPivotCache, _
  TableDestination:=Range("A3"), _
  TableName:="Performance"

With ActiveSheet.PivotTables("Performance")
  .SmallGrid = False
  With .PivotFields("Pressure")
    .Orientation = xlRowField
    .Position = 1
  End With
End With
With .PivotFields("Speed")
```
.Orientation = xlColumnField
 .Position = 1
End With
With .PivotFields("Time")
 .Orientation = xlDataField
 .Position = 1
End With
End With

' Close the connections and clean up.
cnnConn.Close
Set cmdCommand = Nothing
Set rstRecordSet = Nothing
Set cnnConn = Nothing

- As it applies to the **PublishObjects** object.

This example saves the range D5:D9 on the First Quarter worksheet in the active workbook to a Web page called Stockreport.htm. You use the Spreadsheet component to add interactivity to the Web page.

ActiveWorkbook.PublishObjects.Add(_
    SourceType:=xlSourceRange, _
    Filename:="\\Server2\Q1\Stockreport.htm", _
    Sheet:="First Quarter", _
    Source:="D5:D9", _
    HTMLType:=xlHTMLCalc).Publish

- As it applies to the **QueryTables** object.

This example creates a query table based on an ADO recordset. The example preserves the existing column sorting and filtering settings and layout information for backward compatibility.

Dim cnnConnect As ADODB.Connection
Dim rstRecordset As ADODB.Recordset

Set cnnConnect = New ADODB.Connection
cnnConnect.Open "Provider=SQLOLEDB;" & _
    "Data Source=srvdata;" & _
    "User ID=testac;Password=4me2no;"

Set rstRecordset = New ADODB.Recordset
rstRecordset.Open _
    Source:="Select Name, Quantity, Price From Products", _
ActiveConnection:=cnnConnect, _
CursorType:=adOpenDynamic, _
LockType:=adLockReadOnly, _
Options:=adCmdText

With ActiveSheet.QueryTables.Add( _
    Connection:=rstRecordset, _
    Destination:=Range("A1"))
    .Name = "Contact List"
    .FieldNames = True
    .RowNumbers = False
    .FillAdjacentFormulas = False
    .PreserveFormatting = True
    .RefreshOnFileOpen = False
    .BackgroundQuery = True
    .RefreshStyle = xlInsertDeleteCells
    .SavePassword = True
    .SaveData = True
    .AdjustColumnWidth = True
    .RefreshPeriod = 0
    .PreserveColumnInfo = True
    .Refresh BackgroundQuery:=False
End With

This example imports a fixed width text file into a new query table. The first column in the text file is five characters wide and is imported as text. The second column is four characters wide and is skipped. The remainder of the text file is imported into the third column and has the General format applied to it.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables.Add( _
    Connection := "TEXT;C:\My Documents\19980331.txt",
    Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .TextFileParsingType = xlFixedWidth
    .TextFileFixedColumnWidths := Array(5,4)
    .TextFileColumnDataTypes := _
        Array(xlTextFormat, xlSkipColumn, xlGeneralFormat)
    .Refresh
End With

This example creates a new query table on the active worksheet.

sqlstring = "select 96Sales.totals from 96Sales where profit < 5"
connstring = _
    "ODBC;DSN=96SalesData;UID=Rep21;PWD=NUYHwYQI;Database=96Sales"
With ActiveSheet.QueryTables.Add(Connection:=connstring, _
    Destination:=Range("B1"), Sql:=sqlstring)
    .Refresh
End With

- As it applies to the **RecentFiles** object.

This example adds Oscar.xls to the list of recently used files.

Application.RecentFiles.Add Name:="Oscar.xls"

- As it applies to the **Scenarios** object.

This example adds a new scenario to Sheet1.

Worksheets("Sheet1").Scenarios.Add Name:="Best Case", _
    ChangingCells:=Worksheets("Sheet1").Range("A1:A4"), _
    Values:=Array(23, 5, 6, 21), _
    Comment:="Most favorable outcome."

- As it applies to the **SeriesCollection** object.

This example creates a new series in Chart1. The data source for the new series is range B1:B10 on Sheet1.

Charts("Chart1").SeriesCollection.Add _
    Source:=ActiveWorkbook.Worksheets("Sheet1").Range("B1:B10")

This example creates a new series on the embedded chart on Sheet1.

Worksheets("Sheet1").ChartObjects(1).Activate
ActiveChart.SeriesCollection.Add _
    Source:=Worksheets("Sheet1").Range("B1:B10")

- As it applies to the **Sheets** and **WorkSheets** objects.

This example inserts a new worksheet before the last worksheet in the active workbook.


- As it applies to the **SmartTags** object.
This example adds a smart tag titled MSFT to cell A1, then adds extra metadata called Market with the value of Nasdaq to the smart tag and then returns the value of the property to the user. This example assumes the host system is connected to the Internet.

Sub UseProperties()
    Dim strLink As String
    Dim strType As String

    ' Define smart tag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#stocktickerSymbol"
    strType = "stockview"

    Range("A1").Formula = "MSFT"

    ' Add a property for MSFT smart tag and define its value.
    Range("A1").SmartTags.Add(strLink).Properties.Add_ 
    Name:="Market", Value:="Nasdaq"

    ' Notify the user of the smart tag's value.
    MsgBox Range("A1").SmartTags.Add(strLink).Properties("Market").V
End Sub

As it applies to the Styles object.

This example defines a new style based on cell A1 on Sheet1.

With ActiveWorkbook.Styles.Add(Name:="theNewStyle")
    .IncludeNumber = False
    .IncludeFont = True
    .IncludeAlignment = False
    .IncludeBorder = False
    .IncludePatterns = False
    .IncludeProtection = False
    .Font.Name = "Arial"
    .Font.Size = 18
End With

As it applies to the Trendlines object.

This example creates a new linear trendline in Chart1.

ActiveWorkbook.Charts("Chart1").SeriesCollection(1).Trendlines.Add
As it applies to the Validation object.

This example adds data validation to cell E5.

```vba
With Range("e5").Validation
    .Add Type:=xlValidateWholeNumber, _
        AlertStyle:= xlValidAlertStop, _
        Operator:=xlBetween, Formula1:="5", Formula2:="10"
        .InputTitle = "Integers"
        .ErrorTitle = "Integers"
        .InputMessage = "Enter an integer from five to ten"
        .ErrorMessage = "You must enter a number from five to ten"
End With
```

As it applies to the VPageBreaks object.

This example adds a horizontal page break above cell F25 and adds a vertical page break to the left of this cell.

```vba
With Worksheets(1)
    .HPageBreaks.Add .Range("F25")
    .VPageBreaks.Add .Range("F25")
End With
```

As it applies to the Watches object.

This example creates a summation formula in cell A3 and then adds this cell to the watch facility.

```vba
Sub AddWatch()
    With Application
        .Range("A1").Formula = 1
        .Range("A2").Formula = 2
        .Range("A3").Formula = "=Sum(A1:A2)"
        .Range("A3").Select
        .Watches.Add Source:=ActiveCell
    End With
End Sub
```

As it applies to the WorkBooks object.

This example creates a new workbook.
Workbooks. Add
AddCallout Method

Creates a borderless line callout. Returns a Shape object that represents the new callout.

expression.AddCallout(Type, Left, Top, Width, Height)

expression  Required. An expression that returns one of the objects in the Applies to List.

Type  Required MsoCalloutType. The type of callout line.

MsoCalloutType can be one of these MsoCalloutType constants.

msoCalloutOne. A single-segment callout line that can be either horizontal or vertical.
msoCalloutTwo. A single-segment callout line that rotates freely.
msoCalloutMixed.
msoCalloutThree. A two-segment line.
msoCalloutFour. A three-segment line.

Left  Required Single. The position (in points) of the upper-left corner of the callout's bounding box relative to the upper-left corner of the document.

Top  Required Single. The position (in points) of the upper-left corner of the callout's bounding box relative to the upper-left corner of the document.

Width  Required Single. The width of the callout's bounding box, in points.

Height  Required Single. The height of the callout's bounding box, in points.
Remarks

You can insert a greater variety of callouts by using the AddShape method.
Example

This example adds a borderless callout with a freely rotating one-segment callout line to myDocument and then sets the callout angle to 30 degrees.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddCallout(Type:=msoCalloutTwo, _
   Left:=50, Top:=50, Width:=200, Height:=100) _
   .Callout.Angle = msoCalloutAngle30
AddChartAutoFormat Method

Adds a custom chart autoformat to the list of available chart autoformats.

expression.AddChartAutoFormat(Chart, Name, Description)

expression   Required. An expression that returns an Application object.

Chart   Required Chart. A chart that contains the format that will be applied when the new chart autoformat is applied.

Name   Required String. The name of the autoformat.

Description   Optional String. A description of the custom autoformat.
Example

This example adds a new autoformat based on Chart1.

Application.AddChartAutoFormat_
        Chart:=Charts("Chart1"), Name="Presentation Chart"
AddComment Method

- Adds a comment to the range.

expression.AddComment(Text)

expression Required. An expression that returns a Range object.

Text Optional Variant. The comment text.
Example

This example adds a comment to cell E5 on worksheet one.

Worksheets(1).Range("E5").AddComment "Current Sales"
AddConnector Method

- Creates a connector. Returns a Shape object that represents the new connector. When a connector is added, it's not connected to anything. Use the BeginConnect and EndConnect methods to attach the beginning and end of a connector to other shapes in the document.

expression/AddConnector(Type, BeginX, BeginY, EndX, EndY)

expression Required. An expression that returns one of the objects in the Applies To list.

Type Required MsoConnectorType. The connector type to add.

MsoConnectorType can be one of these MsoConnectorType constants.

msoConnectorElbow
msoConnectorTypeMixed
msoConnectorCurve
msoConnectorStraight

BeginX Required Single. The horizontal position (in points) of the connector's starting point relative to the upper-left corner of the document.

BeginY Required Single. The vertical position (in points) of the connector's starting point relative to the upper-left corner of the document.

EndX Required Single. The horizontal position (in points) of the connector's end point relative to the upper-left corner of the document.

EndY Required Single. The vertical position (in points) of the connector's end point relative to the upper-left corner of the document.
Remarks

When you attach a connector to a shape, the size and position of the connector are automatically adjusted, if necessary. Therefore, if you’re going to attach a connector to other shapes, the position and dimensions you specify when adding the connector are irrelevant.
Example

The following example adds a curved connector to a new canvas in a new worksheet.

Sub AddCanvasConnector()
    Dim wksNew As Worksheet
    Dim shpCanvas As Shape

    Set wksNew = Worksheets.Add

    'Add drawing canvas to new worksheet
    Set shpCanvas = wksNew.Shapes.AddCanvas(_
        Left:=150, Top:=150, Width:=200, Height:=300)

    'Add connector to the drawing canvas
    shpCanvas.CanvasItems.AddConnector _
        Type:=msoConnectorStraight, BeginX:=150, _
        BeginY:=150, EndX:=200, EndY:=200
End Sub
AddCurve Method

As it applies to the Shapes object, returns a Shape object that represents a Bézier curve in a worksheet. As it applies to the CanvasShapes object, returns a Shape object that represents a Bézier curve in a drawing canvas.

expression.AddCurve(SafeArrayOfPoints)

expression Required. An expression that returns one of the objects in the Applies To list.

SafeArrayOfPoints Required Variant. An array of coordinate pairs that specifies the vertices and control points of the curve. The first point you specify is the starting vertex, and the next two points are control points for the first Bézier segment. Then, for each additional segment of the curve, you specify a vertex and two control points. The last point you specify is the ending vertex for the curve. Note that you must always specify 3n + 1 points, where n is the number of segments in the curve.
Example

The following example adds a two-segment Bézier curve to myDocument.

```vbnet
Dim pts(1 To 7, 1 To 2) As Single
pts(1, 1) = 0
pts(1, 2) = 0
pts(2, 1) = 72
pts(2, 2) = 72
pts(3, 1) = 100
pts(3, 2) = 40
pts(4, 1) = 20
pts(4, 2) = 50
pts(5, 1) = 90
pts(5, 2) = 120
pts(6, 1) = 60
pts(6, 2) = 30
pts(7, 1) = 150
pts(7, 2) = 90
Set myDocument = Worksheets(1)
myDocument.Shapes.AddCurve SafeArrayOfPoints:=pts
```
AddCustomList Method

- Adds a custom list for custom autofill and/or custom sort.

expression.AddCustomList(ListArray, ByRow)

expression Required. An expression that returns an Application object.

ListArray Required Variant. Specifies the source data, as either an array of strings or a Range object.

ByRow Optional Variant. Only used if ListArray is a Range object. True to create a custom list from each row in the range. False to create a custom list from each column in the range. If this argument is omitted and there are more rows than columns (or an equal number of rows and columns) in the range, Microsoft Excel creates a custom list from each column in the range. If this argument is omitted and there are more columns than rows in the range, Microsoft Excel creates a custom list from each row in the range.
Remarks

If the list you're trying to add already exists, this method does nothing.
Example

This example adds an array of strings as a custom list.

Application.AddCustomList Array("cogs", "sprockets", _
  "widgets", "gizmos")
AddDataField Method

- Adds a data field to a PivotTable report. Returns a PivotField object that represents the new data field.

expression.AddDataField(Field, Caption, Function)

expression Required. An expression that returns one of the objects in the Applies To list.

Field Required Object. The unique field on the server. If the source data is Online Analytical Processing (OLAP), the unique field is a cube field. If the source data is non-OLAP (non-OLAP source data), the unique field is a PivotTable field.

Caption Optional Variant. The label used in the PivotTable report to identify this data field.

Function Optional Variant. The function performed in the added data field.
Example

This example adds a data field titled "Total Score" to a pivot table called "PivotTable1".

**Note:** This example assumes a table exists in which one of the columns contains a column titled "Score".

```vba
Sub AddMoreFields()
    With ActiveSheet.PivotTables("PivotTable1")
        .AddDataField ActiveSheet.PivotTables(_
            "PivotTable1").PivotFields("Score"), "Total Score"
    End With
End Sub
```
AddDiagram Method

Creates a diagram. Returns a Shape object that represents the new diagram.

expression.AddDiagram(Type, Left, Top, Width, Height)

expression Required. An expression that returns one of the objects in the Applies To list.

Type Required MsoDiagramType. The type of diagram.

MsoDiagramType can be one of these MsoDiagramType constants.

msoDiagramCycle A process diagram with a continuous cycle diagram type.
msoDiagramMixed A mixed diagram type.
msoDiagramOrgChart A hierarchical relationship diagram type.
msoDiagramPyramid A foundation based relationships diagram type.
msoDiagramRadial A diagram type showing relationships of a core element.
msoDiagramTarget A diagram type showing steps toward a goal.
msoDiagramVenn A diagram type showing areas of overlap between elements.

Left Required Single. The position (in points) of the upper-left corner of the diagram relative to the upper-left corner of the worksheet.

Top Required Single. The position (in points) of the upper-left top of the diagram relative to the upper-left corner of the worksheet.

Width Required Single. The width of the diagram, in points.

Height Required Single. The height of the diagram, in points.
Example

This example adds a pyramid diagram to the active sheet.

Sub CreatePyramidDiagram()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add pyramid diagram to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram _
        (Type:=msoDiagramPyramid, Left:=10, _
        Top:=15, Width:=400, Height:=475)
    'Add first diagram node child to pyramid diagram

    'Add three more diagram node children to the pyramid diagram
    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount
End Sub
AddFields Method

Adds row, column, and page fields to a PivotTable report or PivotChart report.

`expression.AddFields(RowFields, ColumnFields, PageFields, AddToTable, AppendField)`

`expression` Required. An expression that returns a PivotTable object.

**RowFields** Optional Variant. Specifies a field name (or an array of field names) to be added as rows, or to be added to the category axis.

**ColumnFields** Optional Variant. Specifies a field name (or an array of field names) to be added as columns, or to be added to the series axis.

**PageFields** Optional Variant. Specifies a field name (or an array of field names) to be added as pages, or to be added to the page area.

**AddToTable** Optional Variant. Applies only to PivotTable reports. **True** to add the specified fields to the report (none of the existing fields are replaced). **False** to replace existing fields with the new fields. The default value is **False**.

**AppendField** Optional Boolean. Applies only to PivotChart reports. **True** to add the specified fields to the report (none of the existing fields are replaced). **False** to replace existing fields with the new fields. The default value is **False**.
Remarks

You must specify one of the field arguments.

Field names specify the unique name returned by the **SourceName** property of the **PivotField** object.

This method is not available for **OLAP** data sources.
Example

This example replaces the existing column fields in the first PivotTable report on Sheet1 with the Status and Closed_By fields.

`Worksheets("Sheet1").PivotTables(1).AddFields _
    ColumnFields:=Array("Status", "Closed_By")`
AddFormControl Method

Creates a Microsoft Excel control. Returns a Shape object that represents the new control.

expression.AddFormControl(Type, Left, Top, Width, Height)

expression Required. An expression that returns one of the objects in the Applies To list.

Type Required XlFormControl. The Microsoft Excel control type. You cannot create an edit box on a worksheet.

XlFormControl can be one of these XlFormControl constants.

xlButtonControl
xlCheckBox
xlDropDown
xlEditBox
xlGroupBox
xlLabel
xlListBox
xlOptionButton
xlScrollBar
xlSpinner

Left Required Long. The initial coordinates of the new object (in points) relative to the upper-left corner of cell A1 on a worksheet or to the upper-left corner of a chart.

Top Required Long. The initial coordinates of the new object (in points) relative to the upper-left corner of cell A1 on a worksheet or to the upper-left corner of a chart.
**Width** Required **Long**. The initial size of the new object, in points.

**Height** Required **Long**. The initial size of the new object, in points.
Remarks

Use the `AddOLEObject` method or the `Add` method of the `OLEObjects` collection to create an `ActiveX control`.
Example

This example adds a list box to worksheet one and sets the fill range for the list box.

With Worksheets(1)
    Set lb = .Shapes.AddFormControl(xlListBox, 100, 10, 100, 100)
End With
AddItem Method

Adds an item to a list box or a combo box.

expression.AddItem(Text, Index)

expression Required. An expression that returns a ControlFormat object.

Text Required String. The text to be added

Index Optional Variant. The position of the new entry. If the list has fewer entries than the specified index, blank items from the end of the list are added to the specified position. If this argument is omitted, the item is appended to the existing list.
Remarks

Using this method clears any range specified by the `ListFillRange` property.
Example

This example creates a list box and fills it with integers from 1 to 10.

With Worksheets(1)
    Set lb = .Shapes.AddFormControl(xlListBox, 100, 10, 100, 100)
    For x = 1 To 10
        lb.ControlFormat.AddItem x
    Next
End With
AddLabel Method

- Creates a label. Returns a Shape object that represents the new label.

expression.AddLabel(Orientation, Left, Top, Width, Height)

expression Required. An expression that returns one of the objects in the Applies To list.

Orientation Required MsoTextOrientation. The text orientation within the label.

MsoTextOrientation can be one of these MsoTextOrientation constants.
- msoTextOrientationDownward
- msoTextOrientationHorizontal
- msoTextOrientationHorizontalRotatedFarEast
- msoTextOrientationMixed
- msoTextOrientationUpward
- msoTextOrientationVertical
- msoTextOrientationVerticalFarEast

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.

Left Required Single. The position (in points) of the upper-left corner of the label relative to the upper-left corner of the document.

Top Required Single. The position (in points) of the upper-left corner of the label relative to the top corner of the document.

Width Required Single. The width of the label, in points.

Height Required Single. The height of the label, in points.
Example

This example adds a vertical label that contains the text "Test Label" to myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddLabel(msoTextOrientationVertical, 100, 100, 60, 150)
.TextFrame.Characters.Text = "Test Label"
AddLine Method

As it applies to the Shapes object, returns a Shape object that represents the new line in a worksheet. As it applies to the CanvasShapes object, returns a Shape object that represents the new line in a drawing canvas.

expression.AddLine(BeginX, BeginY, EndX, EndY)

expression Required. An expression that returns a Shapes object.

BeginX, BeginY Required Single. The position (in points) of the line's starting point relative to the upper-left corner of the document.

EndX, EndY Required Single. The position (in points) of the line's end point relative to the upper-left corner of the document.
Example

This example adds a blue dashed line to myDocument.

```vba
Set myDocument = Worksheets(1)
    .DashStyle = msoLineDashDotDot
    .ForeColor.RGB = RGB(50, 0, 128)
End With
```
AddMemberPropertyField Method

Adds a member property field to the display for the cube field.

expression.AddMemberPropertyField(Property, PropertyOrder)

expression Required. An expression that returns one of the objects in the Applies To list.

Property Required String. The unique name of the member property. For balanced hierarchies, a unique name can be created by appending the "quoted" member property name to the unique name of the level the member property is associated with. For unbalanced hierarchies, a unique name can be created by appending the "quoted" member property name to the unique name of the hierarchy.

PropertyOrder Optional Variant. Sets the PropertyOrder property value for a CubeField object. The actual position in the collection will be immediately before the PivotTable field that currently has the same PropertyOrder value that is given in the argument. If no field has the given property order value, the range of acceptable values is 1 to the number of member properties already showing for the hierarchy plus one. This argument is one-based. If omitted, the property goes to the end of the list.
Remarks

The property field specified will not be viewable if the PivotTable view has no fields.

To delete member properties, use the **Delete** method to delete the **PivotField** object from the **PivotFields** collection.
In this example, Microsoft Excel adds a member property field titled "Description" to the PivotTable report view. This example assumes that a PivotTable exists on the active worksheet and that "Country", "Area" and "Description" are items in the report.

Sub UseAddMemberPropertyField()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    With pvtTable
        .ManualUpdate = True
        .CubeFields("[Country]").LayoutForm = xlOutline
        .CubeFields("[Country]").AddMemberPropertyField _
            Property:="[Country].[Area].[Description]"
        .ManualUpdate = False
    End With
End Sub
AddNode Method

- AddNode method as it applies to the DiagramNodeChildren object.

Creates a diagram node. Returns a DiagramNode object that represents the new node.

expression.AddNode(Index, nodeType)

expression Required. An expression that returns a DiagramNodeChildren object

Index Optional Variant. The position of the node.

nodeType Optional MsoDiagramNodeType. The type of node.

MsoDiagramNodeType can be one of these MsoDiagramNodeType constants. msoDiagramAssistant

msoDiagramNode default

- AddNode method as it applies to the DiagramNode object.

Creates a diagram node. Returns a DiagramNode object that represents the new node. DiagramNode object.

expression.AddNode(pos, nodeType)

expression Required. An expression that returns a DiagramNode object.

pos Optional MsoRelativeNodePosition. Where the node will be added, relative to another node.

MsoRelativeNodePosition can be one of these MsoRelativeNodePosition constants. msoAfterLastSibling
msoAfterNode default
msoBeforeFirstChild
msoBeforeNode

type Optional MsoDiagramNodeType. The type of node.

MsoDiagramNodeType can be one of these MsoDiagramNodeType constants.

type Optional MsoDiagramNodeType. The type of node.

type Optional MsoDiagramNodeType. The type of node.
Example

This example adds a node to a diagram node on the active sheet.

Sub DiagramNodeOBJ()
    Dim nodDiagNode As DiagramNode
    Dim shDiagram As Shape

    Set shDiagram = ActiveSheet.Shapes.AddDiagram(
        Type:=msoDiagramOrgChart,
        Left:=10,
        Top:=15,
        Width:=400,
        Height:=475)

    Set nodDiagNode = shDiagram.DiagramNode

    'Add a root node to the diagram.
    nodDiagNode.Children.AddNode
End Sub
AddNodes Method

expression.AddNodes(SegmentType, EditingType, X1, Y1, X2, Y2, X3, Y3)

**expression** Required. An expression that returns one of the objects in the Applies To list.

**SegmentType** Required [MsoSegmentType](#). The type of segment to be added.

MsoSegmentType can be one of these MsoSegmentType constants.

- [msoSegmentLine](#)
- [msoSegmentCurve](#)

**EditingType** Required [MsoEditingType](#). The editing property of the vertex.

MsoEditingType can be one of these MsoEditingType constants.

- [msoEditingAuto](#)
- [msoEditingCorner](#)

Cannot be [msoEditingSmooth](#) or [msoEditingSymmetric](#)

If **SegmentType** is [msoSegmentLine](#), **EditingType** must be [msoEditingAuto](#).

**X1** Required [Single](#).

If the **EditingType** of the new segment is [msoEditingAuto](#), this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the end point of the new segment.

If the **EditingType** of the new node is [msoEditingCorner](#), this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the first control point for the new segment.
Y1 Required Single.

If the EditingType of the new segment is msoEditingAuto, this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the end point of the new segment.

If the EditingType of the new node is msoEditingCorner, this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the first control point for the new segment.

X2 Optional Variant.

If the EditingType of the new segment is msoEditingCorner, this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the second control point for the new segment.

If the EditingType of the new segment is msoEditingAuto, don't specify a value for this argument.

Y2 Optional Variant.

If the EditingType of the new segment is msoEditingCorner, this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the second control point for the new segment.

If the EditingType of the new segment is msoEditingAuto, don't specify a value for this argument.

X3 Optional Variant.

If the EditingType of the new segment is msoEditingCorner, this argument specifies the horizontal distance (in points) from the upper-left corner of the document to the end point of the new segment.
If the *EditingType* of the new segment is *msoEditingAuto*, don't specify a value for this argument.

**Y3** Optional *Variant*.

If the *EditingType* of the new segment is *msoEditingCorner*, this argument specifies the vertical distance (in points) from the upper-left corner of the document to the end point of the new segment.

If the *EditingType* of the new segment is *msoEditingAuto*, don't specify a value for this argument.
Example

This example adds a freeform with four segments to myDocument.

Set myDocument = Worksheets(1)
With myDocument.Shapes.BuildFreeform(msoEditingCorner, 360, 200)
  .AddNodes msoSegmentCurve, msoEditingCorner, _
      380, 230, 400, 250, 450, 300
  .AddNodes msoSegmentCurve, msoEditingAuto, 480, 200
  .AddNodes msoSegmentLine, msoEditingAuto, 480, 400
  .AddNodes msoSegmentLine, msoEditingAuto, 360, 200
  .ConvertToShape
End With
AddPageItem Method

Adds an additional item to a multiple item page field.

expression.AddPageItem(Item, ClearList)

expression Required. An expression that returns one of the objects in the Applies To list.

**Item** Required String. Source name of a PivotItem object, corresponding to the specific Online Analytical Processing (OLAP) member unique name.

**ClearList** Optional Variant. If False (default), adds a page item to the existing list. If True, deletes all current items and adds Item.
Remarks

To avoid run-time errors, the data source must be an OLAP source, the field chosen must currently be in the page position, and the EnableMultiplePageItems property must be set to True.
Example

In this example, Microsoft Excel adds a page item with a source name titled "[Product].[All Products].[Food].[Eggs]". This example assumes an OLAP PivotTable exists on the active worksheet.

Sub UseAddPageItem()
    ' The source is an OLAP database and you can manually reorder it
    ActiveSheet.PivotTables(1).CubeFields("[Product]"). EnableMultiplePageItems = True
    ' Add the page item titled "[Product].[All Products].[Food].[Eggs]"
    ActiveSheet.PivotTables(1).PivotFields("[Product]").AddPageItem "[Product].[All Products].[Food].[Eggs]"
End Sub
AddPicture Method

Creates a picture from an existing file. Returns a **Shape** object that represents the new picture.

```
expression.AddPicture(FileName, LinkToFile, SaveWithDocument, Left, Top, Width, Height)
```

*expression* Required. An expression that returns one of the objects in the Applies To list.

**FileName** Required **String**. The file from which the OLE object is to be created.

**LinkToFile** Required **MsoTriState**. The file to link to.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**
- **msoFalse** To make the picture an independent copy of the file.
- **msoTriStateMixed**
- **msoTriStateToggle**
- **msoTrue** To link the picture to the file from which it was created.

**SaveWithDocument** Required **MsoTriState**. To save the picture with the document.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**
- **msoFalse** To store only the link information in the document.
- **msoTriStateMixed**
- **msoTriStateToggle**
- **msoTrue** To save the linked picture with the document into which it’s inserted.

This argument must be **msoTrue** if **LinkToFile** is **msoFalse**.
**Left** Required **Single**. The position (in points) of the upper-left corner of the picture relative to the upper-left corner of the document.

**Top** Required **Single**. The position (in points) of the upper-left corner of the picture relative to the top of the document.

**Width** Required **Single**. The width of the picture, in points.

**Height** Required **Single**. The height of the picture, in points.
Example

This example adds a picture created from the file Music.bmp to myDocument. The inserted picture is linked to the file from which it was created and is saved with myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddPicture _
    "c:\microsoft office\clipart\music.bmp", _
    True, True, 100, 100, 70, 70
AddPolyline Method

Creates an open polyline or a closed polygon drawing. Returns a *Shape* object that represents the new polyline or polygon.

*expression*.AddPolyline(*SafeArrayOfPoints*)

*expression*  Required. An expression that returns a *Shapes* object.

*SafeArrayOfPoints*  Required *Variant*. An array of *coordinate pairs* that specifies the polyline drawing's vertices.
Remarks

To form a closed polygon, assign the same coordinates to the first and last vertices in the polyline drawing.
Example

This example adds a triangle to myDocument. Because the first and last points have the same coordinates, the polygon is closed and filled. The color of the triangle's interior will be the same as the default shape's fill color.

Dim triArray(1 To 4, 1 To 2) As Single
triArray(1, 1) = 25
triArray(1, 2) = 100
triArray(2, 1) = 100
triArray(2, 2) = 150
triArray(3, 1) = 150
triArray(3, 2) = 50
triArray(4, 1) = 25 ' Last point has same coordinates as first
triArray(4, 2) = 100
Set myDocument = Worksheets(1)
myDocument.Shapes.AddPolyline triArray
AddReplacement Method

Adds an entry to the array of AutoCorrect replacements.

expression.AddReplacement(What, Replacement)

expression  Required. An expression that returns an AutoCorrect object.

What  Required String. The text to be replaced. If this string already exists in the array of AutoCorrect replacements, the existing substitute text is replaced by the new text.

Replacement  Required String. The replacement text.
Example

This example substitutes the word "Temp." for the word "Temperature" in the array of AutoCorrect replacements.

With Application.AutoCorrect
    .AddReplacement "Temperature", "Temp."
End With
AddSet Method

- Adds a new CubeField object to the CubeFields collection. The CubeField object corresponds to a set defined on the Online Analytical Processing (OLAP) provider for the cube.

expression.AddSet(\textit{Name}, \textit{Caption})

expression  Required. An expression that returns one of the objects in the Applies To list.

\textit{Name}  Required \textbf{String}. A valid name in the SETS schema rowset.

\textit{Caption}  Required \textbf{String}. A string representing the field that will be displayed in the PivotTable view.
Remarks

If a set with the name given in the argument Name does not exist, the AddSet method will return a run-time error.
Example

In this example, Microsoft Excel adds a set titled "My Set" to the CubeField object. This example assumes an OLAP PivotTable report exists on the active worksheet. Also, this example assumes a field titled "Product" exists.

Sub UseAddSet()
    Dim pvtOne As PivotTable
    Dim strAdd As String
    Dim strFormula As String
    Dim cbfOne As CubeField

    Set pvtOne = Sheet1.PivotTables(1)
    strAdd = "[MySet]"
    strFormula = "'{[Product].[All Products].[Food].children}'"

    ' Establish connection with data source if necessary.

    ' Add a calculated member titled "[MySet]"
    pvtOne.CalculatedMembers.Add Name:=strAdd, _
        Formula:=strFormula, Type:=xlCalculatedSet

    ' Add a set to the CubeField object.
    Set cbfOne = pvtOne.CubeFields.AddSet(Name:="[MySet]", _
        Caption:="My Set")
End Sub
AddShape Method

As it applies to the Shapes object, returns a Shape object that represents the new AutoShape in a worksheet. As it applies to the CanvasShapes object, returns a Shape object that represents the new AutoShape in a drawing canvas.

expression.AddShape(Type, Left, Top, Width, Height)

expression Required. An expression that returns a Shapes object.

Type Required MsoAutoShapeType. Specifies the type of AutoShape to create.

MsoAutoShapeType can be one of these MsoAutoShapeType constants.

msoShape16pointStar
msoShape24pointStar
msoShape32pointStar
msoShape4pointStar
msoShape5pointStar
msoShape8pointStar
msoShapeActionButtonBackorPrevious
msoShapeActionButtonBeginning
msoShapeActionButtonCustom
msoShapeActionButtonDocument
msoShapeActionButtonEnd
msoShapeActionButtonForwardorNext
msoShapeActionButtonHelp
msoShapeActionButtonHome
msoShapeActionButtonInformation
msoShapeActionButtonMovie
msoShapeActionButtonReturn
msoShapeActionButtonSound
msoShapeArc
msoShapeBalloon
msoShapeBentArrow
msoShapeBentUpArrow
msoShapeBevel
msoShapeBlockArc
msoShapeCan
msoShapeChevron
msoShapeCircularArrow
msoShapeCloudCallout
msoShapeCross
msoShapeCube
msoShapeCurvedDownArrow
msoShapeCurvedDownRibbon
msoShapeCurvedLeftArrow
msoShapeCurvedRightArrow
msoShapeCurvedUpArrow
msoShapeCurvedUpRibbon
msoShapeDiamond
msoShapeDonut
msoShapeDoubleBrace
msoShapeDoubleBracket
msoShapeDoubleWave
msoShapeDownArrow
msoShapeDownArrowCallout
msoShapeDownRibbon
msoShapeExplosion1
msoShapeExplosion2
msoShapeFlowchartAlternateProcess
msoShapeFlowchartCard
msoShapeFlowchartCollate
msoShapeFlowchartConnector
msoShapeFlowchartData
msoShapeRectangle
msoShapeRectangularCallout
msoShapeRegular Pentagon
msoShapeRightArrow
msoShapeRightArrowCallout
msoShapeRightBrace
msoShapeRightBracket
msoShapeRightTriangle
msoShape Rounded Rectangle
msoShape Rounded Rectangular Callout
msoShapeSmiley Face
msoShape Striped Right Arrow
msoShape Sun
msoShape Trapezoid
msoShape Up Arrow
msoShape Up Arrow Callout
msoShape Up Down Arrow
msoShape Up Down Arrow Callout
msoShape Up Ribbon
msoShape U Turn Arrow
msoShape Vertical Scroll
msoShape Wave

**Left, Top** Required **Single.** The position (in points) of the upper-left corner of the AutoShape's bounding box relative to the upper-left corner of the document.

**Width, Height** Required **Single.** The width and height of the AutoShape's bounding box, in points.
Remarks

To change the type of an AutoShape that you’ve added, set the `AutoShapeType` property.
Example

This example adds a rectangle to myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddShape msoShapeRectangle, 50, 50, 100, 200
AddTextbox Method

- Creates a text box. Returns a Shape object that represents the new text box.

expression.AddTextbox(Orientation, Left, Top, Width, Height)

expression Required. An expression that returns one of the objects in the Applies To list.

Orientation Required MsoTextOrientation. The orientation of the textbox.

MsoTextOrientation can be one of these MsoTextOrientation constants.

msoTextOrientationDownward
msoTextOrientationHorizontal
msoTextOrientationHorizontalRotatedFarEast
msoTextOrientationMixed
msoTextOrientationUpward
msoTextOrientationVertical
msoTextOrientationVerticalFarEast

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.

Left Required Single. The position (in points) of the upper-left corner of the text box relative to the upper-left corner of the document.

Top Required Single. The position (in points) of the upper-left corner of the text box relative to the top of the document.

Width Required Single. The width of the text box, in points.

Height Required Single. The height of the text box, in points.
Example

This example adds a text box that contains the text "Test Box" to myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddTextbox(msoTextOrientationHorizontal, _
    100, 100, 200, 50) _
    .TextFrame.Characters.Text = "Test Box"
**AddTextEffect Method**

Creates a WordArt object. Returns a **Shape** object that represents the new WordArt object.

```plaintext
expression.AddTextEffect(PresetTextEffect, Text, FontName, FontSize, FontBold, FontItalic, Left, Top)
```

*expression* Required. An expression that returns one of the objects in the Applies To list.

*PresetTextEffect* Required **MsoPresetTextEffect**. The preset text effect. 

MsoPresetTextEffect can be one of these MsoPresetTextEffect constants.

- **msoTextEffect1**
- **msoTextEffect2**
- **msoTextEffect3**
- **msoTextEffect4**
- **msoTextEffect5**
- **msoTextEffect6**
- **msoTextEffect7**
- **msoTextEffect8**
- **msoTextEffect9**
- **msoTextEffect10**
- **msoTextEffect11**
- **msoTextEffect12**
- **msoTextEffect13**
- **msoTextEffect14**
- **msoTextEffect15**
- **msoTextEffect16**
- **msoTextEffect17**
- **msoTextEffect18**
msoTextEffect19
msoTextEffect20
msoTextEffect21
msoTextEffect22
msoTextEffect23
msoTextEffect24
msoTextEffect25
msoTextEffect26
msoTextEffect27
msoTextEffect28
msoTextEffect29
msoTextEffect30
msoTextEffectMixed

**Text** Required **String.** The text in the WordArt.

**FontName** Required **String.** The name of the font used in the WordArt.

**FontSize** Required **Single.** The size (in points) of the font used in the WordArt.

**FontBold** Required **MsoTriState.** The font used in the WordArt to bold.

MsoTriState can be one of these MsoTriState constants.

- msoCTrue
- msoFalse
- msoTriStateMixed
- msoTriStateToggle
- msoTrue

**FontItalic** Required **MsoTriState.** The font used in the WordArt to italic.

MsoTriState can be one of these MsoTriState constants.

- msoCTrue
- msoFalse
- msoTriStateMixed
msoTriStateToggle
msoTrue

**Left**  Required **Single**. The position (in points) of the upper-left corner of the WordArt's bounding box relative to the upper-left corner of the document.

**Top**  Required **Single**. The position (in points) of the upper-left corner of the WordArt's bounding box relative to the top of the document.
Remarks

When you add WordArt to a document, the height and width of the WordArt are automatically set based on the size and amount of text you specify.
Example

This example adds WordArt that contains the text "Test" to myDocument.

Set myDocument = Worksheets(1)
Set newWordArt = myDocument.Shapes.AddTextEffect(
    PresetTextEffect:=msoTextEffect1, Text:="Test",
    FontName:="Arial Black", FontSize:=36,
    FontBold:=msoFalse, FontItalic:=msoFalse, Left:=10,
    Top:=10)
AddToFavorites Method

- Adds a shortcut to the workbook or hyperlink to the Favorites folder.

`expression.AddToFavorites`

`expression` Required. An expression that returns a `Workbook` or `Hyperlink` object.
Example

This example adds a shortcut to the active workbook to the Favorites folder.

ActiveWorkbook.AddToFavorites
AdvancedFilter Method

Filters or copies data from a list based on a criteria range. If the initial selection is a single cell, that cell's current region is used. Variant.

expression.AdvancedFilter(Action, CriteriaRange, CopyToRange, Unique)

expression  Required. An expression that returns one of the objects in the Applies To list.

Action  Required XlFilterAction.

XlFilterAction can be one of these XlFilterAction constants.

 xlFilterCopy
 xlFilterInPlace

CriteriaRange  Optional Variant. The criteria range. If this argument is omitted, there are no criteria.

CopyToRange  Optional Variant. The destination range for the copied rows if Action is xlFilterCopy. Otherwise, this argument is ignored.

Unique  Optional Variant. True to filter unique records only. False to filter all records that meet the criteria. The default value is False.
Example

This example filters a database (named "Database") based on a criteria range named "Criteria."

Range("Database").AdvancedFilter _
    Action:=xlFilterInPlace, _
    CriteriaRange:=Range("Criteria")
Align Method

Aligns the shapes in the specified range of shapes.

expression.**Align**(AlignCmd, RelativeTo)

**expression** Required. An expression that returns one of the objects in the Applies To list.

**AlignCmd** Required **MsoAlignCmd**. Specifies the way the shapes in the specified shape range are to be aligned.

MsoAlignCmd can be one of these MsoAlignCmd constants.

<table>
<thead>
<tr>
<th>msoAlignCenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>msoAlignMiddles</td>
</tr>
<tr>
<td>msoAlignTops</td>
</tr>
<tr>
<td>msoAlignBottoms</td>
</tr>
<tr>
<td>msoAlignLefts</td>
</tr>
<tr>
<td>msoAlignRights</td>
</tr>
</tbody>
</table>

**RelativeTo** Required **MsoTriState**. Not used in Microsoft Excel. Must be **False**.

MsoTriState can be one of these MsoTriState constants.

<table>
<thead>
<tr>
<th>msoCTrue</th>
</tr>
</thead>
<tbody>
<tr>
<td>msoFalse</td>
</tr>
<tr>
<td>msoTriStateMixed</td>
</tr>
<tr>
<td>msoTriStateToggle</td>
</tr>
<tr>
<td>msoTrue</td>
</tr>
</tbody>
</table>
Example

This example aligns the left edges of all the shapes in the specified range in myDocument with the left edge of the leftmost shape in the range.

Set myDocument = Worksheets(1)
myDocument.Shapes.SelectAll
Selection.ShapeRange.Align msoAlignLefts, False
Apply Method

Applies to the specified shape formatting that’s been copied by using the `PickUp` method.

`expression.Apply`

`expression`  Required. An expression that returns a `Shape` or `ShapeRange` object.
Example

This example copies the formatting of shape one on myDocument and then applies the copied formatting to shape two.

Set myDocument = Worksheets(1)
With myDocument
    .Shapes(1).PickUp
    .Shapes(2).**Apply**
End With
ApplyCustomType Method

- ApplyCustomType method as it applies to the Series object.

Applies a standard or custom chart type to a series.

expression.**ApplyCustomType**(ChartType)

*expression* Required. An expression that returns one of the above objects.

*ChartType* Required **XlChartType**. A standard chart type.

XlChartType can be one of these XlChartType constants.

- **xlLine**
- **xlLineMarkersStacked**
- **xlLineStacked**
- **xlPie**
- **xlPieOfPie**
- **xlPyramidBarStacked**
- **xlPyramidCol**
- **xlPyramidColClustered**
- **xlPyramidColStacked**
- **xlPyramidColStacked100**
- **xlRadar**
- **xlRadarFilled**
- **xlRadarMarkers**
- **xlStockHLC**
- **xlStockOHLC**
- **xlStockVHLC**
- **xlStockVOHLC**
- **xlSurface**
- **xlSurfaceTopView**
xlSurfaceTopViewWireframe
xlSurfaceWireframe
xlXYScatter
xlXYScatterLines
xlXYScatterLinesNoMarkers
xlXYScatterSmooth
xlXYScatterSmoothNoMarkers
xl3DArea
xl3DAreaStacked
xl3DAreaStacked100
xl3DBarClustered
xl3DBarStacked
xl3DBarStacked100
xl3DColumn
xl3DColumnClustered
xl3DColumnStacked
xl3DColumnStacked100
xl3DLine
xl3DPie
xl3DPieExploded
xlArea
xlAreaStacked
xlAreaStacked100
xlBarClustered
xlBarOfPie
xlBarStacked
xlBarStacked100
xlBubble
xlBubble3DEffect
xlColumnClustered
xlColumnStacked
xlColumnStacked100
xlConeBarClustered
Applies a standard or custom chart type to a chart.

*expression*. **ApplyCustomType**(*ChartType*, *TypeName*)

*expression*  Required. An expression that returns one of the above objects.

**Chart Type**  Required **XlChartType**. A standard chart type.

XlChartType can be one of these XlChartType constants.

xlLine
xlLineMarkersStacked
xlLineStacked
xlPie
xlPieOfPie
xlPyramidBarStacked
xlPyramidCol
xlPyramidColClustered
xlPyramidColStacked
xlPyramidColStacked100
xlRadar
xlRadarFilled
xlRadarMarkers
xlStockHLC
xlStockOHLC
xlStockVHLC
xlStockVOHLC
xlSurface
xlSurfaceTopView
xlSurfaceTopViewWireframe
xlSurfaceWireframe
xlXYScatter
xlXYScatterLines
xlXYScatterLinesNoMarkers
xlXYScatterSmooth
xlXYScatterSmoothNoMarkers
xl3DArea
xl3DAreaStacked
xl3DAreaStacked100
xl3DBarClustered
xl3DBarStacked
xl3DBarStacked100
xl3DColumn
xl3DColumnClustered
xl3DColumnStacked
xlLineMarkersStacked100
xlLineStacked100
xlPieExploded
xlPyramidBarClustered
xlPyramidBarStacked100

**TypeName**  Optional **Variant** (used only with a **Chart** object). The name of the custom chart type if **ChartType** specifies a custom chart gallery.
Example

This example applies the “Line with Data Markers" chart type to chart one.

Charts(1).ApplyCustomType xlLineMarkers
ApplyDataLabels Method

Applies data labels to a point, a series, or all the series in a chart.

expression.ApplyDataLabels(\textit{Type}, \textit{LegendKey}, \textit{AutoText}, \textit{HasLeaderLines}, \textit{ShowSeriesName}, \textit{ShowCategoryName}, \textit{ShowValue}, \textit{ShowPercentage}, \textit{ShowBubbleSize}, \textit{Separator})

\textit{expression} Required. An expression that returns one of the objects in the \textit{Applies To} list.

\textit{Type} Optional \texttt{XlDataLabelsType}. The type of data label to apply.

\texttt{XlDataLabelsType} can be one of these \texttt{XlDataLabelsType} constants.

\texttt{xlDataLabelsShowBubbleSizes}
\texttt{xlDataLabelsShowLabelAndPercent}. Percentage of the total, and category for the point. Available only for pie charts and doughnut charts.
\texttt{xlDataLabelsShowPercent}. Percentage of the total. Available only for pie charts and doughnut charts.
\texttt{xlDataLabelsShowLabel}. Category for the point.
\texttt{xlDataLabelsShowNone}. No data labels.
\texttt{xlDataLabelsShowValue}. \texttt{default}. Value for the point (assumed if this argument isn't specified).

\textit{LegendKey} Optional \texttt{Variant}. \texttt{True} to show the legend key next to the point. The default value is \texttt{False}.

\textit{AutoText} Optional \texttt{Variant}. \texttt{True} if the object automatically generates appropriate text based on content.

\textit{HasLeaderLines} Optional \texttt{Variant}. For the \texttt{Chart} and \texttt{Series} objects, \texttt{True} if the series has leader lines.

\textit{ShowSeriesName} Optional \texttt{Variant}. The series name for the data label.
**ShowCategoryName**  Optional **Variant.** The category name for the data label.

**ShowValue**  Optional **Variant.** The value for the data label.

**ShowPercentage**  Optional **Variant.** The percentage for the data label.

**ShowBubbleSize**  Optional **Variant.** The bubble size for the data label.

**Separator**  Optional **Variant.** The separator for the data label.
Example

This example applies category labels to series one in Chart1.

Charts("Chart1").SeriesCollection(1). _
    ApplyDataLabels Type:=xlDataLabelsShowLabel
ApplyNames Method

Applies names to the cells in the specified range.

\[\text{expression}.\text{ApplyNames}(\text{Names, IgnoreRelativeAbsolute, UseRowColumnNames, OmitColumn, OmitRow, Order, AppendLast})\]

\text{expression} \hspace{0.5em} \text{Required. An expression that returns one of the objects in the Applies To list.}

\text{Names} \hspace{0.5em} \text{Optional Variant. An array of the names to be applied. If this argument is omitted, all names on the sheet are applied to the range.}

\text{IgnoreRelativeAbsolute} \hspace{0.5em} \text{Optional Variant. True to replace references with names, regardless of the reference types of either the names or references. False to replace absolute references only with absolute names, relative references only with relative names, and mixed references only with mixed names. The default value is True.}

\text{UseRowColumnNames} \hspace{0.5em} \text{Optional Variant. True to use the names of row and column ranges that contain the specified range if names for the range cannot be found. False to ignore the OmitColumn and OmitRow arguments. The default value is True.}

\text{OmitColumn} \hspace{0.5em} \text{Optional Variant. True to replace the entire reference with the row-oriented name. The column-oriented name can be omitted only if the referenced cell is in the same column as the formula and is within a row-oriented named range. The default value is True.}

\text{OmitRow} \hspace{0.5em} \text{Optional Variant. True to replace the entire reference with the column-oriented name. The row-oriented name can be omitted only if the referenced cell is in the same row as the formula and is within a column-oriented named range. The default value is True.}

\text{Order} \hspace{0.5em} \text{Optional XLApplyNamesOrder. Determines which range name is listed}
first when a cell reference is replaced by a row-oriented and column-oriented range name.

XlApplyNamesOrder can be one of these XlApplyNamesOrder constants.

\texttt{xlColumnThenRow}
\texttt{xlRowThenColumn default}

\texttt{AppendLast} Optional \texttt{Variant. True} to replace the definitions of the names in \texttt{Names} and also replace the definitions of the last names that were defined. \texttt{False} to replace the definitions of the names in \texttt{Names} only. The default value is \texttt{False}. 
Remarks

You can use the `Array` function to create the list of names for the `Names` argument.

If you want to apply names to the entire sheet, use `Cells.ApplyNames`.

You cannot "unapply" names; to delete names, use the `Delete` method.
**Example**

This example applies names to the entire sheet.

```
Cells.ApplyNames Names:=Array("Sales", "Profits")
```
ApplyOutlineStyles Method

Applies outlining styles to the specified range.

`expression.ApplyOutlineStyles`

`expression`  Required. An expression that returns a `Range` object.
Example

The following example applies automatic outlining styles to the selection. The selection must include the entire outline range on a worksheet.

Selection. **ApplyOutlineStyles**
AreaGroups Method

On a 2-D chart, returns an object that represents either a single area chart group (a ChartGroup object) or a collection of the area chart groups (a ChartGroups collection).

expression.AreaGroups(Index)

expression  Required. An expression that returns a Chart object.

Index  Optional Variant. The chart group number.
Example

This example turns on drop lines for the 2-D area chart group.

`Charts(1).AreaGroups(1).HasDropLines = True`
Arrange Method

Arranges the windows on the screen. Variant.

`expression.Arrange(ArrangeStyle, ActiveWorkbook, SyncHorizontal, SyncVertical)`

`expression` Required. An expression that returns one of the objects in the Applies To list

`ArrangeStyle` Optional `XlArrangeStyle`.

`XlArrangeStyle` can be one of these `XlArrangeStyle` constants.

- `xlArrangeStyleCascade`. Windows are cascaded.
- `xlArrangeStyleTiled` **default**. Windows are tiled
- `xlArrangeStyleHorizontal`. Windows are arranged horizontally.
- `xlArrangeStyleVertical`. Windows are arranged vertically.

`ActiveWorkbook` Optional `Variant`. **True** to arrange only the visible windows of the active workbook. **False** to arrange all windows. The default value is **False**.

`SyncHorizontal` Optional `Variant`. Ignored if `ActiveWorkbook` is **False** or omitted. **True** to synchronize the windows of the active workbook when scrolling horizontally. **False** to not synchronize the windows. The default value is **False**.

`SyncVertical` Optional `Variant`. Ignored if `ActiveWorkbook` is **False** or omitted. **True** to synchronize the windows of the active workbook when scrolling vertically. **False** to not synchronize the windows. The default value is **False**.
Example

This example tiles all the windows in the application.

Application.Windows.Arrange ArrangeStyle:=xlArrangeStyleTiled
AutoComplete Method

Returns an AutoComplete match from the list. If there’s no AutoComplete match or if more than one entry in the list matches the string to complete, this method returns an empty string.

expression.AutoComplete(String)

expression  Required. An expression that returns a Range object (must be a single cell).

String  Required String. The string to complete.
Remarks

This method works even if the AutoComplete feature is disabled.
Example

This example returns the AutoComplete match for the string segment “Ap.” An AutoComplete match is made if the column containing cell A5 contains a contiguous list and one of the entries in the list contains a match for the string.

```vba
s = Worksheets(1).Range("A5").AutoComplete("Ap")
If Len(s) > 0 Then
    MsgBox "Completes to " & s
Else
    MsgBox "Has no completion"
End If
```
AutoFill Method

Performs an autofill on the cells in the specified range. **Variant.**

`expression.AutoFill(Destination, Type)`

`expression`  Required. An expression that returns one of the objects in the Applies To list.

**Destination**  Required **Range** object. The cells to be filled. The destination must include the source range.

**Type**  Optional **XlAutoFillType**. Specifies the fill type.

**XlAutoFillType** can be one of these **XlAutoFillType** constants.

- `xlFillDays`
- `xlFillFormats`
- `xlFillSeries`
- `xlFillWeekdays`
- `xlGrowthTrend`
- `xlFillCopy`
- `xlFillDefault default`
- `xlFillMonths`
- `xlFillValues`
- `xlFillYears`
- `xlLinearTrend`

If this argument is `xlFillDefault` or omitted, Microsoft Excel selects the most appropriate fill type, based on the source range.
Example

This example performs an autofill on cells A1:A20 on Sheet1, based on the source range A1:A2 on Sheet1. Before running this example, type 1 in cell A1 and type 2 in cell A2.

Set sourceRange = Worksheets("Sheet1").Range("A1:A2")
Set fillRange = Worksheets("Sheet1").Range("A1:A20")
sourceRange.AutoFill Destination:=fillRange
AutoFilter Method

Filters a list using the AutoFilter. **Variant.**


```expression.AutoFilter(Field, Criteria1, Operator, Criteria2, VisibleDropDown)```

**expression** Required. An expression that returns one of the objects in the Applies To list.

**Field** Optional **Variant.** The integer offset of the field on which you want to base the filter (from the left of the list; the leftmost field is field one).

**Criteria1** Optional **Variant.** The criteria (a string; for example, "101"). Use "=" to find blank fields, or use "<>" to find nonblank fields. If this argument is omitted, the criteria is All. If **Operator** is **xlTop10Items**, **Criteria1** specifies the number of items (for example, "10").

**Operator** Optional **XlAutoFilterOperator.**

**XlAutoFilterOperator** can be one of these **XlAutoFilterOperator** constants.

- **xlAnd** default
- **xlBottom10Items**
- **xlBottom10Percent**
- **xlOr**
- **xlTop10Items**
- **xlTop10Percent**

Use **xlAnd** and **xlOr** with **Criteria1** and **Criteria2** to construct compound criteria.

**Criteria2** Optional **Variant.** The second criteria (a string). Used with **Criteria1** and **Operator** to construct compound criteria.
**VisibleDropDown**  Optional **Variant. True** to display the AutoFilter drop-down arrow for the filtered field. **False** to hide the AutoFilter drop-down arrow for the filtered field. **True** by default.
Remarks

If you omit all the arguments, this method simply toggles the display of the AutoFilter drop-down arrows in the specified range.
Example

This example filters a list starting in cell A1 on Sheet1 to display only the entries in which field one is equal to the string "Otis". The drop-down arrow for field one will be hidden.

`Worksheets("Sheet1").Range("A1").AutoFilter _
    field:=1, _
    Criteria1:="Otis" _
    VisibleDropDown:=False`
AutoFit Method

Changes the width of the columns in the range or the height of the rows in the range to achieve the best fit.

\texttt{expression.AutoFit}

\textit{expression} Required. An expression that returns a \texttt{Range} object. Must be a row or a range of rows, or a column or a range of columns. Otherwise, this method generates an error.
Remarks

One unit of column width is equal to the width of one character in the Normal style.
Example

This example changes the width of columns A through I on Sheet1 to achieve the best fit.

`Worksheets("Sheet1").Columns("A:I").AutoFit`

This example changes the width of columns A through E on Sheet1 to achieve the best fit, based only on the contents of cells A1:E1.

`Worksheets("Sheet1").Range("A1:E1").Columns.AutoFit`
Show All
AutoFormat Method

AutoFormat method as it applies to the Range object.

Automatically formats the specified range, using a predefined format.

expression.AutoFormat(Format, Number, Font, Alignment, Border, Pattern, Width)

expression  Required. An expression that returns one of the above objects.

Format  Optional XlRangeAutoFormat. The specified AutoFormat.

XlRangeAutoFormat can be one of these XlRangeAutoFormat constants.

xlRangeAutoFormat3DEffects1
xlRangeAutoFormat3DEffects2
xlRangeAutoFormatAccounting1
xlRangeAutoFormatAccounting2
xlRangeAutoFormatAccounting3
xlRangeAutoFormatAccounting4
xlRangeAutoFormatClassic1 default
xlRangeAutoFormatClassic2
xlRangeAutoFormatClassic3
xlRangeAutoFormatClassicPivotTable
xlRangeAutoFormatColor1
xlRangeAutoFormatColor2
xlRangeAutoFormatColor3
xlRangeAutoFormatList1
xlRangeAutoFormatList2
xlRangeAutoFormatList3
xlRangeAutoFormatLocalFormat1
xlRangeAutoFormatLocalFormat2
The default constant is **xlRangeAutoFormatClassic1**. Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.

**Number** Optional **Variant.** **True** to include number formats in the AutoFormat. The default value is **True**.

**Font** Optional **Variant.** **True** to include font formats in the AutoFormat. The
default value is True.

**Alignment** Optional Variant. True to include alignment in the AutoFormat. The default value is True.

**Border** Optional Variant. True to include border formats in the AutoFormat. The default value is True.

**Pattern** Optional Variant. True to include pattern formats in the AutoFormat. The default value is True.

**Width** Optional Variant. True to include column width and row height in the AutoFormat. The default value is True.

- AutoFormat method as it applies to the Chart object.

Automatically formats the specified chart.

`expression.AutoFormat(Gallery, Format)`

*expression* Required. An expression that returns one of the above objects.

**Gallery** Required Long. The specified Gallery.

**Format** Optional Variant. The specified AutoFormat.
Remarks

If the range is a single cell, this method also formats the active region surrounding the cell. In other words, the following two statements are equivalent:

Cells("A1").AutoFormat
Cells("A1").CurrentRegion.AutoFormat
Example

This example formats cells A1:D8 on Sheet1, using a predefined format.

Worksheets("Sheet1").Range("A1:D8").__
    AutoFormat Format:=xlRangeAutoFormatClassic1
**AutomaticLength Method**

Specifies that the first segment of the callout line (the segment attached to the text callout box) be scaled automatically when the callout is moved. Use the **CustomLength** method to specify that the first segment of the callout line retain the fixed length returned by the **Length** property whenever the callout is moved. Applies only to callouts whose lines consist of more than one segment (types **msoCalloutThree** and **msoCalloutFour**).

```
expression.AutomaticLength
```

*expression*  Required. An expression that returns a **CalloutFormat** object.
Remarks

Applying this method sets the AutoLength property to True.
Example

This example toggles between an automatically scaling first segment and one with a fixed length for the callout line for shape one on myDocument. For the example to work, shape one must be a callout.

```vba
Set myDocument =Worksheets(1)
With myDocument.Shapes(1).Callout
    If .AutoLength Then
        .CustomLength 50
    Else
        .AutomaticLength
    End If
End With
```
AutoOutline Method

 Automatically creates an outline for the specified range. If the range is a single cell, Microsoft Excel creates an outline for the entire sheet. The new outline replaces any existing outline.

expression.AutoOutline

expression    Required. An expression that returns a Range object.
Example

This example creates an outline for the range A1:G37 on Sheet1. The range must contain either a summary row or a summary column.

\[ \text{Worksheets("Sheet1").Range("A1:G37").AutoOutline} \]
AutoShow Method

Displays the number of top or bottom items for a row, page, or column field in the specified PivotTable report.

expression.AutoShow(Type, Range, Count, Field)

expression Required. An expression that returns one of the objects in the Applies To list

Type Required Long. Use xlAutomatic to cause the specified PivotTable report to show the items that match the specified criteria. Use xlManual to disable this feature.

Range Required Long. The location at which to start showing items. Can be either of the following constants: xlTop or xlBottom.

Count Required Long. The number of items to be shown.

Field Required String. The name of the base data field. You must specify the unique name (as returned from the SourceName property), and not the displayed name.
**Example**

This example shows only the top two companies, based on the sum of sales:

```javascript
ActiveSheet.PivotTables("Pivot1").PivotFields("Company") _
  .AutoShow  xlAutomatic, xlTop, 2, "Sum of Sales"
```
AutoSort Method

Establishes automatic field-sorting rules for PivotTable reports.

expression.AutoSort(Order, Field)

expression Required. An expression that returns one of the objects in the Applies To list.

Order Required XlSortOrder. The sort order.

XlSortOrder can be one of these XlSortOrder constants.
xlAscending
xlDescending
xlManual. To disable automatic sorting.

Field Required String. The name of the sort key field. You must specify the unique name (as returned from the SourceName property), and not the displayed name.
Example

This example sorts the Company field in descending order, based on the sum of sales.

ActiveSheet.PivotTables(1).PivotField("Company")_.AutoSort xlDescending, "Sum of Sales"
Axes Method

Returns an object that represents either a single axis or a collection of the axes on the chart.

\[ \text{expression} \cdot \text{Axes}(Type, \text{AxisGroup}) \]

**expression**  Required. An expression that returns a **Chart** object.

**Type**  Optional **Variant**. Specifies the axis to return. Can be one of the following **XlAxisType** constants: **xlValue**, **xlCategory**, or **xlSeriesAxis** (**xlSeriesAxis** is valid only for 3-D charts).

**AxisGroup**  Optional **XlAxisGroup**. Specifies the axis group. If this argument is omitted, the primary group is used. 3-D charts have only one axis group.

**XlAxisGroup** can be one of these **XlAxisGroup** constants.

**xlPrimary**  *default*

**xlSecondary**
**Example**

This example adds an axis label to the category axis in Chart1.

```vba
With Charts("Chart1").Axes(xlCategory)
    .HasTitle = True
    .AxisTitle.Text = "July Sales"
End With
```

This example turns off major gridlines for the category axis in Chart1.

```vba
Charts("Chart1").Axes(xlCategory).HasMajorGridlines = False
```

This example turns off all gridlines for all axes in Chart1.

```vba
For Each a In Charts("Chart1").Axes
    a.HasMajorGridlines = False
    a.HasMinorGridlines = False
Next a
```
BarGroups Method

On a 2-D chart, returns an object that represents either a single bar chart group (a ChartGroup object) or a collection of the bar chart groups (a ChartGroups collection).

expression.BarGroups(Index)

expression  Required. An expression that returns a Chart object.

Index  Optional Variant. Specifies the chart group.
**Example**

This example sets the space between bar clusters in the 2-D bar chart group to be 50 percent of the bar width.

\[ \text{Charts}(1).\text{BarGroups}(1).\text{GapWidth} = 50 \]
BeginConnect Method

Attaches the beginning of the specified connector to a specified shape. If there’s already a connection between the beginning of the connector and another shape, that connection is broken. If the beginning of the connector isn’t already positioned at the specified connecting site, this method moves the beginning of the connector to the connecting site and adjusts the size and position of the connector. Use the EndConnect method to attach the end of the connector to a shape.

expression.BeginConnect(ConnectedShape, ConnectionSite)

expression  Required. An expression that returns a ConnectorFormat object.

ConnectedShape  Required Shape object. The shape to attach the beginning of the connector to. The specified Shape object must be in the same Shapes collection as the connector.

ConnectionSite  Required Long. A connection site on the shape specified by ConnectedShape. Must be an integer between 1 and the integer returned by the ConnectionSiteCount property of the specified shape. If you want the connector to automatically find the shortest path between the two shapes it connects, specify any valid integer for this argument and then use the RerouteConnections method after the connector is attached to shapes at both ends.
Remarks

When you attach a connector to an object, the size and position of the connector are automatically adjusted, if necessary.
Example

This example adds two rectangles to myDocument and connects them with a curved connector. Notice that the **RerouteConnections** method makes it irrelevant what values you supply for the **ConnectionSite** arguments used with the **BeginConnect** and **EndConnect** methods.

```vba
Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
Set c = s.AddConnector(msoConnectorCurve, 0, 0, 100, 100)
with c.ConnectorFormat
    .BeginConnect ConnectedShape:=firstRect, ConnectionSite:=1
    .EndConnect ConnectedShape:=secondRect, ConnectionSite:=1
    c.RerouteConnections
End With
```
BeginDisconnect Method

Detaches the beginning of the specified connector from the shape it’s attached to. This method doesn’t alter the size or position of the connector: the beginning of the connector remains positioned at a connection site but is no longer connected. Use the EndDisconnect method to detach the end of the connector from a shape.

expression.BeginDisconnect

detaches the beginning of the connector from the specified shape.

expression    Required. An expression that returns a ConnectorFormat object.
Example

This example adds two rectangles to myDocument, attaches them with a connector, automatically reroutes the connector along the shortest path, and then detaches the connector from the rectangles.

Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
Set c = s.AddConnector(msoConnectorCurve, 0, 0, 0, 0)
With c.ConnectorFormat
    .BeginConnect firstRect, 1
    .EndConnect secondRect, 1
    c.RerouteConnections
    .BeginDisconnect
    .EndDisconnect
End With
BorderAround Method

Adds a border to a range and sets the **Color**, **LineStyle**, and **Weight** properties for the new border. **Variant**.

**expression**.**BorderAround**(**LineStyle**, **Weight**, **ColorIndex**, **Color**)  
**expression**  Required. An expression that returns one of the objects in the Applies To list.

**LineStyle**  Optional **XLineStyle**. The line style for the border.

XLineStyle can be one of these XLineStyle constants.  
**xlContinuous** default.  
**xlDash**  
**xlDashDot**  
**xlDashDotDot**  
**xDot**  
**xDouble**  
**xLineStyleNone**  
**xLineStyleNone**

**Weight**  Optional **XlBorderWeight**. The border weight.

XlBorderWeight can be one of these XlBorderWeight constants.  
**xHairline**  
**xMedium**  
**xThick**  
**xThin** default

**ColorIndex**  Optional **XIColorIndex**. The border color, as an index into the
current color palette or as a XlColorIndex constant.

XlColorIndex can be one of these XlColorIndex constants.

- **xlColorIndexAutomatic** *default*
- **xlColorIndexNone**

**Color**  Optional **Variant**.  The border color, as an RGB value.
Remarks

You must specify either \textit{ColorIndex} or \textit{Color}, but not both.

You can specify either \textit{LineStyle} or \textit{Weight}, but not both. If you don't specify either argument, Microsoft Excel uses the default line style and weight.

This method outlines the entire range without filling it in. To set the borders of all the cells, you must set the \textit{Color}, \textit{LineStyle}, and \textit{Weight} properties for the \texttt{Borders} collection. To clear the border, you must set the \textit{LineStyle} property to \texttt{xlLineStyleNone} for all the cells in the range.
Example

This example adds a thick red border around the range A1:D4 on Sheet1.

Worksheets("Sheet1").Range("A1:D4").BorderAround _
ColorIndex:=3, Weight:=xlThick
**BreakLink Method**

Converts formulas linked to other Microsoft Excel sources or OLE sources to values.

\[ \text{expression}.\text{BreakLink}(\text{Name, Type}) \]

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Name*  Required *String*. The name of the link.

*Type*  Required *XlLinkType*. The type of link.

*XlLinkType* can be one of these *XlLinkType* constants.

*xlLinkTypeExcelLinks*  A link to a Microsoft Excel source.

*xlLinkTypeOLELinks*  A link to an OLE source.
Example

In this example, Microsoft Excel converts the first link (an Excel link type) in the active workbook. This example assumes at least one formula exists in the active workbook that links to another Excel source.

Sub UseBreakLink()
    Dim astrLinks As Variant
    ' Define variable as an Excel link type.
    astrLinks = ActiveWorkbook.LinkSources(Type:=xlLinkTypeExcelLinks)
    ' Break the first link in the active workbook.
    ActiveWorkbook.BreakLink _
        Name:=astrLinks(1), _
        Type:=xlLinkTypeExcelLinks
End Sub
BringToFront Method

Brings the object to the front of the z-order.

```
expression.BringToFront
```

- **expression**: Required. An expression that returns an object in the Applies To list.
Example

This example brings embedded chart one on Sheet1 to the front of the z-order.

Worksheets("Sheet1").ChartObjects(1).BringToFront
Show All
BuildFreeform Method

Builds a freeform object. Returns a FreeformBuilder object that represents the freeform as it is being built. Use the AddNodes method to add segments to the freeform. After you have added at least one segment to the freeform, you can use the ConvertToShape method to convert the FreeformBuilder object into a Shape object that has the geometric description you’ve defined in the FreeformBuilder object.

expression.BuildFreeform(EditinType, X1, Y1)

expression  Required. An expression that returns one of the objects in the Applies To list.

EditingType  Required MsoEditingType. The editing property of the first node.

MsoEditingType can be one of these MsoEditingType constants:

msoEditingAuto
msoEditingCorner
Cannot be msoEditingSmooth or msoEditingSymmetric.

X1  Required Single. The position (in points) of the first node in the freeform drawing relative to the upper-left corner of the document.

Y1  Required Single. The position (in points) of the first node in the freeform drawing relative to the upper-left corner of the document.
Example

This example adds a freeform with five vertices to myDocument.

Set myDocument = Worksheets(1)
With myDocument.Shapes.BuildFreeform(msoEditingCorner, 360, 200)
  .AddNodes msoSegmentCurve, msoEditingCorner, _, 380, 230, 400, 250, 450, 300
  .AddNodes msoSegmentCurve, msoEditingAuto, 480, 200
  .AddNodes msoSegmentLine, msoEditingAuto, 480, 400
  .AddNodes msoSegmentLine, msoEditingAuto, 360, 200
  .ConvertToShape
End With
Calculate Method

Calculates all open workbooks, a specific worksheet in a workbook, or a specified range of cells on a worksheet, as shown in the following table.

To calculate               Follow this example
All open workbooks         Application.Calculate (or just Calculate)
A specific worksheet       Worksheets(1).Calculate
A specified range           Worksheets(1).Rows(2).Calculate

*expression*.Calculate

*expression*  Optional for Application, required for Worksheet and Range. An expression that returns an object in the Applies To list.
Example

This example calculates the formulas in columns A, B, and C in the used range on Sheet1.

`Worksheets("Sheet1").UsedRange.Columns("A:C").Calculate`
CalculatedFields Method

```
expression.CalculatedFields
```

Returns a `CalculatedFields` collection that represents all the calculated fields in the specified PivotTable report. Read-only.

- `expression` Required. An expression that returns a `PivotTable` object.
Example

This example prevents the calculated fields from being dragged to the row position.

For Each fld in _
    Worksheets(1).PivotTables("Pivot1") _
        .CalculatedFields
    fld.DragToRow = False
Next
CalculatedItems Method

Returns a CalculatedItems collection that represents all the calculated items in the specified PivotTable report. Read-only.

expression.CalculatedItems

expression  Required. An expression that returns a PivotField object.
Remarks

For **OLAP** data sources, this method returns a zero-length collection.
Example

This example creates a list of calculated items and their formulas.

Set pt = Worksheets(1).PivotTables(1)
For Each ci In pt.PivotFields("Sales").CalculatedItems
    r = r + 1
    With Worksheets(2)
        .Cells(r, 1).Value = ci.Name
        .Cells(r, 2).Value = ci.Formula
    End With
Next
CalculateFull Method

Forces a full calculation of the data in all open workbooks.

expression.CalculateFull

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example compares the version of Microsoft Excel with the version of Excel that the workbook was last calculated in. If the two version numbers are different, a full calculation of the data in all open workbooks is performed.

If Application.CalculationVersion <> Workbooks(1).CalculationVersion Then
  Application.CalculateFull
End If
CalculateFullRebuild Method

For all open workbooks, forces a full calculation of the data and rebuilds the dependencies.

(expression).CalculateFullRebuild

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Dependencies are the formulas that depend on other cells. For example, the formula "=A1" depends on cell A1. The CalculateFullRebuild method is similar to re-entering all formulas.
Example

This example compares the version of Microsoft Excel with the version of Excel in which the workbook was last calculated. If the two version numbers are different, a full calculation of the data in all open workbooks is performed and the dependencies are rebuilt.

Sub UseCalculateFullRebuild()

    If Application.CalculationVersion <> _
        Workbooks(1).CalculationVersion Then
        Application.CalculateFullRebuild
    End If

End Sub
CancelRefresh Method

Cancels all background queries for the specified query table. Use the Refreshing property to determine whether a background query is currently in progress.

expression.CancelRefresh

expression  Required. An expression that returns a QueryTable object.
Example

This example cancels a query table refresh operation.

With Worksheets(1).QueryTables(1)
    If .Refreshing Then .CancelRefresh
End With
CanCheckIn Method

True if Microsoft Excel can check in a specified workbook to a server. Read/write Boolean.

expression.CanCheckIn

type: expression.

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example checks the server to see if the specified workbook can be checked in. If it can be, it saves and closes the workbook and checks it back into the server.

Sub CheckInOut(strWkbCheckIn As String)
    ' Determine if workbook can be checked in.
    If Workbooks(strWkbCheckIn).CanCheckIn = True Then
        Workbooks(strWkbCheckIn).CheckIn
        MsgBox strWkbCheckIn & " has been checked in."
    Else
        MsgBox "This file cannot be checked in " & _
            "at this time. Please try again later."
    End If
End Sub
CanCheckOut Method

True if Microsoft Excel can check out a specified workbook from a server. Read/write Boolean.

expression.CanCheckOut(FileName)

expression Required. An expression that returns one of the objects in the Applies To list.

FileName Required String. The name of the file to check out.
Example

This example verifies that a workbook is not checked out by another user and can be checked out. If the workbook can be checked out, it copies the workbook to the local computer for editing.

Sub UseCanCheckOut(docCheckOut As String)

    ' Determine if workbook can be checked out.
    If Workbooks.CanCheckOut(Filename:=docCheckOut) = True Then
        Workbooks.CheckOut (Filename:=docCheckOut)
    Else
        MsgBox "You are unable to check out this document at this ti
    End If

End Sub
CentimetersToPoints Method

Converts a measurement from centimeters to points (one point equals 0.035 centimeters).

expression.CentimetersToPoints(Centimeters)

*expression* Required. An expression that returns an *Application* object.

**Centimeters** Required *Double*. Specifies the centimeter value to be converted to points.
Example

This example sets the left margin of Sheet1 to 5 centimeters.

`Worksheets("Sheet1").PageSetup.LeftMargin = _
  Application.CentimetersToPoints(5)`
ChangeFileAccess Method

Changes the access permissions for the workbook. This may require an updated version to be loaded from the disk.

expression.ChangeFileAccess(Mode, WritePassword, Notify)

expression Required. An expression that returns one of the objects in the Applies To list.

Mode Required XlFileAccess. Specifies the new access mode.

XlFileAccess can be one of these XlFileAccess constants.

xlReadWrite
xlReadOnly

WritePassword Optional Variant. Specifies the write-reserved password if the file is write reserved and Mode is xlReadWrite. Ignored if there's no password for the file or if Mode is xlReadOnly.

Notify Optional Variant. True (or omitted) to notify the user if the file cannot be immediately accessed.
Remarks

If you have a file open in read-only mode, you don't have exclusive access to the file. If you change a file from read-only to read/write, Microsoft Excel must load a new copy of the file to ensure that no changes were made while you had the file open as read-only.
Example

This example sets the active workbook to read-only.

ActiveWorkbook.ChangeFileAccess Mode:=xlReadOnly
ChangeLink Method

Changes a link from one document to another.

\[expressionCHANGE\textsf{Link}(Name, NewName, Type)\]

\[expression\] Required. An expression that returns one of the objects in the Applies To list.

**Name** Required **String**. The name of the Microsoft Excel or DDE/OLE link to be changed, as it was returned from the LinkSources method.

**NewName** Required **String**. The new name of the link.

**Type** Optional **XlLinkType**. The link type.

XlLinkType can be one of these XlLinkType constants.

- xlLinkTypeExcelLinks *default*
- xlLinkTypeOLELinks. Use for both DDE and OLE links.
Example

This example changes a Microsoft Excel link.

ActiveWorkbook.ChangeLink "c:\excel\book1.xls", _
"c:\excel\book2.xls", xlExcelLinks
ChangePassword Method

Changes the password for a range that can be edited on a protected worksheet.

expression.ChangePassword(Password)

expression  Required. An expression that returns one of the objects in the Applies To list.

Password  Required String. The name of the password.
Example

In this example, Microsoft Excel allows edits to range "A1:A4" on the active worksheet, notifies the user, changes the password for this specified range, and notifies the user of the change.

Sub UseChangePassword()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet
    ' Establish a range that can allow edits on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
        Title:="Classified", _
        Range:=Range("A1:A4"), _
        Password:="secret"
    MsgBox "Cells A1 to A4 can be edited on the protected worksheet.
    ' Change the password.
    wksOne.Protection.AllowEditRanges(1).ChangePassword _
        Password:="moresecret"
    MsgBox "The password for these cells has been changed."
End Sub
ChangeScenario Method

Changes the scenario to have a new set of changing cells and (optionally) scenario values.

expression.ChangeScenario(ChangingCells, Values)

expression  Required. An expression that returns a Scenario object.

ChangingCells  Required Variant. A Range object that specifies the new set of changing cells for the scenario. The changing cells must be on the same sheet as the scenario.

Values  Optional Variant. An array that contains the new scenario values for the changing cells. If this argument is omitted, the scenario values are assumed to be the current values in the changing cells.
Remarks

If you specify *Values*, the array must contain an element for each cell in the *ChangingCells* range; otherwise, Microsoft Excel generates an error.
Example

This example sets the changing cells for scenario one to the range A1:A10 on Sheet1.

Worksheets("Sheet1").Scenarios(1).ChangeScenario _
Worksheets("Sheet1").Range("A1:A10")
Characters Method

Returns a Characters object that represents a range of characters within a shape’s text frame. You can use the Characters object to add and format characters within the text frame.

expression.Characters(Start, Length)

expression  Required. An expression that returns a Characters object in the specified text frame.

Start  Optional Variant. The first character to be returned. If this argument is either set to 1 or omitted, the Characters method returns a range of characters starting with the first character.

Length  Optional Variant. The number of characters to be returned. If this argument is omitted, the Characters method returns the remainder of the string (everything after the character that was set as the Start argument).
Remarks

The **Characters** object isn't a collection.
Example

This example formats as bold the third character in the first shape’s text frame on the active worksheet.

```vbnet
With ActiveSheet.Shapes(1).TextFrame
    .Characters.Text = "abcdefg"
    .Characters(3, 1).Font.Bold = True
End With
```
ChartGroups Method

Returns an object that represents either a single chart group (a `ChartGroup` object) or a collection of all the chart groups in the chart (a `ChartGroups` object). The returned collection includes every type of group.

`expression.ChartGroups(Index)`

`expression` Required. An expression that returns a `Chart` object.

`Index` Optional `Variant`. The chart group number.
Example

This example turns on up and down bars for chart group one on Chart1 and then sets their colors. The example should be run on a 2-D line chart containing two series that intersect at one or more data points.

With Charts("Chart1").ChartGroups(1)
    .HasUpDownBars = True
    .DownBars.Interior.ColorIndex = 3
End With
ChartObjects Method

Returns an object that represents either a single embedded chart (a ChartObject object) or a collection of all the embedded charts (a ChartObjects object) on the sheet.

expression.ChartObjects(Index)

expression Required. An expression that returns an object in the Applies To list. If you specify a Chart object, it must be a chart sheet (it cannot be an embedded chart).

Index Optional Variant. The name or number of the chart. This argument can be an array, to specify more than one chart.
Remarks

This method isn't equivalent to the **Charts** property. This method returns embedded charts; the **Charts** property returns chart sheets. Use the **Chart** property to return the **Chart** object for an embedded chart.
**Example**

This example adds a title to embedded chart one on Sheet1.

```vba
With Worksheets("Sheet1").ChartObjects(1).Chart
    .HasTitle = True
    .ChartTitle.Text = "1995 Rainfall Totals by Month"
End With
```

This example creates a new series in embedded chart one on Sheet1. The data source for the new series is the range B1:B10 on Sheet1.

```vba
Worksheets("Sheet1").ChartObjects(1).Activate
ActiveChart.SeriesCollection.Add source:=Worksheets("Sheet1").Range("B1:B10")
```

This example clears the formatting of embedded chart one on Sheet1.

```vba
Worksheets("Sheet1").ChartObjects(1).Chart.ChartArea.ClearFormats
```
ChartWizard Method

Modifies the properties of the given chart. You can use this method to quickly format a chart without setting all the individual properties. This method is non-interactive, and it changes only the specified properties.

expression.ChartWizard(Source, Gallery, Format, PlotBy, CategoryLabels, SeriesLabels, HasLegend, Title, CategoryTitle, ValueTitle, ExtraTitle)

expression Required. An expression that returns one of the objects in the Applies To list.

Source Optional Variant. The range that contains the source data for the new chart. If this argument is omitted, Microsoft Excel edits the active chart sheet or the selected chart on the active worksheet.

Gallery Optional XlChartType. The chart type.

XlChartType can be one of these XlChartType constants.

xlArea
xlBar
xlColumn
xlLine
xlPie
xlRadar
xlXYScatter
xlCombination
xl3DArea
xl3DBar
xl3DColumn
xl3DLine
xl3DPie
xl3DSurface
xDoughnut
xDefaultAutoFormat

**Format**  Optional **Variant**. The option number for the built-in autoformats. Can be a number from 1 through 10, depending on the gallery type. If this argument is omitted, Microsoft Excel chooses a default value based on the gallery type and data source.

**PlotBy**  Optional **Variant**. Specifies whether the data for each series is in rows or columns. Can be one of the following **XlRowCol** constants: **xlRows** or **xlColumns**.

**CategoryLabels**  Optional **Variant**. An integer specifying the number of rows or columns within the source range that contain category labels. Legal values are from 0 (zero) through one less than the maximum number of the corresponding categories or series.

**SeriesLabels**  Optional **Variant**. An integer specifying the number of rows or columns within the source range that contain series labels. Legal values are from 0 (zero) through one less than the maximum number of the corresponding categories or series.

**HasLegend**  Optional **Variant**. **True** to include a legend.

**Title**  Optional **Variant**. The chart title text.

**CategoryTitle**  Optional **Variant**. The category axis title text.
**ValueTitle**  Optional **Variant.**  The value axis title text

**ExtraTitle**  Optional **Variant.**  The series axis title for 3-D charts or the second value axis title for 2-D charts.
Remarks

If *Source* is omitted and either the selection isn't an embedded chart on the active worksheet or the active sheet isn't an existing chart, this method fails and an error occurs.
Example

This example reformats Chart1 as a line chart, adds a legend, and adds category and value axis titles.

Charts("Chart1").ChartWizard _  
Gallery:=xlLine, _  
HasLegend:=True, CategoryTitle:="Year", ValueTitle:="Sales"
CheckAbort Method

Stops recalculation in a Microsoft Excel application.

expression.CheckAbort(KeepAbort)

expression Required. An expression that returns one of the objects in the Applies To list.

KeepAbort Optional Variant. Allows recalculation to be performed for a Range.
Example

In this example, Microsoft Excel stops recalculation in the application except for cell A10. In order to see results from this example, it is assumed that other calculations exist in the application which will allow the user to see the differences between the chosen cell and the cells not chosen.

Sub UseCheckAbort()
    Dim rngSubtotal As Variant
    Set rngSubtotal = Application.Range("A10")

    ' Stop recalculation except for designated cell.
    Application.CheckAbort (KeepAbort:=rngSubtotal)
End Sub
CheckIn Method

Performs a check-in (with or without publish) or undo-check-out of the working copy on the server. Read/write.

expression.CheckIn(SaveChanges, Comments, MakePublic)

expression Required. An expression that returns one of the objects in the Applies To list.

SaveChanges Optional Variant. True saves changes and checks in the document. False returns the document to a checked-in status without saving a new revision.

Comments Optional Variant. Allows the user to enter check-in comments for the revision of the document being checked in (only applies if SaveChanges equals True).

MakePublic Optional Variant. Allows the user to perform a publish on the document after being checked in. This submits the document for the approval process, which can eventually result in a version of the document being published to users with read-only rights to the workspace (only applies if SaveChanges equals True).
Example

This example checks the server to see if the specified workbook can be checked in. If it can be, it saves and closes the workbook and checks it back into the server.

Sub CheckInOut(strWkbCheckIn As String)
    ' Determine if workbook can be checked in.
    If Workbooks(strWkbCheckIn).CanCheckIn = True Then
        Workbooks(strWkbCheckIn).CheckIn
        MsgBox strWkbCheckIn & " has been checked in."
    Else
        MsgBox "This file cannot be checked in " & _
        "at this time. Please try again later."
    End If
End Sub
CheckOut Method

- Returns a String representing a specified workbook from a server to a local computer for editing.

expression.CheckOut(File\Name)

expression  Required. An expression that returns one of the objects in the Applies To list.

File\Name  Required String. The name of the file to check out.
Example

This example verifies that a workbook is not checked out by another user and can be checked out. If the workbook can be checked out, it copies the workbook to the local computer for editing.

Sub UseCheckOut(docCheckOut As String)
    ' Determine if workbook can be checked out.
    If Workbooks.CanCheckOut(docCheckOut) = True Then
        Workbooks.CheckOut docCheckOut
    Else
        MsgBox "Unable to check out this document at this time."
    End If
End Sub
CheckSpelling Method

- CheckSpelling method as it applies to the Application object.

Checks the spelling of a single word. Returns True if the word is found in one of the dictionaries; returns False if the word isn't found. Boolean.

expression.CheckSpelling(Word, CustomDictionary, IgnoreUppercase)

expression Required. An expression that returns one of the above objects.

Word Required String (used only with Application object). The word you want to check.

CustomDictionary Optional Variant. A string that indicates the file name of the custom dictionary to be examined if the word isn't found in the main dictionary. If this argument is omitted, the currently specified dictionary is used.

IgnoreUppercase Optional Variant. True to have Microsoft Excel ignore words that are all uppercase. False to have Microsoft Excel check words that are all uppercase. If this argument is omitted, the current setting will be used.

- CheckSpelling method as it applies to the Range object.

Checks the spelling of an object. This form has no return value; Microsoft Excel displays the Spelling dialog box Variant.

expression.CheckSpelling(CustomDictionary, IgnoreUppercase, AlwaysSuggest, SpellLang)

expression Required. An expression that returns one of the above objects.

CustomDictionary Optional Variant. A string that indicates the file name of the custom dictionary to be examined if the word isn't found in the main dictionary.
If this argument is omitted, the currently specified dictionary is used.

**IgnoreUppercase** Optional **Variant. True** to have Microsoft Excel ignore words that are all uppercase. **False** to have Microsoft Excel check words that are all uppercase. If this argument is omitted, the current setting will be used.

**AlwaysSuggest** Optional **Variant. True** to have Microsoft Excel display a list of suggested alternate spellings when an incorrect spelling is found. **False** to have Microsoft Excel wait for you to input the correct spelling. If this argument is omitted, the current setting will be used.

**SpellLang** Optional **Variant.** The language of the dictionary being used. Can be one of the **MsoLanguageID** values used by the **LanguageID** property.

- **CheckSpelling** method as it applies to the **Chart** and **Worksheet** objects.

Checks the spelling of an object. This form has no return value; Microsoft Excel displays the **Spelling** dialog box.

```
expression.CheckSpelling(CustomDictionary, IgnoreUppercase, AlwaysSuggest, SpellLang)
```

**expression** Required. An expression that returns one of the above objects.

**CustomDictionary** Optional **Variant.** A string that indicates the file name of the custom dictionary to be examined if the word isn't found in the main dictionary. If this argument is omitted, the currently specified dictionary is used.

**IgnoreUppercase** Optional **Variant. True** to have Microsoft Excel ignore words that are all uppercase. **False** to have Microsoft Excel check words that are all uppercase. If this argument is omitted, the current setting will be used.

**AlwaysSuggest** Optional **Variant. True** to have Microsoft Excel display a list of suggested alternate spellings when an incorrect spelling is found. **False** to have Microsoft Excel wait for you to input the correct spelling. If this argument is omitted, the current setting will be used.

**SpellLang** Optional **Variant.** The language of the dictionary being used. Can be
one of the MsoLanguageID values used by the LanguageID property.
Remarks

To check headers, footers, and objects on a worksheet, use this method on a *Worksheet* object.

To check only cells and notes, use this method with the object returned by the *Cells* method.
Example

This example checks the spelling on Sheet1.

Worksheets("Sheet1").CheckSpelling
CircleInvalid Method

Circles invalid entries on the worksheet.

expression.CircleInvalid

expression  Required. An expression that returns a Worksheet object.
Example

This example circles invalid entries on worksheet one.

Worksheets(1).CircleInvalid
Clear Method

- Clear method as it applies to the ChartArea, Legend, and Range objects.

Clears the entire object.

expression.Clear

expression  Required. An expression that returns one of the above objects.

- Clear method as it applies to the CellFormat object.

Clears the criterias set in the FindFormat and ReplaceFormat properties.

expression.Clear

expression  Required. An expression that returns a CellFormat object.
Example

This example clears the formulas and formatting in cells A1:G37 on Sheet1.

`Worksheets("Sheet1").Range("A1:G37").Clear`

This example clears the chart area (the chart data and formatting) of Chart1.

`Charts("Chart1").ChartArea.Clear`
ClearArrows Method

Clears the tracer arrows from the worksheet. Tracer arrows are added by using the auditing feature.

expression.ClearArrows

expression  Required. An expression that returns a Worksheet object.
Example

This example clears tracer arrows from Sheet1.

Worksheets("Sheet1").ClearArrows
ClearCircles Method

Clears circles from invalid entries on the worksheet.

$expression \text{.ClearCircles}$

$expression$  Required. An expression that returns a $\text{Worksheet}$ object.
Remarks

Use the `CircleInvalid` method to circle cells that contain invalid data.
**Example**

This example clears circles from invalid entries on worksheet one.

*Worksheets(1).* **ClearCircles**
ClearComments Method

Clears all cell comments from the specified range.

```
expression.ClearComments
```

`expression` Required. An expression that returns a `Range` object.
Example

This example clears all comments from cell E5.

Worksheets(1).Range("e5").ClearComments
ClearContents Method

Clears the formulas from the range. Clears the data from a chart but leaves the formatting.

`expression.ClearContents`

`expression`  Required. An expression that returns a `ChartArea` or `Range` object.
Example

This example clears the formulas from cells A1:G37 on Sheet1 but leaves the formatting intact.

Worksheets("Sheet1").Range("A1:G37").ClearContents

This example clears the chart data from Chart1 but leaves the formatting intact.

Charts("Chart1").ChartArea.ClearContents
ClearFormats Method

Clears the formatting of the object.

`expression.ClearFormats`

`expression` Required. An expression that returns an object in the Applies To list.
Example

This example clears all formatting from cells A1:G37 on Sheet1.

`Worksheets("Sheet1").Range("A1:G37").ClearFormats`

This example clears the formatting from embedded chart one on Sheet1.

`Worksheets("Sheet1").ChartObjects(1).Chart.ChartArea.ClearFormats`
ClearNotes Method

Clears notes and sound notes from all the cells in the specified range.

`expression.ClearNotes`

`expression`  Required. An expression that returns a `Range` object.
Example

This example clears all notes and sound notes from columns A through C on Sheet1.

Worksheets("Sheet1").Columns("A:C").ClearNotes
ClearOutline Method

Clears the outline for the specified range.

`expression.ClearOutline`

`expression` Required. An expression that returns a `Range` object.
Example

This example clears the outline for the range A1:G37 on Sheet1.

`Worksheets("Sheet1").Range("A1:G37").ClearOutline`
Show All
CloneNode Method

Clones a diagram node. Returns a DiagramNode object representing the cloned node.

expression.CloneNode(copyChildren, pTargetNode, pos)

expression Required. An expression that returns one of the objects in the Applies To list.

copyChildren Required Boolean. True to clone the diagram nodes children as well.

pTargetNode Optional DiagramNode object. An expression that returns a DiagramNode object that represents the node where the new node will be placed.

pos Optional MsoRelativeNodePosition. If pTargetNode is specified, indicates where the node will be added relative to pTargetNode.

MsoRelativeNodePosition can be one of these MsoRelativeNodePosition constants.

msoAfterLastSibling
msoAfterNode default
msoBeforeFirstSibling
msoBeforeNode
Example

The following example creates a diagram and clones the newest-created node.

Sub CloneANode()
    Dim nodRoot As DiagramNode
    Dim shpDiagram As Shape
    Dim nodFourthNode As DiagramNode
    Dim nodDuplicate As DiagramNode
    Dim intCount As Integer

    Set shpDiagram = ActiveSheet.Shapes.AddDiagram(_
        Type:=msoDiagramOrgChart, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    ' Add subordinate nodes to the root node
    For intCount = 1 To 4
        nodRoot.Children.AddNode
    Next

    Set nodFourthNode = nodRoot.Children.Item(4)

    'Clone the most recently created child node
    Set nodDuplicate = nodRoot.Children.Item(1).CloneNode(copyChildren:=True,
        pTargetNode:=nodFourthNode, pos:=msoAfterNode)
End Sub
Close Method

- Close method as it applies to the Window object.

Closes the object. **Boolean.**

.expression.Close(SaveChanges, Filename, RouteWorkbook)

**expression** Required. An expression that returns one of the above objects.

**SaveChanges** Optional **Variant.** If there are no changes to the workbook, this argument is ignored. If there are changes to the workbook and the workbook appears in other open windows, this argument is ignored. If there are changes to the workbook but the workbook doesn't appear in any other open windows, this argument specifies whether changes should be saved, as shown in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>Saves the changes to the workbook. If there is not yet a file name associated with the workbook, then <strong>FileName</strong> is used. If <strong>FileName</strong> is omitted, the user is asked to supply a file name.</td>
</tr>
<tr>
<td>False</td>
<td>Does not save the changes to this file.</td>
</tr>
<tr>
<td>Omitted</td>
<td>Displays a dialog box asking the user whether or not to save changes.</td>
</tr>
</tbody>
</table>

**FileName** Optional **Variant.** Save changes under this file name.

**RouteWorkbook** Optional **Variant.** If the workbook doesn't need to be routed to the next recipient (if it has no routing slip or has already been routed), this argument is ignored. Otherwise, Microsoft Excel routes the workbook as shown in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>True</td>
<td>Sends the workbook to the next recipient.</td>
</tr>
</tbody>
</table>
False  Doesn't send the workbook.
Omitted  Displays a dialog box asking the user whether the workbook should be sent.

- **Close method as it applies to the Workbooks object.**

  Closes the object.

  *expression*.Close

  *expression*  Required. An expression that returns one of the above objects.

- **Close method as it applies to the Workbook object.**

  Closes the object.

  *expression*.Close(*SaveChanges, Filename, RouteWorkbook*)

  *expression*  Required. An expression that returns one of the above objects.

  *SaveChanges*  Optional Variant. If there are no changes to the workbook, this argument is ignored. If there are changes to the workbook and the workbook appears in other open windows, this argument is ignored. If there are changes to the workbook but the workbook doesn't appear in any other open windows, this argument specifies whether changes should be saved, as shown in the following table.

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</tr>
<tr>
<td><strong>False</strong></td>
<td>Does not save the changes to this file.</td>
</tr>
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<td>Omitted</td>
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</table>
**FileName** Optional Variant. Save changes under this file name.

**RouteWorkbook** Optional Variant. If the workbook doesn't need to be routed to the next recipient (if it has no routing slip or has already been routed), this argument is ignored. Otherwise, Microsoft Excel routes the workbook as shown in the following table.

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</tr>
<tr>
<td>Omitted</td>
<td>Displays a dialog box asking the user whether the workbook should be sent.</td>
</tr>
</tbody>
</table>
Remarks

Closing a workbook from Visual Basic doesn't run any Auto_Close macros in the workbook. Use the RunAutoMacros method to run the auto close macros.
Example

This example closes Book1.xls and discards any changes that have been made to it.

`Workbooks("BOOK1.XLS").Close  SaveChanges:=False`

This example closes all open workbooks. If there are changes in any open workbook, Microsoft Excel displays the appropriate prompts and dialog boxes for saving changes.

`Workbooks.Close`
ColumnDifferences Method

Returns a Range object that represents all the cells whose contents are different from the comparison cell in each column.

expression.ColumnDifferences(Comparison)

expression  Required. An expression that returns a Range object containing the cells to compare.

Comparison  Required Variant. A single cell to compare to the specified range.
Example

This example selects the cells in column A on Sheet1 whose contents are different from cell A4.

Worksheets("Sheet1").Activate
Set r1 = ActiveSheet.Columns("A").ColumnDifferences(  
    Comparison:=ActiveSheet.Range("A4"))

r1.Select
ColumnGroups Method

On a 2-D chart, returns an object that represents either a single column chart group (a ChartGroup object) or a collection of the column chart groups (a ChartGroups collection).

expression.ColumnGroups(Index)

expression Required. An expression that returns a Chart object.

Index Optional Variant. Specifies the chart group.
Example

This example sets the space between column clusters in the 2-D column chart group to be 50 percent of the column width.

Charts(1).ColumnGroups(1).GapWidth = 50
ConnectData Method

Adds new topics from a real-time data server. The ConnectData method is called when a file is opened that contains real-time data functions or when a user types in a new formula which contains the RTD function.

expression.ConnectData(TopicID, Strings, GetNewValues)

expression  Required. An expression that returns an IRtdServer object.

TopicID  Required Long. A unique value, assigned by Microsoft Excel, which identifies the topic.

Strings  Required Variant. A single-dimensional array of strings identifying the topic.

GetNewValues  Required Boolean. True to determine if new values are to be acquired.
Consolidate Method

Consolidates data from multiple ranges on multiple worksheets into a single range on a single worksheet. **Variant.**

*expression*. **Consolidate**(Sources, Function, TopRow, LeftColumn, CreateLinks)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

**Sources**  Optional **Variant**. The sources of the consolidation as an array of text reference strings in R1C1-style notation. The references must include the full path of sheets to be consolidated.

**Function**  Optional **XlConsolidationFunction**.

XlConsolidationFunction can be one of these XlConsolidationFunction constants.

- **xlAverage** default.
- **xlCount**
- **xlCountNums**
- **xlMax**
- **xlMin**
- **xlProduct**
- **xlStDev**
- **xlStDevP**
- **xlSum**
xlVar

xlVarP

TopRow  Optional Variant. **True** to consolidate data based on column titles in the top row of the consolidation ranges. **False** to consolidate data by position. The default value is **False**.

LeftColumn  Optional Variant. **True** to consolidate data based on row titles in the left column of the consolidation ranges. **False** to consolidate data by position. The default value is **False**.

CreateLinks  Optional Variant. **True** to have the consolidation use worksheet links. **False** to have the consolidation copy the data. The default value is **False**.
Example

This example consolidates data from Sheet2 and Sheet3 onto Sheet1, using the SUM function.

Worksheets("Sheet1").Range("A1").Consolidate _
       Sources:=Array("Sheet2!R1C1:R37C6", "Sheet3!R1C1:R37C6"), _
       Function:=xlSum
Show All
Convert Method

Converts the current diagram to a different diagram.

\textit{expression}.\textit{Convert(}\textit{Type})

\textit{expression}  Required. An expression that returns one of the objects in the Applies To list.

\textit{Type}  Required \textbf{MsoDiagramType}. The type of diagram to convert to.

\textbf{MsoDiagramType} can be one of these \textbf{MsoDiagramType} constants.

\textbf{msoDiagramCycle}  A process diagram with a continuous cycle diagram type.
\textbf{msoDiagramMixed}  A mixed diagram type.
\textbf{msoDiagramOrgChart}  A hierarchical relationship diagram type.
\textbf{msoDiagramPyramid}  A foundation based relationships diagram type.
\textbf{msoDiagramRadial}  A diagram type showing relationships of a core element.
\textbf{msoDiagramTarget}  A diagram type showing steps toward a goal.
\textbf{msoDiagramVenn}  A diagram type showing areas of overlap between elements.
Example

This example adds a radial diagram to the active worksheet and then converts it to a target diagram.

Sub ConvertDiagram()
    Dim wksSheet As Worksheet
    Dim shDiagram As Shape

    Set wksSheet = ActiveSheet
    Set shDiagram = wksSheet.Shapes.AddDiagram( _
        Type:=msoDiagramRadial, _
        Left:=20, Top:=40, _
        Width:=400, Height:=200)

    ' Fill the diagram to make it visible to the user
    shDiagram.Fill.Visible = msoTrue

    ' Convert the diagram.
    shDiagram.Diagram.Convert Type:=msoDiagramTarget
End Sub
ConvertFormula Method

Converts cell references in a formula between the A1 and R1C1 reference styles, between relative and absolute references, or both. **Variant.**

`expression.ConvertFormula(Formula, FromReferenceStyle, ToReferenceStyle, ToAbsolute,RelativeTo)`

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Formula*  Required **Variant.**  A string that contains the formula you want to convert. This must be a valid formula, and it must begin with an equal sign.

*FromReferenceStyle*  Required **XlReferenceStyle.**  The reference style of the formula.

XlReferenceStyle can be one of these XlReferenceStyle constants.  
xA1  
xR1C1

*ToReferenceStyle*  Optional **XlReferenceStyle.**  The reference style you want returned. If this argument is omitted, the reference style isn't changed; the formula stays in the style specified by *FromReferenceStyle.**

XlReferenceStyle can be one of these XlReferenceStyle constants.  
xA1  
xR1C1

*ToAbsolute*  Optional **XlReferenceStyle.**  Specifies the converted reference type. If this argument is omitted, the reference type isn't changed.

XlReferenceStyle can be one of these XlReferenceStyle constants.  
xBAbsolute
xlAbsRowRelColumn

xlRelRowAbsColumn

xlRelative

RelativeTo Optional Variant. Optional Variant. A Range object that contains one cell. Relative references relate to this cell.
Example

This example converts a SUM formula that contains R1C1-style references to an equivalent formula that contains A1-style references, and then it displays the result.

```vba
inputFormula = "=SUM(R10C2:R15C2"
MsgBox Application.ConvertFormula( _
    formula:=inputFormula, _
    fromReferenceStyle:=xlR1C1, _
    toReferenceStyle:=xlA1)
```
ConvertToShape Method

Creates a shape that has the geometric characteristics of the specified FreeformBuilder object. Returns a Shape object that represents the new shape.

**Note**  You must apply the AddNodes method to a FreeformBuilder object at least once before you use the ConvertToShape method.

\[expression\].ConvertToShape

**expression**  Required. An expression that returns a FreeformBuilder object.
Example

This example adds a freeform with five vertices to myDocument.

Set myDocument = Worksheets(1)
With myDocument.Shapes.BuildFreeform(msoEditingCorner, 360, 200)
    .AddNodes msoSegmentCurve, msoEditingCorner, _
        380, 230, 400, 250, 450, 300
    .AddNodes msoSegmentCurve, msoEditingAuto, 480, 200
    .AddNodes msoSegmentLine, msoEditingAuto, 480, 400
    .AddNodes msoSegmentLine, msoEditingAuto, 360, 200
        .ConvertToShape
End With
Copy Method

- Copy method as it applies to the **Range** object.

Copies the range to the specified range or to the Clipboard.

```vba
expression.Copy(Destination)
```

*expression*  Required. An expression that returns a **Range** object.

**Destination**  Optional **Variant**. Specifies the new range to which the specified range will be copied. If this argument is omitted, Microsoft Excel copies the range to the Clipboard.

- Copy method as it applies to the **ChartArea**, **ChartObject**, **ChartObjects**, **OLEObject**, **OLEObjects**, **Point**, and **Series** objects.

Copies the object to the Clipboard. Copies a picture of the point or series to the Clipboard.

```vba
expression.Copy
```

*expression*  Required. An expression that returns one of the above objects.

- Copy method as it applies to the **Chart**, **Charts**, **Sheets**, **Worksheet**, and **Worksheets** objects.

Copies the sheet to another location in the workbook.

```vba
expression.Copy(Before, After)
```

*expression*  Required. An expression that returns one of the above objects.

**Before**  Optional **Variant**. The sheet before which the copied sheet will be placed. You cannot specify **Before** if you specify **After**.
After  Optional Variant. The sheet after which the copied sheet will be placed. You cannot specify After if you specify Before.
Remarks

If you don't specify either *Before* or *After*, Microsoft Excel creates a new workbook that contains the copied sheet.

- **Copy method as it applies to the Shape object.**

Copies the object to the Clipboard.

*expression*.Copy

*expression* Required. An expression that returns a *Shape* object.
Example

- **Copy method as it applies to the Range object.**

  This example copies the formulas in cells A1:D4 on Sheet1 into cells E5:H8 on Sheet2.

  ```vba
  Worksheets("Sheet1").Range("A1:D4").Copy _
  destination:=Worksheets("Sheet2").Range("E5")
  ```

- **Copy method as it applies to the Chart, Charts, Sheets, Worksheet, and Worksheets objects.**

  This example copies Sheet1, placing the copy after Sheet3.

  ```vba
  Worksheets("Sheet1").Copy After:=Worksheets("Sheet3")
  ```
CopyFromRecordset Method

Copies the contents of an ADO or DAO \texttt{Recordset} object onto a worksheet, beginning at the upper-left corner of the specified range. If the \texttt{Recordset} object contains fields with OLE objects in them, this method fails.

\textit{expression}.\texttt{CopyFromRecordset(\textit{Data}, \textit{MaxRows}, \textit{MaxColumns})}

\textit{expression} Required. An expression that returns a \texttt{Range} object.

\textit{Data} Required \texttt{Variant}. The \texttt{Recordset} object to copy into the range.

\textit{MaxRows} Optional \texttt{Variant}. The maximum number of records to copy onto the worksheet. If this argument is omitted, all the records in the \texttt{Recordset} object are copied.

\textit{MaxColumns} Optional \texttt{Variant}. The maximum number of fields to copy onto the worksheet. If this argument is omitted, all the fields in the \texttt{Recordset} object are copied.
Remarks

Copying begins at the current row of the Recordset object. After copying is completed, the EOF property of the Recordset object is True.
Example

This example copies the field names from a DAO **Recordset** object into the first row of a worksheet and formats the names as bold. The example then copies the recordset onto the worksheet, beginning at cell A2.

```vba
For iCols = 0 To rs.Fields.Count - 1
    ws.Cells(1, iCols + 1).Value = rs.Fields(iCols).Name
Next
ws.Range(ws.Cells(1, 1), ws.Cells(1, rs.Fields.Count)).Font.Bold = True
ws.Range("A2").CopyFromRecordset rs
```
CopyPicture Method

- CopyPicture method as it applies to the Range object.

Copies the selected object to the Clipboard as a picture. Variant.

expression. CopyPicture(Appearance, Format)

expression Required. An expression that returns one of the above objects.

Appearance Optional XLPictureAppearance. Specifies how the picture should be copied.

XLPictureAppearance can be one of these XLPictureAppearance constants.
xlPrinter. The picture is copied as it will look when it's printed.
xlScreen default. The picture is copied to resemble its display on the screen as closely as possible

Format Optional XLCopyPictureFormat. The format of the picture.

XLCopyPictureFormat can be one of these XLCopyPictureFormat constants.
xlBitmap
xlPicture default

- CopyPicture method as it applies to the ChartObject, ChartObjects, OLEObject, and OLEObjects objects.

Copies the selected object to the Clipboard as a picture. Variant.

expression. CopyPicture(Appearance, Format)

expression Required. An expression that returns one of the above objects.
Appearance  Optional  **XLPictureAppearance**. Specifies how the picture should be copied.

XLPictureAppearance can be one of these XLPictureAppearance constants.  
**xlPrinter**. The picture is copied as it will look when it's printed.  
**xlScreen default**. The picture is copied to resemble its display on the screen as closely as possible

Format  Optional  **XLCopyPictureFormat**. The format of the picture.

XLCopyPictureFormat can be one of these XLCopyPictureFormat constants.  
**xlBitmap**  
**xlPicture default**
**Size**  Optional **XLPictureAppearance**. The size of the copied picture when the object is a chart on a chart sheet (not embedded on a worksheet).

XLPictureAppearance can be one of these XLPictureAppearance constants.

- **xlPrinter** default. The picture is copied to match its printed size as closely as possible.
- **xlScreen**. The picture is copied to match the size of its display on the screen as closely as possible.

▶ **CopyPicture method as it applies to the Shape object.**

Copies the selected object to the Clipboard as a picture.

```vba
expression.CopyPicture(Appearance, Format)
```

*expression*  Required. An expression that returns one of the above objects.

*Appearance*  Optional **XLPictureAppearance**. Specifies how the picture should be copied.

XLPictureAppearance can be one of these XLPictureAppearance constants.

- **xlPrinter**. The picture is copied as it will look when it's printed.
- **xlScreen** default. The picture is copied to resemble its display on the screen as closely as possible

*Format*  Optional **XLCopyPictureFormat**. The format of the picture.

XLCopyPictureFormat can be one of these XLCopyPictureFormat constants.

- **xlBitmap**
- **xlPicture** default
Remarks

If you copy a range, it must be made up of adjacent cells.
Example

This example copies a screen image of cells A1:D4 on Sheet1 to the Clipboard, and then it pastes the bitmap to another location on Sheet1.

```vba
Worksheets("Sheet1").Range("A1:D4").CopyPicture xlScreen, xlBitmap
Worksheets("Sheet1").Paste _
    Destination:=Worksheets("Sheet1").Range("E6")
```
CreateCubeFile Method

- Creates a cube file from a PivotTable report connected to an Online Analytical Processing (OLAP) data source.

expression.CreateCubeFile(File, Measures, Levels, Members, Properties)

expression Required. An expression that returns one of the objects in the Applies To list.

File Required String. The name of the cube file to be created. It will overwrite the file if it already exists.

Measures Optional Variant. An array of unique names of measures that are to be part of the slice.

Levels Optional Variant. An array of strings. Each array item is a unique level name. It represents the lowest level of a hierarchy that is in the slice.

Members Optional Variant. An array of string arrays. The elements correspond, in order, to the hierarchies represented in the Levels array. Each element is an array of string arrays that consists of the unique names of the top level members in the dimension that are to be included in the slice.

Properties Optional Boolean. False results in no member properties being included in the slice. The default value is True.
Example

This example creates a cube file titled "CustomCubeFile" on drive C:\ with no member properties to be included in the slice. With the Measures, Levels, and Members arguments omitted from this example, the cube file will end up matching the view of the PivotTable report. This example assumes a PivotTable report connected to an OLAP data source exists on the active worksheet.

Sub UseCreateCubeFile()
    ActiveSheet.PivotTables(1).CreateCubeFile _
        File:="C:\CustomCubeFile", Properties:=False
End Sub
CreateNames Method

Creates names in the specified range, based on text labels in the sheet.

`expression.CreateNames(Top, Left, Bottom, Right)`

`expression`  Required. An expression that returns a `Range` object.

`Top`  Optional `Variant. True` to create names by using labels in the top row. The default value is `False`.

`Left`  Optional `Variant. True` to create names by using labels in the left column. The default value is `False`.

`Bottom`  Optional `Variant. True` to create names by using labels in the bottom row. The default value is `False`.

`Right`  Optional `Variant. True` to create names by using labels in the right column. The default value is `False`.
Remarks

If you don’t specify one of *Top, Left, Bottom, or Right*, Microsoft Excel guesses the location of the text labels, based on the shape of the specified range.
Example

This example creates names for cells B1:B3 based on the text in cells A1:A3. Note that you must include the cells that contain the names in the range, even though the names are created only for cells B1:B3.

Set rangeToName = Worksheets("Sheet1").Range("A1:B3")
rangeToName.CreateNames Left:=True
CreateNewDocument Method

Creates a new document linked to the specified hyperlink.

expression.CreateNewDocument(Filename, EditNow, Overwrite)

expression An expression that returns a Hyperlink object.

Filename Required String. The file name of the specified document.

EditNow Required Boolean. True to have the specified document open immediately in its associated editing environment. The default value is True.

Overwrite Required Boolean. True to overwrite any existing file of the same name in the same folder. False if any existing file of the same name is preserved and the Filename argument specifies a new file name. The default value is False.
**Example**

This example creates a new document based on the new hyperlink in the first worksheet and then loads the document into Microsoft Excel for editing. The document is called “Report.xls,” and it overwrites any file of the same name in the `\Server1\Annual` folder.

```vba
With Worksheets(1)
    Set objHyper = _
                        Address:="\Server1\Annual\Report.xls")
    objHyper.CreateNewDocument _
        FileName="\Server1\Annual\Report.xls", _
        EditNow:=True, Overwrite:=True
End With
```
CreatePivotTable Method

Creates a PivotTable report based on a PivotCache object. Returns a PivotTable object.

expression. CreatePivotTable(TableDestination, TableName, ReadData, DefaultVersion)

expression An expression that returns a PivotCache object.

TableDestination Required Variant. The cell in the upper-left corner of the PivotTable report’s destination range (the range on the worksheet where the resulting PivotTable report will be placed). The destination range must be on a worksheet in the workbook that contains the PivotCache object specified by expression.

TableName Optional Variant. The name of the new PivotTable report.

ReadData Optional Variant. True to create a PivotTable cache that contains all of the records from the external database; this cache can be very large. False to enable setting some of the fields as server-based page fields before the data is actually read.

DefaultVersion Optional Variant. The default version of the PivotTable report.
Remarks

For an alternative way to create a PivotTable report based on a PivotTable cache, see the Add method of the PivotTable object.
Example

This example creates a new PivotTable cache based on an OLAP provider, and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet.

With ActiveWorkbook.PivotCaches.Add(SourceType:=xlExternal)
  .Connection = _
  "OLEDB;Provider=MSOLAP;Location=srvdata;Initial Catalog=Nati
  .CommandType = xlCmdCube
  .CommandText = Array("Sales")
  .MaintainConnection = True
  .CreatePivotTable TableDestination:=Range("A3"), _
  TableName:= "PivotTable1"
End With
With ActiveSheet.PivotTables("PivotTable1")
  .SmallGrid = False
  .PivotCache.RefreshPeriod = 0
With .CubeFields("[state]")
  .Orientation = xlColumnField
  .Position = 1
End With
With .CubeFields("[Measures].[Count Of au_id]"
  .Orientation = xlDataField
  .Position = 1
End With
End With

This example creates a new PivotTable cache using an ADO connection to Microsoft Jet, and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet.

Dim cnnConn As ADODB.Connection
Dim rstRecordset As ADODB.Recordset
Dim cmdCommand As ADODB.Command

' Open the connection.
Set cnnConn = New ADODB.Connection
With cnnConn
  .ConnectionString = _
  "Provider=Microsoft.Jet.OLEDB.4.0"
  .Open "C:\perfdate\record.mdb"
End With
' Set the command text.
Set cmdCommand = New ADODB.Command
Set cmdCommand.ActiveConnection = cnnConn
With cmdCommand
  .CommandText = "Select Speed, Pressure, Time From DynoRun"
  .CommandType = adCmdText
  .Execute
End With

' Open the recordset.
Set rstRecordset = New ADODB.Recordset
Set rstRecordset.ActiveConnection = cnnConn
rstRecordset.Open cmdCommand

' Create a PivotTable cache and report.
Set objPivotCache = ActiveWorkbook.PivotCaches.Add(_
  SourceType:=xlExternal)
Set objPivotCache.Recordset = rstRecordset
With objPivotCache
  .CreatePivotTable TableDestination:=Range("A3"), _
    TableName:="Performance"
End With

With ActiveSheet.PivotTables("Performance")
  .SmallGrid = False
  With .PivotFields("Pressure")
    .Orientation = xlRowField
    .Position = 1
  End With
  With .PivotFields("Speed")
    .Orientation = xlColumnField
    .Position = 1
  End With
  With .PivotFields("Time")
    .Orientation = xlDataField
    .Position = 1
  End With
End With

' Close the connections and clean up.
cnnConn.Close
Set cmdCommand = Nothing
Set rstRecordSet = Nothing
Set cnnConn = Nothing
CreateSummary Method

Creates a new worksheet that contains a summary report for the scenarios on the specified worksheet. Variant.

expression.CreateSummary(ReportType, ResultCells)

expression Required. An expression that returns one of the objects in the Applies To list.

ReportType Optional XlSummaryReportType.

XlSummaryReportType can be one of these XlSummaryReportType constants.

xlSummaryPivotTable
xlStandardSummary default

ResultCells Optional Variant. A Range object that represents the result cells on the specified worksheet. Normally, this range refers to one or more cells containing the formulas that depend on the changing cell values for your model — that is, the cells that show the results of a particular scenario. If this argument is omitted, there are no result cells included in the report.
**Example**

This example creates a summary of the scenarios on Sheet1, with result cells in the range C4:C9 on Sheet1.

```vba
Worksheets("Sheet1").Scenarios.CreateSummary _
ResultCells := Worksheets("Sheet1").Range("C4:C9")
```
CustomDrop Method

Sets the vertical distance (in points) from the edge of the text bounding box to the place where the callout line attaches to the text box. This distance is measured from the top of the text box unless the AutoAttach property is set to True and the text box is to the left of the origin of the callout line (the place that the callout points to), in which case the drop distance is measured from the bottom of the text box.

expression.**CustomDrop**(Drop)

**expression**  Required. An expression that returns a **CalloutFormat** object.

**Drop**  Required **Single**. The drop distance, in points.
**Example**

This example sets the custom drop distance to 14 points, and specifies that the drop distance always be measured from the top. For the example to work, shape three must be a callout.

Set myDocument =Worksheets(1)
With myDocument.Shapes(3).Callout
    .CustomDrop 14
    .AutoAttach = False
End With
CustomLength Method

Specifies that the first segment of the callout line (the segment attached to the text callout box) retain a fixed length whenever the callout is moved. Use the AutomaticLength method to specify that the first segment of the callout line be scaled automatically whenever the callout is moved. Applies only to callouts whose lines consist of more than one segment (types msoCalloutThree and msoCalloutFour).

expression.CustomLength(Length)

expression  Required. An expression that returns a CalloutFormat object.

Length  Required Single. The length of the first segment of the callout, in points.
Remarks

Applying this method sets the **AutoLength** property to **False** and sets the **Length** property to the value specified for the **Length** argument.
Example

This example toggles between an automatically scaling first segment and one with a fixed length for the callout line for shape one on myDocument. For the example to work, shape one must be a callout.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Callout
     If .AutoLength Then
         .CustomLength 50
     Else
         .AutomaticLength
     End If
End With
Cut Method

Cuts the object to the Clipboard or pastes it into a specified destination.

expression.Cut(Destination)

expression  Required. An expression that returns an object in the Applies To list.

Destination  Optional Variant. Used only with Range objects. The range where the object should be pasted. If this argument is omitted, the object is cut to the Clipboard.
Remarks

The cut range must be made up of adjacent cells.

Only embedded charts can be cut.
Example

This example cuts the range A1:G37 on Sheet1 and places it on the Clipboard.

Worksheets("Sheet1").Range("A1:G37").Cut
DataLabels Method

Returns an object that represents either a single data label (a DataLabel object) or a collection of all the data labels for the series (a DataLabels collection).

expression.DataLabels(Index)

data

expression Required. An expression that returns a Series object.

Index Optional Variant. The number of the data label.
Remarks

If the series has the **Show Value** option turned on for the data labels, the returned collection can contain up to one label for each point. Data labels can be turned on or off for individual points in the series.

If the series is on an area chart and has the **Show Label** option turned on for the data labels, the returned collection contains only a single label, which is the label for the area series.
Example

This example sets the data labels for series one in Chart1 to show their key, assuming that their values are visible when the example runs.

With Charts("Chart1").SeriesCollection(1)
    .HasDataLabels = True
    With .DataLabels
        .ShowLegendKey = True
        .Type = xlValue
    End With
End With
DataSeries Method

Create a data series in the specified range. **Variant**.

*expression*.DataSeries(*Rowcol*, *Type*, *Date*, *Step*, *Stop*, *Trend*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Rowcol*  Optional **Variant**. Can be the `xlRows` or `xlColumns` constant to have the data series entered in rows or columns, respectively. If this argument is omitted, the size and shape of the range is used.

*Type*  Optional **XlDataSeriesType**.

XlDataSeriesType can be one of these XlDataSeriesType constants.

- `xlAutoFill`
- `xlDataSeriesLinear`  *default*
- `xlChronological`
- `xlGrowth`

*Date*  Optional **XlDataSeriesDate**. If the *Type* argument is `xlChronological`, the *Date* argument indicates the step date unit.

XlDataSeriesDate can be one of these XlDataSeriesDate constants.

- `xlDay`  *default*
- `xlWeekday`
- `xlMonth`
- `xlYear`

*Step*  Optional **Variant**. The step value for the series. The default value is 1.

*Stop*  Optional **Variant**. The stop value for the series. If this argument is omitted, Microsoft Excel fills to the end of the range.
**Trend**  Optional *Variant*. **True** to create a linear trend or growth trend. **False** to create a standard data series. The default value is **False**.
Example

This example creates a series of 12 dates. The series contains the last day of every month in 1996 and is created in the range A1:A12 on Sheet1.

Set dateRange = Worksheets("Sheet1").Range("A1:A12")
Worksheets("Sheet1").Range("A1").Formula = "31-JAN-1996"
dateRange.DataSeries Type:=xlChronological, Date:=xlMonth
DDEExecute Method

Runs a command or performs some other action or actions in another application by way of the specified DDE channel.

\textit{expression}.\texttt{DDEExecute(Channel, String)}

\textit{expression} Optional. An expression that returns an \texttt{Application} object.

\textit{Channel} Required \texttt{Long}. The channel number returned by the \texttt{DDEInitiate} method.

\textit{String} Required \texttt{String}. The message defined in the receiving application.
Remarks

The **DDEExecute** method is designed to send commands to another application. You can also use it to send keystrokes to another application, although the **SendKeys** method is the preferred way to send keystrokes. The **String** argument can specify any single key combined with ALT, CTRL, or SHIFT, or any combination of those keys. Each key is represented by one or more characters, such as "a" for the character a, or "{ENTER}" for the ENTER key.

To specify characters that aren't displayed when you press the corresponding key (for example, ENTER or TAB), use the codes listed in the following table. Each code in the table represents one key on the keyboard.

<table>
<thead>
<tr>
<th>Key</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKSPACE</td>
<td>{BACKSPACE} or {BS}</td>
</tr>
<tr>
<td>BREAK</td>
<td>{BREAK}</td>
</tr>
<tr>
<td>CAPS LOCK</td>
<td>{CAPSLOCK}</td>
</tr>
<tr>
<td>CLEAR</td>
<td>{CLEAR}</td>
</tr>
<tr>
<td>DELETE or DEL</td>
<td>{DELETE} or {DEL}</td>
</tr>
<tr>
<td>DOWN ARROW</td>
<td>{DOWN}</td>
</tr>
<tr>
<td>END</td>
<td>{END}</td>
</tr>
<tr>
<td>ENTER (numeric keypad)</td>
<td>{ENTER}</td>
</tr>
<tr>
<td>ENTER</td>
<td>~ (tilde)</td>
</tr>
<tr>
<td>ESC</td>
<td>{ESCAPE} or {ESC}</td>
</tr>
<tr>
<td>HELP</td>
<td>{HELP}</td>
</tr>
<tr>
<td>HOME</td>
<td>{HOME}</td>
</tr>
<tr>
<td>INS</td>
<td>{INSERT}</td>
</tr>
<tr>
<td>LEFT ARROW</td>
<td>{LEFT}</td>
</tr>
<tr>
<td>NUM LOCK</td>
<td>{NUMLOCK}</td>
</tr>
<tr>
<td>PAGE DOWN</td>
<td>{PGDN}</td>
</tr>
<tr>
<td>PAGE UP</td>
<td>{PGUP}</td>
</tr>
<tr>
<td>RETURN</td>
<td>{RETURN}</td>
</tr>
<tr>
<td>RIGHT ARROW</td>
<td>{RIGHT}</td>
</tr>
<tr>
<td>SCROLL LOCK</td>
<td>{SCROLLLOCK}</td>
</tr>
</tbody>
</table>
TAB \{TAB\}
UP ARROW \{UP\}
F1 through F15 \{F1\} through \{F15\}

You can also specify keys combined with SHIFT and/or CTRL and/or ALT. To specify a key combined with one or more of the keys just mentioned, use the following table.

<table>
<thead>
<tr>
<th>To combine a key with</th>
<th>Precede the key code with</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIFT</td>
<td>+ (plus sign)</td>
</tr>
<tr>
<td>CTRL</td>
<td>^ (caret)</td>
</tr>
<tr>
<td>ALT</td>
<td>% (percent sign)</td>
</tr>
</tbody>
</table>
Example

This example opens a channel to Word, opens the Word document Formletr.doc, and then sends the FilePrint command to WordBasic.

```vba
channelNumber = Application.DDEInitiate(_
    app:="WinWord", _
    topic:="C:\WINWORD\FORMLETR.DOC")
Application.DDEExecute channelNumber, "[FILEPRINT]"
Application.DDETerminate channelNumber
```
DDEInitiate Method

Opens a DDE channel to an application.

expression.DDEInitiate(App, Topic)

expression  Optional. An expression that returns an Application object.

App  Required String. The application name.

Topic  Required String. Describes something in the application to which you're opening a channel — usually a document of that application.
Remarks

If successful, the DDEInitiate method returns the number of the open channel. All subsequent DDE functions use this number to specify the channel.
**Example**

This example opens a channel to Word, opens the Word document Formletr.doc, and then sends the FilePrint command to WordBasic.

```vbnet
channelNumber = Application.DDEInitiate( _
    app:="WinWord", _
    topic:="C:\WINWORD\FORMLETR.DOC")
Application.DDEExecute channelNumber, "[FILEPRINT]"
Application.DDETerminate channelNumber
```
DDEPoke Method

Sends data to an application.

expression.DDEPoke(Channel, Item, Data)

expression    Optional. An expression that returns an Application object.

Channel    Required Long. The channel number returned by the DDEInitiate method.

Item    Required Variant. The item to which the data is to be sent.

Data    Required Variant. The data to be sent to the application.
Remarks

An error occurs if the method call doesn't succeed.
Example

This example opens a channel to Word, opens the Word document Sales.doc, and then inserts the contents of cell A1 (on Sheet1) at the beginning of the document.

channelNumber = Application.DDEInitiate(_
    app:="WinWord", _
    topic:="C:\WINWORD\SALES.DOC")
Set rangeToPoke = Worksheets("Sheet1").Range("A1")
Application.DDEPoke channelNumber, "\StartOfDoc", rangeToPoke
Application.DDETerminate channelNumber
DDERequest Method

Requests information from the specified application. This method always returns an array; for more information, see the example.

expression.DDERequest(Channel, Item)

expression  Optional. An expression that returns an Application object.

Channel  Required Long. The channel number returned by the DDEInitiate method.

Item  Required String. The item to be requested.
Example

This example opens a channel to the System topic in Word and then uses the Topics item to return a list of all open documents. The list is returned in column A on Sheet1.

```
channelNumber = Application.DDEInitiate( _
    app:="WinWord", _
    topic:="System")
returnList = Application.DDERequest(channelNumber, "Topics")
For i = LBound(returnList) To UBound(returnList)
    Worksheets("Sheet1").Cells(i, 1).Formula = returnList(i)
Next i
Application.DDETerminate channelNumber
```
DDETerminate Method

Closes a channel to another application.

\textit{expression}.\texttt{DDETerminate(\textit{Channel})}

\textit{expression} Optional. An expression that returns an \texttt{Application} object.

\textit{Channel} Required \texttt{Long}. The channel number returned by the \texttt{DDEInitiate} method.
Example

This example opens a channel to Word, opens the Word document Formletr.doc, and then sends the FilePrint command to WordBasic.

channelNumber = Application.DDEInitiate( _
    app:="WinWord", _
    topic:="C:\WINWORD\FORMLETR.DOC")
Application.DDEExecute channelNumber, "[FILEPRINT]"
Application.DDETerminate channelNumber
Delete Method

- **Delete method as it applies to the Range object.**

Deletes the object.

```
expression.Delete(Shift)
```

**expression**  Required. An expression that returns one of the above objects.

**Shift**  Optional Variant. Used only with Range objects. Specifies how to shift cells to replace deleted cells. Can be one of the following `XlDeleteShiftDirection` constants: `xlShiftToLeft` or `xlShiftUp`. If this argument is omitted, Microsoft Excel decides based on the shape of the range.

- **Delete method as it applies to the ShapeNodes object.**

Deletes the object.

```
expression.Delete(Index)
```

**expression**  Required. An expression that returns one of the above objects.

**Index**  Required Integer.

- **Delete method as it applies to all other objects in the Applies To list.**

Deletes the object.

```
expression.Delete
```

**expression**  Required. An expression that returns one of the above objects.
Remarks

Deleting a Point or LegendKey object deletes the entire series.

You can delete custom document properties, but you cannot delete a built-in document property.
Example

This example deletes cells A1:D10 on Sheet1 and shifts the remaining cells to the left.

Worksheets("Sheet1").Range("A1:D10").Delete Shift:=xlShiftToLeft

This example deletes Sheet3 in the active workbook without displaying the confirmation dialog box.

Application.DisplayAlerts = False
Worksheets("Sheet3").Delete
Application.DisplayAlerts = True

This example sorts the data in the first column on Sheet1 and then deletes rows that contain duplicate data.

Worksheets("Sheet1").Range("A1").Sort _
    key1:=Worksheets("Sheet1").Range("A1")
Set currentCell = Worksheets("Sheet1").Range("A1")
Do While Not IsEmpty(currentCell)
    Set nextCell = currentCell.Offset(1, 0)
    If nextCell.Value = currentCell.Value Then
        currentCell.EntireRow.Delete
    End If
    Set currentCell = nextCell
Loop
DeleteAll Method

Removes all users associated with access to a protected range on a worksheet.

`expression.DeleteAll`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel removes all users associated with access to the first protected range on the active worksheet. This example assumes the worksheet is not protected.

Sub UseDeleteAll()
    Dim wksSheet As Worksheet
    Set wksSheet = Application.ActiveSheet
    ' Remove all users associated with access to the first protected range
End Sub
DeleteChartAutoFormat Method

Removes a custom chart autoformat from the list of available chart autoformats.

expression.DeleteChartAutoFormat(Name)

(expression Required. An expression that returns an Application object.

Name Required String. The name of the custom autoformat to be removed.)
Example

This example deletes the custom autoformat named "Presentation Chart."

Application.DeleteChartAutoFormat name:="Presentation Chart"
DeleteCustomList Method

Deletes a custom list.

`expression.DeleteCustomList(ListNum)`

- `expression` Required. An expression that returns an `Application` object.

- `ListNum` Required `Long`. The custom list number. This number must be greater than or equal to 5 (Microsoft Excel has four built-in custom lists that cannot be deleted).
Remarks

This method generates an error if the list number is less than 5 or if there's no matching custom list.
Example

This example deletes a custom list.

```
n = Application.GetCustomListNum(Array("cogs", "sprockets", _
    "widgets", "gizmos"))
Application.DeleteCustomList n
```
DeleteNumberFormat Method

Deletes a custom number format from the workbook.

\textit{expression}.DeleteNumberFormat(\textit{NumberFormat})

\textit{expression} Required. An expression that returns a \textbf{Workbook} object.

\textit{NumberFormat} Required \textbf{String}. Names the number format to be deleted.
**Example**

This example deletes the number format "000-00-0000" from the active workbook.

```vba
ActiveWorkbook.DeleteNumberFormat("000-00-0000")
```
DeleteReplacement Method

Deletes an entry from the array of AutoCorrect replacements.

`expression.DeleteReplacement(What)`

`expression` Required. An expression that returns an `AutoCorrect` object.

**What** Required **String**. The text to be replaced, as it appears in the row to be deleted from the array of AutoCorrect replacements. If this string doesn't exist in the array of AutoCorrect replacements, this method fails.
Example

This example removes the word "Temperature" from the array of AutoCorrect replacements.

With Application.AutoCorrect
    .DeleteReplacement "Temperature"
End With
Deselect Method

- Cancels the selection for the specified chart.

`expression.Deselect`

`expression` Required. An expression that returns a **Chart** object.
Example

This example is equivalent to pressing ESC while working on the active chart. The example should be run on a chart that has a component (such as an axis) selected.

ActiveChart.Deselect
DialogBox Method

Displays a dialog box defined by a dialog box definition table on a Microsoft Excel 4.0 macro sheet. Returns the number of the chosen control, or returns False if the user clicks the Cancel button.

expression.DialogBox

expression  Required. An expression that returns a Range object. The Range must refer to a dialog box definition table on a Microsoft Excel 4.0 macro sheet.
**Example**

This example runs a Microsoft Excel 4.0 dialog box and then displays the return value in a message box. The `dialogRange` variable refers to the dialog box definition table on the Microsoft Excel 4.0 macro sheet named “Macro1.”

```vbnet
Set dialogRange = Excel4MacroSheets("Macro1").Range("myDialogBox")
result = dialogRange.DialogBox
MsgBox result
```
Dirty Method

Designates a range to be recalculated when the next recalculation occurs.

*expression*.Dirty

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Remarks

The Calculate method forces the specified range to be recalculated, for cells that Microsoft Excel understands as needing recalculation.

If the application is in manual calculation mode, using the Dirty method instructs Excel to identify the specified cell to be recalculated. If the application is in automatic calculation mode, using the Dirty method instructs Excel to perform a recalculation.
Example

In this example, Microsoft Excel enters a formula in cell A3, saves the changes, and then recalculates cell A3.

Sub UseDirtyMethod()
    MsgBox "Two values and a formula will be entered."
    Range("A1").Value = 1
    Range("A2").Value = 2
    Range("A3").Formula = "+A1+A2"

    ' Save the changes made to the worksheet.
    Application.DisplayAlerts = False
    Application.Save
    MsgBox "Changes saved."

    ' Force a recalculation of range A3.
    Application.Range("A3").Dirty
    MsgBox "Try to close the file without saving and a dialog box wi

End Sub
This keyword is not implemented. It is reserved for future use.
Disconnect Method

Instructs the real-time data server to disconnect from the specified IRTDUpdateEvent object.

expression.Disconnect

expression  Required. An expression that returns an IRTDUpdateEvent object.
DisconnectData Method

Notifies the RTD server application that a topic is no longer in use.

expression.DisconnectData(TopicID)

expression  Required. An expression that returns an IRtdServer object.

TopicID  Required Long. A unique value of the topic assigned by Microsoft Excel.
Distribute Method

Horizontally or vertically distributes the shapes in the specified range of shapes.

expression.Distribute(DistributeCmd, RelativeTo)

expression Required. An expression that returns one of the objects in the Applies To list.

DistributeCmd Required **MsoDistributeCmd**. Specifies whether shapes in the range are to be distributed horizontally or vertically.

MsoDistributeCmd can be one of these MsoDistributeCmd constants.

msoDistributeHorizontally
msoDistributeVertically

RelativeTo Required **MsoTriState**. Not used in Microsoft Excel. Must be False.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue
Example

This example defines a shape range that contains all the AutoShapes on myDocument and then horizontally distributes the shapes in this range. The leftmost shape retains its position.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    numShapes = .Count
    If numShapes > 1 Then
        numAutoShapes = 0
        ReDim autoShpArray(1 To numShapes)
        For i = 1 To numShapes
            If .Item(i).Type = msoAutoShape Then
                numAutoShapes = numAutoShapes + 1
                autoShpArray(numAutoShapes) = .Item(i).Name
            End If
        Next
        If numAutoShapes > 1 Then
            ReDim Preserve autoShpArray(1 To numAutoShapes)
            Set asRange = .Range(autoShpArray)
            asRange.Distribute msoDistributeHorizontally, False
        End If
    End If
End With
DoubleClick Method

Equivalent to double-clicking the active cell.

expression.DoubleClick

expression  Required. An expression that returns an Application object.
Example

This example double-clicks the active cell on Sheet1.

Worksheets("Sheet1").Activate
ApplicationDoubleClick
DoughnutGroups Method

On a 2-D chart, returns an object that represents either a single doughnut chart group (a `ChartGroup` object) or a collection of the doughnut chart groups (a `ChartGroups` collection).

```
expression.DoughnutGroups(Index)
```

- `expression` Required. An expression that returns a `Chart` object.
- `Index` Optional `Variant`. Specifies the chart group.
Example

This example sets the starting angle for doughnut group one in Chart1.

Charts("Chart1").\texttt{DoughnutGroups}(1).\texttt{FirstSliceAngle} = 45
DragOff Method

Drags a page break out of the print area.

expression.DragOff(Direction, RegionIndex)

expression  Required. An expression that returns one of the objects in the Applies To list.

**Direction**  Required **XlDirection**. The direction in which the page break is dragged.

XlDirection can be one of these XlDirection constants.

- xlDown
- xlToRight
- xlToLeft
- xlUp

**RegionIndex**  Required **Long**. The print-area region index for the page break (the region where the mouse pointer is located when the mouse button is pressed if the user drags the page break). If the print area is contiguous, there’s only one print region. If the print area is discontiguous, there’s more than one print region.
Remarks

This method exists primarily for the macro recorder. You can use the **Delete** method to delete a page break in Visual Basic.
Example

This example deletes vertical page break one from the active sheet by dragging it off the right edge of print region one.

ActiveSheet.VPageBreaks(1).DragOff xlToRight, 1
Duplicate Method

Duplicates the object and returns a reference to the new copy.

*expression.*Duplicate

*expression*  Required. An expression that returns an object in the Applies To list.
Example

This example duplicates embedded chart one on Sheet1 and then selects the copy.

Set dChart = Worksheets("Sheet1").ChartObjects(1).**Duplicate**
dChart.Select
EndConnect Method

Attaches the end of the specified connector to a specified shape. If there’s already a connection between the end of the connector and another shape, that connection is broken. If the end of the connector isn’t already positioned at the specified connecting site, this method moves the end of the connector to the connecting site and adjusts the size and position of the connector. Use the BeginConnect method to attach the beginning of the connector to a shape.

expression.EndConnect(ConnectedShape, ConnectionSite)

expression  Required. An expression that returns a ConnectorFormat object.

ConnectedShape  Required Shape object. The shape to attach the end of the connector to. The specified Shape object must be in the same Shapes collection as the connector.

ConnectionSite  Required Long. A connection site on the shape specified by ConnectedShape. Must be an integer between 1 and the integer returned by the ConnectionSiteCount property of the specified shape. If you want the connector to automatically find the shortest path between the two shapes it connects, specify any valid integer for this argument and then use the RerouteConnections method after the connector is attached to shapes at both ends.
Remarks

When you attach a connector to an object, the size and position of the connector are automatically adjusted, if necessary.
Example

This example adds two rectangles to myDocument and connects them with a curved connector. Notice that the RerouteConnections method makes it irrelevant what values you supply for the ConnectionSite arguments used with the BeginConnect and EndConnect methods.

Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
Set c = s.AddConnector(msoConnectorCurve, 0, 0, 100, 100)
With c.ConnectorFormat
  .BeginConnect ConnectedShape:=firstRect, ConnectionSite:=1
  .EndConnect ConnectedShape:=secondRect, ConnectionSite:=1
  c.RerouteConnections
End With
EndDisconnect Method

Detaches the end of the specified connector from the shape it’s attached to. This method doesn’t alter the size or position of the connector: the end of the connector remains positioned at a connection site but is no longer connected. Use the BeginDisconnect method to detach the beginning of the connector from a shape.

expression.EndDisconnect

expression  Required. An expression that returns a ConnectorFormat object.
Example

This example adds two rectangles to myDocument, attaches them with a connector, automatically reroutes the connector along the shortest path, and then detaches the connector from the rectangles.

```
Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
set c = s.AddConnector(msoConnectorCurve, 0, 0, 0, 0)
with c.ConnectorFormat
  .BeginConnect firstRect, 1
  .EndConnect secondRect, 1
  c.RerouteConnections
  .BeginDisconnect
  .EndDisconnect
End With
```
EndReview Method

Terminates a review of a file that has been sent for review using the SendForReview method.

expression.EndReview

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example terminates the review of the active workbook. When executed, this procedure displays a message asking if you want to end the review. This example assumes the active workbook has been sent for review.

Sub EndWorkbookRev()
    ActiveWorkbook.EndReview
End Sub
**ErrorBar Method**

Applies error bars to the series. **Variant.**

`expression.ErrorBar(Direction, Include, Type, Amount, MinusValues)`

`expression` Required. An expression that returns one of the objects in the Applies To list.

**Direction** Required **XlErrorBarDirection.** The error bar direction.

XlErrorBarDirection can be one of these XlErrorBarDirection constants.

- `xlX`
- `xlY default`

**Include** Required **XlErrorBarInclude.** The error bar parts to include.

XlErrorBarInclude can be one of these XlErrorBarInclude constants.

- `XlErrorBarIncludeBoth default`
- `XlErrorBarIncludeNone`
- `XlErrorBarIncludeMinusValues`
- `XlErrorBarIncludePlusValues`

**Type** Required **XlErrorBarType.** The error bar type.

XlErrorBarType can be one of these XlErrorBarType constants.

- `XlErrorBarTypeCustom`
- `XlErrorBarTypePercent`
- `XlErrorBarTypeStError`
- `XlErrorBarTypeFixedValue`
- `XlErrorBarTypeStDev`

**Amount** Optional **Variant.** The error amount. Used for only the positive error
amount when *Type* is `xlErrorBarTypeCustom`.

*MinusValues*  Optional *Variant.*  The negative error amount when *Type* is `xlErrorBarTypeCustom`.  

Example

This example applies standard error bars in the Y direction for series one in Chart1. The error bars are applied in the positive and negative directions. The example should be run on a 2-D line chart.

Charts("Chart1").SeriesCollection(1).ErrorBar
   Direction:=xlY, Include:=xlErrorBarIncludeBoth,
   Type:=xlErrorBarTypeStError
Evaluate Method

Converts a Microsoft Excel name to an object or a value.

`expression.Evaluate(Name)`

`expression`  Optional for **Application**, required for **Chart**, **DialogSheet**, and **Worksheet**. An expression that returns an object in the Applies To list.

**Name**  Required **String**. The name of the object, using the naming convention of Microsoft Excel.
Remarks

The following types of names in Microsoft Excel can be used with this method:

- A1-style references. You can use any reference to a single cell in A1-style notation. All references are considered to be absolute references.
- Ranges. You can use the range, intersect, and union operators (colon, space, and comma, respectively) with references.
- Defined names. You can specify any name in the language of the macro.
- External references. You can use the ! operator to refer to a cell or to a name defined in another workbook — for example, Evaluate("[BOOK1.XLS]Sheet1!A1").

Note Using square brackets (for example, "[A1:C5]") is identical to calling the Evaluate method with a string argument. For example, the following expression pairs are equivalent.

\[
\begin{align*}
[a1].Value &= 25 \\
\text{Evaluate("A1").Value} &= 25
\end{align*}
\]

\[
\begin{align*}
\text{trigVariable} &= \text{[SIN(45)]} \\
\text{trigVariable} &= \text{Evaluate("SIN(45)")}
\end{align*}
\]

\[
\begin{align*}
\text{Set firstCellInSheet} &= \text{Workbooks("BOOK1.XLS")} . \text{Sheets(4).}[A1] \\
\text{Set firstCellInSheet} &= _
\text{Workbooks("BOOK1.XLS")} . \text{Sheets(4).Evaluate("A1")}
\end{align*}
\]

The advantage of using square brackets is that the code is shorter. The advantage of using Evaluate is that the argument is a string, so you can either construct the string in your code or use a Visual Basic variable.
Example

This example turns on bold formatting in cell A1 on Sheet1.

Worksheets("Sheet1").Activate
boldCell = "A1"
Application.\textbf{Evaluate}(boldCell).Font.Bold = True
ExclusiveAccess Method

Assigns the current user exclusive access to the workbook that's open as a shared list.

expression.ExclusiveAccess

type: Required. An expression that returns a Workbook object.
Remarks

The **ExclusiveAccess** method saves any changes you've made to the workbook and requires other users who have the workbook open to save their changes to a different file.

If the specified workbook isn't open as a shared list, this method fails. To determine whether a workbook is open as a shared list, use the **MultiUserEditing** property.
**Example**

This example determines whether the active workbook is open as a shared list. If it is, the example gives the current user exclusive access.

If ActiveWorkbook.MultiUserEditing Then
    ActiveWorkbook.ExclusiveAccess
End If
Execute Method

Activates a smart tag action that is associated with the smart tag type on a cell.

expression.Execute

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example inserts a refreshable stock quote for the ticker symbol "MSFT" and it assumes the host system is connected to the Internet.

Sub ExecuteASmartTag()
    Dim strAction As String
    strAction = "Insert refreshable stock price"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    ' Invoke a smart tag for the Microsoft ticker symbol.
    With Range("A1")
        .Formula = "MSFT"
        .SmartTags("
            "urn:schemas-microsoft-com:office:smarttags#stockticker"
            ").SmartTagActions(strAction).Execute
    End With
End Sub
ExecuteExcel4Macro Method

Runs a Microsoft Excel 4.0 macro function and then returns the result of the function. The return type depends on the function.

\[ \text{expression}.\text{ExecuteExcel4Macro}(\text{String}) \]

**expression**  Optional. An expression that returns an **Application** object.

**String**  Required **String**. A Microsoft Excel 4.0 macro language function without the equal sign. All references must be given as R1C1 strings. If **String** contains embedded double quotation marks, you must double them. For example, to run the macro function =MID("sometext",1,4), **String** would have to be "MID(""sometext"",1,4)".
Remarks

The Microsoft Excel 4.0 macro isn't evaluated in the context of the current workbook or sheet. This means that any references should be external and should specify an explicit workbook name. For example, to run the Microsoft Excel 4.0 macro "My_Macro" in Book1 you must use "Book1!My_Macro()". If you don't specify the workbook name, this method fails.
Example

This example runs the `GET.CELL(42)` macro function on cell C3 on Sheet1 and then displays the result in a message box. The `GET.CELL(42)` macro function returns the horizontal distance from the left edge of the active window to the left edge of the active cell. This macro function has no direct Visual Basic equivalent.

```
Worksheets("Sheet1").Activate
Range("C3").Select
MsgBox ExecuteExcel4Macro("GET.CELL(42)")
```
Export Method

Exports the chart in a graphic format.

expression.Export(FileName, FilterName, Interactive)

expression Required. An expression that returns a Chart object.

FileName Required String. The name of the exported file.

FilterName Optional Variant. The language-independent name of the graphic filter as it appears in the registry.

Interactive Optional Variant. True to display the dialog box that contains the filter-specific options. If this argument is False, Microsoft Excel uses the default values for the filter. The default value is False.
Example

This example exports chart one as a GIF file.

Worksheets("Sheet1").ChartObjects(1).Chart.Export
    FileName:="current_sales.gif", FilterName:="GIF"
Extend Method

Adds new data points to an existing series collection. **Variant**

expression.**Extend(Source, Rowcol, CategoryLabels)**

**expression**  Required. An expression that returns a **SeriesCollection** object.

**Source**  Required **Variant**. The new data to be added to the **SeriesCollection** object, either as a **Range** object or an array of data points.

**Rowcol**  Optional **Variant**. Ignored if **Source** is an array. Specifies whether the new values are in the rows or columns of the given range source. Can be one of the following **XlRowCol** constants: **xlRows** or **xlColumns**. If this argument is omitted, Microsoft Excel attempts to determine where the values are by the size and orientation of the selected range or by the dimensions of the array.

**CategoryLabels**  Optional **Variant**. Ignored if **Source** is an array. **True** to have the first row or column contain the name of the category labels. **False** to have the first row or column contain the first data point of the series. If this argument is omitted, Microsoft Excel attempts to determine the location of the category label from the contents of the first row or column.
Remarks

This method is not available for PivotChart reports.
Example

This example extends the series on Chart1 by adding the data in cells B1:B6 on Sheet1.

Charts("Chart1").SeriesCollection.Extend
    Source:=Worksheets("Sheet1").Range("B1:B6")
FillAcrossSheets Method

Copies a range to the same area on all other worksheets in a collection.

\[ \text{expression}\cdot\text{FillAcrossSheets(Range, Type)} \]

expression  Required. An expression that returns one of the objects in the Applies To list.

Range  Required Range object. The range to fill on all the worksheets in the collection. The range must be from a worksheet within the collection.

Type  Optional XlFillWith. Specifies how to copy the range.

XlFillWith can be one of these XlFillWith constants.

- xlFillWithAll default
- xlFillWithContents
- xlFillWithFormats
Example

This example fills the range A1:C5 on Sheet1, Sheet5, and Sheet7 with the contents of the same range on Sheet1.

```vba
x = Array("Sheet1", "Sheet5", "Sheet7")
Sheets(x).FillAcrossSheets _
    Worksheets("Sheet1").Range("A1:C5")
```
FillDown Method

Fills down from the top cell or cells in the specified range to the bottom of the range. The contents and formatting of the cell or cells in the top row of a range are copied into the rest of the rows in the range.

\texttt{expression.FillDown}

\texttt{expression} Required. An expression that returns a \texttt{Range} object.
Example

This example fills the range A1:A10 on Sheet1, based on the contents of cell A1.

Worksheets("Sheet1").Range("A1:A10").FillDown
FillLeft Method

Fills left from the rightmost cell or cells in the specified range. The contents and formatting of the cell or cells in the rightmost column of a range are copied into the rest of the columns in the range.

expression.FillLeft

expression  Required. An expression that returns a Range object.
Example

This example fills the range A1:M1 on Sheet1, based on the contents of cell M1.

Worksheets("Sheet1").Range("A1:M1").FillLeft
**FillRight Method**

Fills right from the leftmost cell or cells in the specified range. The contents and formatting of the cell or cells in the leftmost column of a range are copied into the rest of the columns in the range.

`expression.FillRight`

*expression* Required. An expression that returns a **Range** object.
Example

This example fills the range A1:M1 on Sheet1, based on the contents of cell A1.

Worksheets("Sheet1").Range("A1:M1").FillRight
FillUp Method

Fills up from the bottom cell or cells in the specified range to the top of the range. The contents and formatting of the cell or cells in the bottom row of a range are copied into the rest of the rows in the range.

expression.FillUp

expression  Required. An expression that returns a Range object.
Example

This example fills the range A1:A10 on Sheet1, based on the contents of cell A10.

Worksheets("Sheet1").Range("A1:A10").FillUp
Find Method

- Find method as it applies to the WorksheetFunction object.

Finds specific information in a worksheet.

expression.Find(Arg1, Arg2, Arg3)

expression  Required. An expression that returns a WorksheetFunction object.

Arg1  Required String. The name of the worksheet.

Arg2  Required String. The name of the range.

Arg3  Optional Variant. The name of an argument to refine the search.

- Find method as it applies to the Range object.

Finds specific information in a range, and returns a Range object that represents the first cell where that information is found. Returns Nothing if no match is found. Doesn’t affect the selection or the active cell.

For information about using the Find worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.

expression.Find(What, After, LookIn, LookAt, SearchOrder, SearchDirection, MatchCase, MatchByte, SearchFormat)

expression  Required. An expression that returns a Range object.

What  Required Variant. The data to search for. Can be a string or any Microsoft Excel data type.

After  Optional Variant. The cell after which you want the search to begin. This corresponds to the position of the active cell when a search is done from the user interface. Note that After must be a single cell in the range. Remember that the
search begins after this cell; the specified cell isn’t searched until the method wraps back around to this cell. If you don’t specify this argument, the search starts after the cell in the upper-left corner of the range.

**LookIn** Optional **Variant**. The type of information.

**LookAt** Optional **Variant**. Can be one of the following **XlLookAt** constants: **xlWhole** or **xlPart**.

**SearchOrder** Optional **Variant**. Can be one of the following **XlSearchOrder** constants: **xlByRows** or **xlByColumns**.

**SearchDirection** Optional **XlSearchDirection**. The search direction.

XlSearchDirection can be one of these XlSearchDirection constants.

**xlNext** *default*

**xlPrevious**

**MatchCase** Optional **Variant**. **True** to make the search case sensitive. The default value is **False**.

**MatchByte** Optional **Variant**. Used only if you’ve selected or installed double-byte language support. **True** to have double-byte characters match only double-byte characters. **False** to have double-byte characters match their single-byte equivalents.

**SearchFormat** Optional **Variant**. The search format.
Remarks

The settings for *LookIn*, *LookAt*, *SearchOrder*, and *MatchByte* are saved each time you use this method. If you don’t specify values for these arguments the next time you call the method, the saved values are used. Setting these arguments changes the settings in the *Find* dialog box, and changing the settings in the *Find* dialog box changes the saved values that are used if you omit the arguments. To avoid problems, set these arguments explicitly each time you use this method.

You can use the *FindNext* and *FindPrevious* methods to repeat the search.

When the search reaches the end of the specified search range, it wraps around to the beginning of the range. To stop a search when this wraparound occurs, save the address of the first found cell, and then test each successive found-cell address against this saved address.

To find cells that match more complicated patterns, use a *For Each...Next* statement with the *Like* operator. For example, the following code searches for all cells in the range A1:C5 that use a font whose name starts with the letters Cour. When Microsoft Excel finds a match, it changes the font to Times New Roman.

```vba
For Each c In [A1:C5]
    If c.Font.Name Like "Cour*" Then
        c.Font.Name = "Times New Roman"
    End If
Next
```
Example

This example finds all cells in the range A1:A500 on worksheet one that contain the value 2 and changes it to 5.

With Worksheets(1).Range("a1:a500")
    Set c = .Find(2, lookin:=xlValues)
    If Not c Is Nothing Then
        firstAddress = c.Address
        Do
            c.Value = 5
            Set c = .FindNext(c)
            Loop While Not c Is Nothing And c.Address <> firstAddress
        End If
    End With
FindFile Method

- Displays the Open dialog box.

`expression.FindFile`

`expression` Required. An expression that returns an Application object.
Remarks

This method displays the **Open** dialog box and allows the user to open a file. If a new file is opened successfully, this method returns **True**. If the user cancels the dialog box, this method returns **False**.
Example

This example displays the **Open** dialog box.

Application. **FindFile**
FindNext Method

Continues a search that was begun with the Find method. Finds the next cell that matches those same conditions and returns a Range object that represents that cell. Doesn’t affect the selection or the active cell.

expression.FindNext(After)

expression  Required. An expression that returns a Range object.

After  Optional Variant. The cell after which you want to search. This corresponds to the position of the active cell when a search is done from the user interface. Note that After must be a single cell in the range. Remember that the search begins after this cell; the specified cell isn’t searched until the method wraps back around to this cell. If this argument isn’t specified, the search starts after the cell in the upper-left corner of the range.
Remarks

When the search reaches the end of the specified search range, it wraps around to the beginning of the range. To stop a search when this wraparound occurs, save the address of the first found cell, and then test each successive found-cell address against this saved address.
Example

This example finds all cells in the range A1:A500 that contain the value 2 and changes their values to 5.

With Worksheets(1).Range("a1:a500")
    Set c = .Find(2, lookin:=xlValues)
    If Not c Is Nothing Then
        firstAddress = c.Address
        Do
            c.Value = 5
            Set c = .FindNext(c)
            Loop While Not c Is Nothing And c.Address <> firstAddress
        End If
    End With
FindPrevious Method

Continues a search that was begun with the Find method. Finds the previous cell that matches those same conditions and returns a Range object that represents that cell. Doesn’t affect the selection or the active cell.

expression.FindPrevious(After)

expression  Required. An expression that returns a Range object.

After  Optional Variant. The cell before which you want to search. This corresponds to the position of the active cell when a search is done from the user interface. Note that After must be a single cell in the range. Remember that the search begins before this cell; the specified cell isn’t searched until the method wraps back around to this cell. If this argument isn’t specified, the search starts before the upper-left cell in the range.
Remarks

When the search reaches the beginning of the specified search range, it wraps around to the end of the range. To stop a search when this wraparound occurs, save the address of the first found cell, and then test each successive found-cell address against this saved address.
Example

This example shows how the **FindPrevious** method is used with the **Find** and **FindNext** methods. Before running this example, make sure that Sheet1 contains at least two occurrences of the word “Phoenix” in column B.

```vba
Set fc =Worksheets("Sheet1").Columns("B").Find(what:="Phoenix")
MsgBox "The first occurrence is in cell " & fc.Address
Set fc =Worksheets("Sheet1").Columns("B").FindNext(after:=fc)
MsgBox "The next occurrence is in cell " & fc.Address
Set fc =Worksheets("Sheet1").Columns("B").FindPrevious(after:=fc)
MsgBox "The previous occurrence is in cell " & fc.Address
```
Flip Method

- Flips the specified shape around its horizontal or vertical axis.

\[expression.Flip(FlipCmd)\]

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.

\textit{FlipCmd} Required \textbf{MsoFlipCmd}. Specifies whether the shape is to be flipped horizontally or vertically

MsoFlipCmd can be one of these MsoFlipCmd constants.
\textbf{msoFlipHorizontal}
\textbf{msoFlipVertical}
Example

This example adds a triangle to myDocument, duplicates the triangle, and then flips the duplicate triangle vertically and makes it red.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRightTriangle, _
  10, 10, 50, 50).Duplicate
  .Fill.ForeColor.RGB = RGB(255, 0, 0)
  .Flip msoFlipVertical
End With
Follow Method

Displays a cached document, if it’s already been downloaded. Otherwise, this method resolves the hyperlink, downloads the target document, and displays the document in the appropriate application.

expression.Follow(NewWindow, AddHistory, ExtraInfo, Method, HeaderInfo)

expression  Required. An expression that returns a Hyperlink object.

NewWindow  Optional Variant. True to display the target application in a new window. The default value is False.

AddHistory  Optional Variant. Not used. Reserved for future use.

ExtraInfo  Optional Variant. A String or byte array that specifies additional information for HTTP to use to resolve the hyperlink. For example, you can use ExtraInfo to specify the coordinates of an image map, the contents of a form, or a FAT file name.

Method  Optional Variant. Specifies the way ExtraInfo is attached. Can be one of the following MsoExtraInfoMethod constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>msoMethodGet</td>
<td>ExtraInfo is a String that’s appended to the address.</td>
</tr>
<tr>
<td>msoMethodPost</td>
<td>ExtraInfo is posted as a String or byte array.</td>
</tr>
</tbody>
</table>

HeaderInfo  Optional Variant. A String that specifies header information for the HTTP request. The default value is an empty string.
Example

This example loads the document attached to the hyperlink on shape one on worksheet one.

`Worksheets(1).Shapes(1).Hyperlink.Follow NewWindow:=True`
FollowHyperlink Method

Displays a cached document, if it’s already been downloaded. Otherwise, this method resolves the hyperlink, downloads the target document, and displays the document in the appropriate application.

expression.FollowHyperlink(Address, SubAddress, NewWindow, AddHistory, ExtraInfo, Method, HeaderInfo)

expression Required. An expression that returns a Workbook object.

Address Required String. The address of the target document.

SubAddress Optional Variant. The location within the target document. The default value is the empty string.

NewWindow Optional Variant. True to display the target application in a new window. The default value is False.

AddHistory Optional Variant. Not used. Reserved for future use.

ExtraInfo Optional Variant. A String or byte array that specifies additional information for HTTP to use to resolve the hyperlink. For example, you can use ExtraInfo to specify the coordinates of an image map, the contents of a form, or a FAT file name.

Method Optional Variant. Specifies the way ExtraInfo is attached. Can be one of the following MsoExtraInfoMethod constants.

MsoExtraInfoMethod type can be one of these MsoExtraInfoMethod constants. msoMethodGet. ExtraInfo is a String that’s appended to the address. msoMethodPost. ExtraInfo is posted as a String or byte array.

HeaderInfo Optional Variant. A String that specifies header information for the HTTP request. The default value is an empty string.
Example

This example loads the document at example.microsoft.com in a new window and adds it to the History folder.

ActiveWorkbook.FollowHyperlink Address:="http://example.microsoft.com" NewWindow:=True
Format Method

Sets a PivotTable report to one of the predefined indented, nonindented, or cross-tabulated formats.

expression.Format(Format)

expression  Required. An expression that returns one of the objects in the Applies To list.

Format  Required XlPivotFormatType. Specifies the type of report formatting to be applied to the specified PivotTable report.

XlPivotFormatType can be one of these XlPivotFormatType constants.

xlPTClassic
xlPTNone
xlReport1
xlReport10
xlReport2
xlReport3
xlReport4
xlReport5
xlReport6
xlReport7
xlReport8
xlReport9
xlTable1
xlTable10
xlTable2
xlTable3
xlTable4
xlTable5
Example

This example applies the xlReport4 indented format to the fourth PivotTable report on the active worksheet.

`ActiveSheet.PivotTables("PivotTable4").Format xlReport4`
FunctionWizard Method

- Starts the Function Wizard for the upper-left cell of the range.

`expression.FunctionWizard`

`expression`  Required. An expression that returns a `Range` object.
**Example**

This example starts the Function Wizard for the active cell on Sheet1.

```vba
Worksheets("Sheet1").Activate
ActiveCell.FunctionWizard
```
GetChartElement Method

Returns information about the chart element at specified X and Y coordinates. This method is unusual in that you specify values for only the first two arguments. Microsoft Excel fills in the other arguments, and your code should examine those values when the method returns.

```
expression.GetChartElement(X, Y, ElementID, Arg1, Arg2)
```

*expression* Required. An expression that returns a **Chart** object.

*X* Required **Long**. The X coordinate of the chart element.

*Y* Required **Long**. The Y coordinate of the chart element.

*ElementID* Required **Long**. When the method returns, this argument contains the **XLChartItem** value of the chart element at the specified coordinates. For more information, see the “Remarks” section.

*Arg1* Required **Long**. When the method returns, this argument contains information related to the chart element. For more information, see the “Remarks” section.

*Arg2* Required **Long**. When the method returns, this argument contains information related to the chart element. For more information, see the “Remarks” section.
Remarks

The value of *ElementID* after the method returns determines whether *Arg1* and *Arg2* contain any information, as shown in the following table.

<table>
<thead>
<tr>
<th>ElementID</th>
<th>Arg1</th>
<th>Arg2</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlAxis</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlAxisTitle</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlDisplayUnitLabel</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlMajorGridlines</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlMinorGridlines</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlPivotChartDropZone</td>
<td>DropZoneType</td>
<td>None</td>
</tr>
<tr>
<td>xlPivotChartFieldButton</td>
<td>DropZoneType</td>
<td>PivotFieldIndex</td>
</tr>
<tr>
<td>xlDownBars</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlDropLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xHiLoLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlRadarAxisLabels</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlSeriesLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlUpBars</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlChartArea</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xlChartTitle</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xICorners</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIDataTable</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIFloor</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xILegend</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xINothing</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIPlotArea</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIWalls</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIDataLabel</td>
<td>SeriesIndex</td>
<td>PointIndex</td>
</tr>
<tr>
<td>xIErrorBars</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xILegendEntry</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xILegendKey</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>Argument</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>AxisIndex</td>
<td>Specifies whether the axis is primary or secondary. Can be one of the following XlAxisGroup constants: xlPrimary or xlSecondary.</td>
<td></td>
</tr>
<tr>
<td>AxisType</td>
<td>Specifies the axis type. Can be one of the following XlAxisType constants: xlCategory, xlSeriesAxis, or xlValue.</td>
<td></td>
</tr>
<tr>
<td>DropZoneType</td>
<td>Specifies the drop zone type: column, data, page, or row field. Can be one of the following XlPivotFieldOrientation constants: xlColumnField,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>xlDataField, xlPageField, or xlRowField. The column and row field constants specify the series and category fields, respectively.</td>
<td></td>
</tr>
<tr>
<td>GroupIndex</td>
<td>Specifies the offset within the ChartGroups collection for a specific chart group.</td>
<td></td>
</tr>
<tr>
<td>PivotFieldIndex</td>
<td>Specifies the offset within the PivotFields collection for a specific column (series), data, page, or row (category) field. -1 if the drop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zone type is xlDataField.</td>
<td></td>
</tr>
<tr>
<td>PointIndex</td>
<td>Specifies the offset within the Points collection for a specific point within a series. A value of – 1 indicates that all data points are</td>
<td></td>
</tr>
<tr>
<td></td>
<td>selected.</td>
<td></td>
</tr>
<tr>
<td>SeriesIndex</td>
<td>Specifies the offset within the Series collection for a specific series.</td>
<td></td>
</tr>
<tr>
<td>ShapeIndex</td>
<td>Specifies the offset within the Shapes collection for a specific shape.</td>
<td></td>
</tr>
<tr>
<td>TrendlineIndex</td>
<td>Specifies the offset within the Trendlines collection for a specific trendline within a series.</td>
<td></td>
</tr>
</tbody>
</table>
Example

This example warns the user if she moves the mouse over the chart legend.

Private Sub Chart_MouseMove(ByVal Button As Long, _
    ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)
    Dim IDNum As Long
    Dim a As Long
    Dim b As Long

    ActiveChart.GetChartElement X, Y, IDNum, a, b
    If IDNum = xlLegendEntry Then _
        MsgBox "WARNING: Move away from the legend"
End Sub
GetCustomListContents Method

Returns a custom list (an array of strings).

`expression.GetCustomListContents(ListNum)`

*expression* Required. An expression that returns an *Application* object.

*ListNum* Required *Long*. The list number.
Example

This example writes the elements of the first custom list in column one on Sheet1.

listArray = Application.GetCustomListContents(1)
For i = LBound(listArray, 1) To UBound(listArray, 1)
    Worksheets("sheet1").Cells(i, 1).Value = listArray(i)
Next i
GetCustomListNum Method

Returns the custom list number for an array of strings. You can use this method to match both built-in lists and custom-defined lists.

\( expression.GetCustomListNum(ListArray) \)

**expression**  Required. An expression that returns an **Application** object.

**ListArray**  Required **Variant**. An array of strings.
Remarks

This method generates an error if there's no corresponding list.
Example

This example deletes a custom list.

\[
n = \text{Application.GetCustomListNum}(["cogs", "sprockets", "widgets", "gizmos"])
\]

Application.DeleteCustomList n
GetData Method

expression.GetData(Name)

expression  Required. An expression that returns a **PivotTable** object.

Name  Required **String**. Describes a single cell in the PivotTable report, using syntax similar to the **PivotSelect** method or the PivotTable report references in calculated item formulas.
Example

This example shows the sum of revenues for apples in January (Data field = Revenue, Product = Apples, Month = January).

Msgbox ActiveSheet.PivotTables(1) .GetData("'Sum of Revenue' Apples January")
GetOpenFilename Method

Displays the standard Open dialog box and gets a file name from the user without actually opening any files.

expression.GetOpenFilename(FileFilter, FilterIndex, Title, ButtonText, MultiSelect)

expression Required. An expression that returns an Application object.

FileFilter Optional Variant. A string specifying file filtering criteria.

This string consists of pairs of file filter strings followed by the MS-DOS wildcard file filter specification, with each part and each pair separated by commas. Each separate pair is listed in the Files of type drop-down list box. For example, the following string specifies two file filters—text and addin: "Text Files (*.txt),*.txt,Add-In Files (*.xla),*.xla".

To use multiple MS-DOS wildcard expressions for a single file filter type, separate the wildcard expressions with semicolons; for example, "Visual Basic Files (*.bas; *.txt),*.bas;*.txt".

If omitted, this argument defaults to "All Files (*.*)/*.*".

FilterIndex Optional Variant. Specifies the index numbers of the default file filtering criteria, from 1 to the number of filters specified in FileFilter. If this argument is omitted or greater than the number of filters present, the first file filter is used.

Title Optional Variant. Specifies the title of the dialog box. If this argument is omitted, the title is "Open."

ButtonText Optional Variant. Macintosh only.

MultiSelect Optional Variant. True to allow multiple file names to be selected. False to allow only one file name to be selected. The default value is False
Remarks

This method returns the selected file name or the name entered by the user. The returned name may include a path specification. If MultiSelect is True, the return value is an array of the selected file names (even if only one filename is selected). Returns False if the user cancels the dialog box.

This method may change the current drive or folder.
Example

This example displays the **Open** dialog box, with the file filter set to text files. If the user chooses a file name, the code displays that file name in a message box.

```vbnet
fileToOpen = Application._GetOpenFilename("Text Files (*.txt), *.txt")
If fileToOpen <> False Then
    MsgBox "Open " & fileToOpen
End If
```
GetPhonetic Method

Returns the Japanese phonetic text of the specified text string. This method is available to you only if you have selected or installed Japanese language support for Microsoft Office.

expression.GetPhonetic(Text)

expression  An expression that returns an Application object.

Text  Optional Variant. Specifies the text to be converted to phonetic text. If you omit this argument, the next possible phonetic text string (if any) of the previously specified Text is returned. If there are no more possible phonetic text strings, an empty string is returned.
Example

This example displays all of the possible phonetic text strings from the specified string.

```vba
strPhoText = Application.GetPhonetic("純子")
While strPhoText <> ""
    MsgBox strPhoText
    strPhoText = Application.GetPhonetic()
Wend
```
GetPivotData Method

Returns a **Range** object with information about a data item in a PivotTable report.

`expression.GetPivotData(DataField, Field1, Item1, Field2, Item2, Field3, Item3, Field4, Item4, Field5, Item5, Field6, Item6, Field7, Item7, Field8, Item8, Field9, Item9, Field10, Item10, Field11, Item11, Field12, Item12, Field13, Item13, Field14, Item14, Field15)`

*expression*  Required. An expression that returns one of the objects in the Applies To list.

**DataField**  Optional **Variant**. The name of the field containing the data for the PivotTable.

**Field1**  Optional **Variant**. The name of a column or row field in the PivotTable report.

**Item1**  Optional **Variant**. The name of an item in **Field1**.

**Field2**  Optional **Variant**. The name of a column or row field in the PivotTable report.

**Item2**  Optional **Variant**. The name of an item in **Field2**.

**Field3**  Optional **Variant**. The name of a column or row field in the PivotTable report.

**Item3**  Optional **Variant**. The name of an item in **Field3**.

**Field4**  Optional **Variant**. The name of a column or row field in the PivotTable report.

**Item4**  Optional **Variant**. The name of an item in **Field4**.
**Field5** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item5** Optional **Variant.** The name of an item in **Field5**.

**Field6** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item6** Optional **Variant.** The name of an item in **Field6**.

**Field7** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item7** Optional **Variant.** The name of an item in **Field7**.

**Field8** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item8** Optional **Variant.** The name of an item in **Field8**.

**Field9** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item9** Optional **Variant.** The name of an item in **Field9**.

**Field10** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item10** Optional **Variant.** The name of an item in **Field10**.

**Field11** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item11** Optional **Variant.** The name of an item in **Field11**.

**Field12** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item12** Optional **Variant.** The name of an item in **Field12**.

**Field13** Optional **Variant.** The name of a column or row field in the PivotTable
report.

**Item13** Optional **Variant.** The name of an item in **Field13.**

**Field14** Optional **Variant.** The name of a column or row field in the PivotTable report.

**Item14** Optional **Variant.** The name of an item in **Field14.**

**Field15** Optional **Variant.** The name of a column or row field in the PivotTable report.
Example

In this example, Microsoft Excel returns the quantity of chairs in the warehouse to the user. This example assumes a PivotTable report exists on the active worksheet. Also, this example assumes that, in the report, the title of the data field is "Quantity", a field titled "Warehouse" exists, and a data item titled "Chairs" exists in the Warehouse field.

Sub UseGetPivotData()
    Dim rngTableItem As Range
    ' Get PivotData for the quantity of chairs in the warehouse.
    Set rngTableItem = ActiveCell._
        PivotTable.GetPivotData("Quantity", "Warehouse", "Chairs")
    MsgBox "The quantity of chairs in the warehouse is: " & rngTableItem.Value
End Sub
GetSaveAsFilename Method

Displays the standard Save As dialog box and gets a file name from the user without actually saving any files.

`expression.GetSaveAsFilename(InitialFilename, FileFilter, FilterIndex, Title, ButtonText)`

`expression` Required. An expression that returns an Application object.

`InitialFilename` Optional Variant. Specifies the suggested file name. If this argument is omitted, Microsoft Excel uses the active workbook’s name.

`FileFilter` Optional Variant. A string specifying file filtering criteria.

This string consists of pairs of file filter strings followed by the MS-DOS wildcard file filter specification, with each part and each pair separated by commas. Each separate pair is listed in the Files of type drop-down list box. For example, the following string specifies two file filters, text and addin: "Text Files (*.txt), *.txt, Add-In Files (*.xla), *.xla".

To use multiple MS-DOS wildcard expressions for a single file filter type, separate the wildcard expressions with semicolons; for example, "Visual Basic Files (*.bas; *.txt),*.bas;*.txt".

If omitted, this argument defaults to "All Files (*.*)*,.*".

`FilterIndex` Optional Variant. Specifies the index number of the default file filtering criteria, from 1 to the number of filters specified in FileFilter. If this argument is omitted or greater than the number of filters present, the first file filter is used.

`Title` Optional Variant. Specifies the title of the dialog box. If this argument is omitted, the default title is used.

`ButtonText` Optional Variant. Macintosh only.
Remarks

This method returns the selected file name or the name entered by the user. The returned name may include a path specification. Returns False if the user cancels the dialog box.

This method may change the current drive or folder.
Example

This example displays the **Save As** dialog box, with the file filter set to text files. If the user chooses a file name, the example displays that file name in a message box.

```vbnet
fileSaveName = Application.GetSaveAsFilename( _
    fileFilter:="Text Files (*.txt), *.txt")
If fileSaveName <> False Then
    MsgBox "Save as " & fileSaveName
End If
```
GoalSeek Method

Calculates the values necessary to achieve a specific goal. If the goal is an amount returned by a formula, this calculates a value that, when supplied to your formula, causes the formula to return the number you want. Returns True if the goal seek is successful.

expression.GoalSeek(Goal, ChangingCell)

expression Required. An expression that returns a Range object. Must be a single cell.

Goal Required Variant. The value you want returned in this cell.

ChangingCell Required Range. Specifies which cell should be changed to achieve the target value.
Example

This example assumes that Sheet1 has a cell named "Polynomial" that contains the formula \(=(X^3)+(3*X^2)+6\) and another cell named "X" that’s empty. The example finds a value for X so that Polynomial contains the value 15.

\[
\text{Worksheets("Sheet1").Range("Polynomial").GoalSeek}
\text{ Goal:=15,}
\text{ ChangingCell:=Worksheets("Sheet1").Range("X")}
\]
Goto Method

Selects any range or Visual Basic procedure in any workbook, and activates that workbook if it’s not already active.

```
expression.Goto(Reference, Scroll)
```

- **expression** Required. An expression that returns an `Application` object.
- **Reference** Optional `Variant`. The destination. Can be a `Range` object, a string that contains a cell reference in R1C1-style notation, or a string that contains a Visual Basic procedure name. If this argument is omitted, the destination is the last range you used the `Goto` method to select.
- **Scroll** Optional `Variant`. `True` to scroll through the window so that the upper-left corner of the range appears in the upper-left corner of the window. `False` to not scroll through the window. The default is `False`. 
Remarks

This method differs from the `Select` method in the following ways:

- If you specify a range on a sheet that’s not on top, Microsoft Excel will switch to that sheet before selecting. (If you use `Select` with a range on a sheet that’s not on top, the range will be selected but the sheet won’t be activated).
- This method has a `Scroll` argument that lets you scroll through the destination window.
- When you use the `Goto` method, the previous selection (before the `Goto` method runs) is added to the array of previous selections (for more information, see the `PreviousSelections` property). You can use this feature to quickly jump between as many as four selections.
- The `Select` method has a `Replace` argument; the `Goto` method doesn’t.
Example

This example selects cell A154 on Sheet1 and then scrolls through the worksheet to display the range.

Application.Goto Reference:=Worksheets("Sheet1").Range("A154"), _
    scroll:=True
Group Method

- **Group method as it applies to the ShapeRange object.**

Groups the shapes in the specified range. Returns the grouped shapes as a single Shape object.

*expression*.Group

*expression*  Required. An expression that returns a ShapeRange object.

- **Group method as it applies to the Range object.**

When the Range object represents a single cell in a PivotTable field’s data range, the Group method performs numeric or date-based grouping in that field.

*expression*.Group(*Start, End, By, Periods*)

*expression*  Required. An expression that returns a Range object.

Start  Optional Variant. The first value to be grouped. If this argument is omitted or True, the first value in the field is used.

End  Optional Variant. The last value to be grouped. If this argument is omitted or True, the last value in the field is used.

By  Optional Variant. If the field is numeric, this argument specifies the size of each group. If the field is a date, this argument specifies the number of days in each group if element 4 in the Periods array is True and all the other elements are False. Otherwise, this argument is ignored. If this argument is omitted, Microsoft Excel automatically chooses a default group size.

Periods  Optional Variant. An array of Boolean values that specify the period for the group, as shown in the following table.

<table>
<thead>
<tr>
<th>Array element</th>
<th>Period</th>
</tr>
</thead>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If an element in the array is **True**, a group is created for the corresponding time; if the element is **False**, no group is created. If the field isn’t a date field, this argument is ignored.
Remarks

Because a group of shapes is treated as a single shape, grouping and ungrouping shapes changes the number of items in the Shapes collection and changes the index numbers of items that come after the affected items in the collection.

The Range object must be a single cell in the PivotTable field’s data range. If you attempt to apply this method to more than one cell, it will fail (without displaying an error message).
Example

This example groups the field named ORDER_DATE by 10-day periods.

Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
Set groupRange = pvtTable.PivotFields("ORDER_DATE").DataRange
groupRange.Cells(1).Group by:=10,
    periods:=Array(False, False, False, 
        True, False, False, False)
Heartbeat Method

Determines if the real-time data server is still active. Returns a Long; zero or negative number indicates failure; positive number indicates success.

expression.Heartbeat

expression Required. An expression that returns an IRtdServer object.
Remarks

The **Heartbeat** method is called by Microsoft Excel if the **HeartbeatInterval** property has elapsed since the last time Excel was called with the **UpdateNotify** method.
Help Method

Displays a Help topic.

\[ \text{expression} . \text{Help} ( \text{HelpFile}, \text{HelpContextID}) \]

- \textit{expression} Required. An expression that returns an \textbf{Application} object.
- \textit{helpFile} Optional \textbf{Variant}. The name of the online Help file you want to display. If this argument isn't specified, Microsoft Excel Help is used.
- \textit{helpContextID} Optional \textbf{Variant}. Specifies the context ID number for the Help topic. If this argument isn't specified, the \textbf{Help Topics} dialog box is displayed.
Example

This example displays topic number 65527 in the Help file Otisapp.hlp.

Application.Help "OTISAPP.HLP", 65527
HighlightChangesOptions Method

Controls how changes are shown in a shared workbook.

\[ \text{expression}.\text{HighlightChangesOptions}(\text{When}, \text{Who}, \text{Where}) \]

\text{expression} Required. An expression that returns a \textbf{Workbook} object.

\textbf{When} Optional \textbf{Variant}. The changes that are shown. Can be one of the following \textbf{XlHighlightChangesTime} constants: \textbf{xlSinceMyLastSave}, \textbf{xlAllChanges}, or \textbf{xlNotYetReviewed}.

\textbf{Who} Optional \textbf{Variant}. The user or users whose changes are shown. Can be "Everyone," "Everyone but Me," or the name of one of the users of the shared workbook.

\textbf{Where} Optional \textbf{Variant}. An A1-style range reference that specifies the area to check for changes.
Example

This example shows changes to the shared workbook on a separate worksheet.

With ActiveWorkbook
  .HighlightChangesOptions _
    When:=xlSinceMyLastSave, _
    Who:="Everyone"
  .ListChangesOnNewSheet = True
End With
**Import Method**

This method should not be used. Sound notes have been removed from Microsoft Excel.
Show All
InchesToPoints Method

Converts a measurement from inches to points.

expression.InchesToPoints(Inches)

expression  Required. An expression that returns an Application object.

Inches  Required Double. Specifies the inch value to be converted to points.
Example

This example sets the left margin of Sheet1 to 2.5 inches.

Worksheets("Sheet1").PageSetup.LeftMargin = _
Application.InchesToPoints(2.5)
IncrementBrightness Method

Changes the brightness of the picture by the specified amount. Use the Brightness property to set the absolute brightness of the picture.

expression.IncrementBrightness(Increment)

expression  Required. An expression that returns a PictureFormat object.

Increment  Required Single. Specifies how much to change the value of the Brightness property for the picture. A positive value makes the picture brighter; a negative value makes the picture darker.
Remarks

You cannot adjust the brightness of a picture past the upper or lower limit for the Brightness property. For example, if the Brightness property is initially set to 0.9 and you specify 0.3 for the Increment argument, the resulting brightness level will be 1.0, which is the upper limit for the Brightness property, instead of 1.2.
Example

This example creates a duplicate of shape one on myDocument and then moves and darkens the duplicate. For the example to work, shape one must be either a picture or an OLE object.

    Set myDocument = Worksheets(1)
    With myDocument.Shapes(1).Duplicate
        .PictureFormat.IncrementBrightness -0.2
        .IncrementLeft 50
        .IncrementTop 50
    End With
IncrementContrast Method

Changes the contrast of the picture by the specified amount. Use the Contrast property to set the absolute contrast for the picture.

expression.IncrementContrast(Increment)

expression Required. An expression that returns a PictureFormat object.

Increment Required Single. Specifies how much to change the value of the Contrast property for the picture. A positive value increases the contrast; a negative value decreases the contrast.
Remarks

You cannot adjust the contrast of a picture past the upper or lower limit for the Contrast property. For example, if the Contrast property is initially set to 0.9 and you specify 0.3 for the Increment argument, the resulting contrast level will be 1.0, which is the upper limit for the Contrast property, instead of 1.2.
Example

This example increases the contrast for all pictures on myDocument that aren’t already set to maximum contrast.

```vba
Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.Type = msoPicture Or s.Type = msoLinkedPicture Then
        s.PictureFormat.IncrementContrast 0.1
    End If
Next
```
IncrementLeft Method

Moves the specified shape horizontally by the specified number of points.

expression.IncrementLeft(Increment)

expression Required. An expression that returns a Shape object.

Increment Required Single. Specifies how far the shape is to be moved horizontally, in points. A positive value moves the shape to the right; a negative value moves it to the left.
Example

This example duplicates shape one on myDocument, sets the fill for the duplicate, moves it 70 points to the right and 50 points up, and rotates it 30 degrees clockwise.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Duplicate
    .Fill.PresetTextured msoTextureGranite
    .IncrementLeft 70
    .IncrementTop -50
    .IncrementRotation 30
End With
IncrementOffsetX Method

Changes the horizontal offset of the shadow by the specified number of points. Use the OffsetX property to set the absolute horizontal shadow offset.

expression.IncrementOffsetX(Increment)

expression Required. An expression that returns a ShadowFormat object.

Increment Required Single. Specifies how far the shadow offset is to be moved horizontally, in points. A positive value moves the shadow to the right; a negative value moves it to the left.
Example

This example moves the shadow on shape three on myDocument to the left by 3 points.

```vba
Set myDocument = Worksheets(1)
```
IncrementOffsetY Method

Changes the vertical offset of the shadow by the specified number of points. Use the OffsetY property to set the absolute vertical shadow offset.

expression.IncrementOffsetY(Increment)

expression Required. An expression that returns a ShadowFormat object.

Increment Required Single. Specifies how far the shadow offset is to be moved vertically, in points. A positive value moves the shadow down; a negative value moves it up.
Example

This example moves the shadow on shape three on myDocument up by 3 points.

Set myDocument = Worksheets(1)
IncrementRotation Method

Changes the rotation of the specified shape around the z-axis by the specified number of degrees. Use the Rotation property to set the absolute rotation of the shape.

`expression.IncrementRotation(Increment)`

**expression**  Required. An expression that returns one of the objects in the Applies To list.

**Increment**  Required Single. Specifies how far the shape is to be rotated horizontally, in degrees. A positive value rotates the shape clockwise; a negative value rotates it counterclockwise.
Remarks

To rotate a three-dimensional shape around the x-axis or the y-axis, use the **IncrementRotationX** method or the **IncrementRotationY** method.
Example

This example duplicates shape one on myDocument, sets the fill for the duplicate, moves it 70 points to the right and 50 points up, and rotates it 30 degrees clockwise.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Duplicate
  .Fill.PresetTextured msoTextureGranite
  .IncrementLeft 70
  .IncrementTop -50
  .IncrementRotation 30
End With
IncrementRotationX Method

Changes the rotation of the specified shape around the x-axis by the specified number of degrees. Use the RotationX property to set the absolute rotation of the shape around the x-axis.

expression.IncrementRotationX(Increment)

expression  Required. An expression that returns a ThreeDFormat object.

Increment  Required Single. Specifies how much (in degrees) the rotation of the shape around the x-axis is to be changed. Can be a value from –90 through 90. A positive value tilts the shape up; a negative value tilts it down.
Remarks

You cannot adjust the specified shape's rotation around the x-axis past the upper or lower limit for the RotationX property (90 degrees to –90 degrees). For example, if the RotationX property is initially set to 80 and you specify 40 for the Increment argument, the resulting rotation will be 90 (the upper limit for the RotationX property) instead of 120.

To change the rotation of a shape around the y-axis, use the IncrementRotationY method. To change the rotation around the z-axis, use the IncrementRotation method.
Example

This example tilts shape one on myDocument up 10 degrees. Shape one must be an extruded shape for you to see the effect of this code.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).ThreeD.IncrementRotationX 10
IncrementRotationY Method

Changes the rotation of the specified shape around the y-axis by the specified number of degrees. Use the RotationY property to set the absolute rotation of the shape around the y-axis.

`expression.IncrementRotationY(Increment)`

*expression* Required. An expression that returns a ThreeDFormat object.

*Increment* Required *Single*. Specifies how much (in degrees) the rotation of the shape around the y-axis is to be changed. Can be a value from –90 through 90. A positive value tilts the shape to the left; a negative value tilts it to the right.
Remarks

To change the rotation of a shape around the x-axis, use the `IncrementRotationX` method. To change the rotation around the z-axis, use the `IncrementRotation` method.

You cannot adjust the specified shape's rotation around the y-axis past the upper or lower limit for the `RotationY` property (90 degrees to −90 degrees). For example, if the `RotationY` property is initially set to 80 and you specify 40 for the `Increment` argument, the resulting rotation will be 90 (the upper limit for the `RotationY` property) instead of 120.
Example

This example tilts shape one on `myDocument` 10 degrees to the right. Shape one must be an extruded shape for you to see the effect of this code.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes(1).ThreeD.IncrementRotationY = -10
```
IncrementTop Method

Moves the specified shape vertically by the specified number of points.

`expression.IncrementTop(Increment)`

*expression* Required. An expression that returns a *Shape* object.

*Increment* Required *Single*. Specifies how far the shape object is to be moved vertically, in points. A positive value moves the shape down; a negative value moves it up.
Example

This example duplicates shape one on myDocument, sets the fill for the duplicate, moves it 70 points to the right and 50 points up, and rotates it 30 degrees clockwise.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Duplicate
    .Fill.PresetTextured msoTextureGranite
    .IncrementLeft 70
    .IncrementTop -50
    .IncrementRotation 30
End With
Show All
InputBox Method

Displays a dialog box for user input. Returns the information entered in the dialog box.

\[ expression.InputBox(Prompt, Title, Default, Left, Top, HelpFile, HelpContextId, Type) \]

- **expression**  Required. An expression that returns an Application object.

- **Prompt**  Required String. The message to be displayed in the dialog box. This can be a string, a number, a date, or a Boolean value (Microsoft Excel automatically coerces the value to a String before it's displayed).

- **Title**  Optional Variant. The title for the input box. If this argument is omitted, the default title is "Input."

- **Default**  Optional Variant. Specifies a value that will appear in the text box when the dialog box is initially displayed. If this argument is omitted, the text box is left empty. This value can be a Range object.

- **Left**  Optional Variant. Specifies an x position for the dialog box in relation to the upper-left corner of the screen, in points.

- **Top**  Optional Variant. Specifies a y position for the dialog box in relation to the upper-left corner of the screen, in points.

- **HelpFile**  Optional Variant. The name of the Help file for this input box. If the HelpFile and HelpContextID arguments are present, a Help button will appear in the dialog box.

- **HelpContextId**  Optional Variant. The context ID number of the Help topic in HelpFile.

- **Type**  Optional Variant. Specifies the return data type. If this argument is omitted, the dialog box returns text. Can be one or a sum of the following values.
<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>A formula</td>
</tr>
<tr>
<td>1</td>
<td>A number</td>
</tr>
<tr>
<td>2</td>
<td>Text (a string)</td>
</tr>
<tr>
<td>4</td>
<td>A logical value (<strong>True</strong> or <strong>False</strong>)</td>
</tr>
<tr>
<td>8</td>
<td>A cell reference, as a <strong>Range</strong> object</td>
</tr>
<tr>
<td>16</td>
<td>An error value, such as #N/A</td>
</tr>
<tr>
<td>64</td>
<td>An array of values</td>
</tr>
</tbody>
</table>

You can use the sum of the allowable values for **Type**. For example, for an input box that can accept both text and numbers, set **Type** to 1 + 2.
**Remarks**

Use **InputBox** to display a simple dialog box so that you can enter information to be used in a macro. The dialog box has an **OK** button and a **Cancel** button. If you choose the **OK** button, **InputBox** returns the value entered in the dialog box. If you click the **Cancel** button, **InputBox** returns **False**.

If **Type** is 0, **InputBox** returns the formula in the form of text — for example, ":=2*PI()/360". If there are any references in the formula, they are returned as A1-style references. (Use **ConvertFormula** to convert between reference styles.)

If **Type** is 8, **InputBox** returns a **Range** object. You must use the **Set** statement to assign the result to a **Range** object, as shown in the following example.

```
Set myRange = Application.InputBox(prompt := "Sample", type := 8)
```

If you don't use the **Set** statement, the variable is set to the value in the range, rather than the **Range** object itself.

If you use the **InputBox** method to ask the user for a formula, you must use the **FormulaLocal** property to assign the formula to a **Range** object. The input formula will be in the user's language.

The **InputBox** method differs from the **InputBox** function in that it allows selective validation of the user's input, and it can be used with Microsoft Excel objects, error values, and formulas. Note that **Application.InputBox** calls the **InputBox** method; **InputBox** with no object qualifier calls the **InputBox** function.
Example

This example prompts the user for a number.

myNum = Application.InputBox("Enter a number")

This example prompts the user to select a cell on Sheet1. The example uses the **Type** argument to ensure that the return value is a valid cell reference (a **Range** object).

Worksheets("Sheet1"). Activate
Set myCell = Application.InputBox( _
    prompt:="Select a cell", Type:=8)
Insert Method

- Insert method as it applies to the Range object.

Inserts a cell or a range of cells into the worksheet or macro sheet and shifts other cells away to make space.

expression. Insert(Shift, CopyOrigin)

expression Required. An expression that returns a Range object.

Shift Optional Variant. Specifies which way to shift the cells. Can be one of the following XlInsertShiftDirection constants: xlShiftToRight or xlShiftDown. If this argument is omitted, Microsoft Excel decides based on the shape of the range.

CopyOrigin Optional Variant. The copy origin.

- Insert method as it applies to the Characters object.

Inserts a string preceding the selected characters.

expression. Insert(String)

expression Required. An expression that returns a Characters object.

String Required String. The string to insert.

- Insert method as it applies to the ShapeNodes object.

Inserts a node into a freeform shape.

expression. Insert(Index, SegmentType, EditingType, X1, Y1, X2, Y2, X3, Y3)

expression Required. An expression that returns a ShapeNodes object.
**Index**  Required **Long**. The number of the shape node after which to insert a new node.

**SegmentType**  Required **MsoSegmentType**. The segment type.

MsoSegmentType can be one of these MsoSegmentType constants.
- msoSegmentCurve
- msoSegmentLine

**EditingType**  Required **MsoEditingType**. The editing type.

MsoEditingType can be one of these MsoEditingType constants.
- msoEditingAuto
- msoEditingCorner
- msoEditingSmooth
- msoEditingSymmetric

**X1**  Required **Single**. If the **EditingType** of the new segment is msoEditingAuto, this argument specifies the horizontal distance, measured in points, from the upper-left corner of the document to the end point of the new segment. If the **EditingType** of the new node is msoEditingCorner, this argument specifies the horizontal distance, measured in points, from the upper-left corner of the document to the first control point for the new segment.

**Y1**  Required **Single**. If the **EditingType** of the new segment is msoEditingAuto, this argument specifies the vertical distance, measured in points, from the upper-left corner of the document to the end point of the new segment. If the **EditingType** of the new node is msoEditingCorner, this argument specifies the vertical distance, measured in points, from the upper-left corner of the document to the first control point for the new segment.

**X2**  Optional **Single**. If the **EditingType** of the new segment is msoEditingCorner, this argument specifies the horizontal distance, measured in points, from the upper-left corner of the document to the second control point for the new segment. If the **EditingType** of the new segment is msoEditingAuto, don't specify a value for this argument.

**Y2**  Optional **Single**. If the **EditingType** of the new segment is
**msoEditingCorner**, this argument specifies the vertical distance, measured in points, from the upper-left corner of the document to the second control point for the new segment. If the *EditingType* of the new segment is *msoEditingAuto*, don't specify a value for this argument.

**X3**  Optional *Single*. If the *EditingType* of the new segment is *msoEditingCorner*, this argument specifies the horizontal distance, measured in points, from the upper-left corner of the document to the end point of the new segment. If the *EditingType* of the new segment is *msoEditingAuto*, don't specify a value for this argument.

**Y3**  Optional *Single*. If the *EditingType* of the new segment is *msoEditingCorner*, this argument specifies the vertical distance, measured in points, from the upper-left corner of the document to the end point of the new segment. If the *EditingType* of the new segment is *msoEditingAuto*, don't specify a value for this argument.
**Example**

This example selects the third shape in the active document, checks whether the shape is a **Freeform** object, and if it is, inserts a node. This example assumes three shapes exist on the active worksheet.

```vba
Sub InsertShapeNode()
    ActiveSheet.Shapes(3).Select
    With Selection.ShapeRange
        If .Type = msoFreeform Then
            .Nodes.Insert
                Index:=3, SegmentType:=msoSegmentCurve,
                EditingType:=msoEditingSymmetric, X1:=35, Y1:=100
            .Fill.ForeColor.RGB = RGB(0, 0, 200)
            .Fill.Visible = msoTrue
        Else
            MsgBox "This shape is not a Freeform object."
        End If
    End With
End Sub
```
InsertIndent Method

 Adds an indent to the specified range.

 expression.InsertIndent(InsertAmount)

 expression  Required. An expression that returns a Range object.

 InsertAmount  Required Long. The amount to be added to the current indent.
Remarks

Using this method to set the indent level to a number less than 0 (zero) or greater than 15 causes an error.

Use the **IndentLevel** property to return the indent level for a range.
Example

This example decreases the indent level in cell A10.

```vba
With Range("a10")
    .InsertIndent -1
End With
```
Intersect Method

Returns a Range object that represents the rectangular intersection of two or more ranges.

expression.Intersect(Arg1, Arg2, ...)

expression  Optional. An expression that returns an Application object.

Arg1, Arg2, ...  Required Range. The intersecting ranges. At least two Range objects must be specified.
Example

This example selects the intersection of two named ranges, rg1 and rg2, on Sheet1. If the ranges don't intersect, the example displays a message.

    Worksheets("Sheet1").Activate
    Set isect = Application.Intersect(Range("rg1"), Range("rg2"))
    If isect Is Nothing Then
        MsgBox "Ranges do not intersect"
    Else
        isect.Select
    End If
Item Method

- Item method as it applies to the Axes object.

Returns a single Axis object from an Axes collection.

expression.Item(Type, AxisGroup)

*expression* Required. An expression that returns an Axes collection.

*Type* Required XlAxisType. The axis type.

XlAxisType can be one of these XlAxisType constants.

- xlCategory
- xlSeriesAxis Valid only for 3-D charts.
- xlValue

AxisGroup Optional XlAxisGroup. The axis.

XlAxisGroup can be one of these XlAxisGroup constants.

- xlPrimary default
- xlSecondary

- Item method as it applies to the Names object.

Returns a single Name object from a Names collection.

expression.Item(Index, IndexLocal, RefersTo)

*expression* Required. An expression that returns a Names collection.

*Index* Optional Variant. The name or number of the defined name to be returned.

*IndexLocal* Optional Variant. The name of the defined name, in the language
of the user. No names will be translated if you use this argument.

**RefersTo** Optional **Variant**. What the name refers to. You use this argument to identify a name by what it refers to.
Remarks

You must specify one, and only one, of these three arguments.

- Item method as it applies to the Comments, ODBCErrors, OLEDBErrors and Points objects.

Returns a single object from a collection.

\[
\text{expression}.\text{Item}(\text{Index})
\]

*expression*  Required. An expression that returns one of the above objects.

*Index*  Required *Long*. The index number for the object.

- Item method as it applies to all other objects in the Applies To list.

Returns a single object from a collection.

\[
\text{expression}.\text{Item}(\text{Index})
\]

*expression*  Required. An expression that returns all other objects in the Applies To list.

*Index*  Required *Variant*. The name or index number for the object.
Remarks

The text name of the object is the value of the Name and Value properties. For an Online Analytical Processing (OLAP) data source, the value is equal to the value of the SourceName property, and for other data sources, the value is equal to the value of the Caption property.
Example

As it applies to the **Axes** object.

This example sets the title text for the category axis on Chart1.

```vba
With Charts("chart1").Axes.Item(xlCategory)
    .HasTitle = True
    .AxisTitle.Caption = "1994"
End With
```

As it applies to the **CalculatedFields** object.

This example sets the formula for calculated field one.

```vba
Worksheets(1).PivotTables(1).CalculatedFields.Item(1) _
    .Formula = "=Revenue - Cost"
```

As it applies to the **CalculatedItems** and **PivotItemList** objects.

This example hides calculated item one.

```vba
Worksheets(1).PivotTables(1).PivotFields("year") _
    .CalculatedItems.Item(1).Visible = False
```

As it applies to the **CanvasShapes**, **GroupShapes**, and **ShapeRange** objects.

This example sets the **OnAction** property for shape two in a shape range. If the sr variable doesn’t represent a **ShapeRange** object, this example fails.

```vba
Dim sr As Shape
sr.Item(2).OnAction = "ShapeAction"
```

As it applies to the **ChartGroups** object.

This example adds drop lines to chart group one on chart sheet one.

```vba
Charts(1).ChartGroups.Item(1).HasDropLines = True
```

As it applies to the **ChartObjects** object.
This example activates embedded chart one.

Worksheets("sheet1").ChartObjects.Item(1).Activate

- As it applies to the **Comments** object.

This example hides comment two.

Worksheets(1).Comments.Item(2).Visible = False

- As it applies to the **CustomViews** object.

This example includes print settings in the custom view named Current Inventory.

ThisWorkbook.CustomViews.Item("Current Inventory") = 
  .PrintSettings = True

- As it applies to the **DataLabels** object.

This example sets the number format for the fifth data label in series one in embedded chart one on worksheet one.

Worksheets(1).ChartObjects(1).Chart.
  .SeriesCollection(1).DataLabels.Item(5).NumberFormat = "0.000"

- As it applies to the **FormatConditions** object.

This example sets format properties for an existing conditional format for cells E1:E10.

With Worksheets(1).Range("e1:e10").FormatConditions.Item(1)
  With .Borders
    .LineStyle = xlContinuous
    .Weight = xlThin
    .ColorIndex = 6
  End With
End With

- As it applies to the **LegendEntries** object.

This example changes the font for the text of the legend entry at the top of the legend (this is usually the legend for series one) in embedded chart one on
Sheet1.

Worksheets("sheet1").ChartObjects(1).Chart.

As it applies to the Names object.

This example deletes the name mySortRange from the active workbook.

ActiveWorkbook.Names.Item("mySortRange").Delete

As it applies to the ODBCErrors object.

This example displays an ODBC error.

Set er = Application.ODBCErrors.Item(1)
MsgBox "The following error occurred:" & 
  er.ErrorString & " : " & er.SqlState

As it applies to the OLEDBErrors object.

This example displays an OLE DB error.

Set objEr = Application.OLEDBErrors.Item(1)
MsgBox "The following error occurred:" & 
  objEr.ErrorString & " : " & objEr.SqlState

As it applies to the OLEObjects object.

This example deletes OLE object one from Sheet1.

Worksheets("sheet1").OLEObjects.Item(1).Delete

As it applies to the Parameters object.

This example modifies the parameter prompt string.

WithWorksheets(1).QueryTables(1).Parameters.Item(1)
  .SetParam xlPrompt, "Please " & .PromptString
End With

As it applies to the PivotCaches object.
This example refreshes cache one.

```vba
ActiveWorkbook.PivotCaches.Item(1).Refresh
```

- **As it applies to the **PivotFields** object.**

This example makes the Year field a row field in the first PivotTable report on Sheet3.

```vba
Worksheets("sheet3").PivotTables(1)._ .PivotFields.Item("year").Orientation = xlRowField
```

- **As it applies to the **PivotFields** object.**

This example displays the first formula for PivotTable one on worksheet one.

```vba
MsgBox Worksheets(1).PivotTables(1).PivotFormulas.Item(1).Formula
```

- **As it applies to the **PivotFormulas** object.**

This example hides the 1998 item in the first PivotTable report on Sheet3.

```vba
```

- **As it applies to the **PivotItems** object.**

This example makes the Year field a row field in the first PivotTable report on Sheet3.

```vba
Worksheets("sheet3").PivotTables.Item(1)._ .PivotFields("year").Orientation = xlRowField
```

- **As it applies to the **Points** object.**

This example sets the marker style for the third point in series one in embedded chart one on worksheet one. The specified series must be a 2-D line, scatter, or radar series.

```vba
```

- **As it applies to the **QueryTables** object.**
This example sets a query table so that formulas to the right of the query table are automatically updated whenever it’s refreshed.

Sheets("sheet1").QueryTables.Item(1).FillAdjacentFormulas = True

- **As it applies to the **Scenarios** object.**

This example shows the scenario named Typical on the worksheet named Options.

Worksheets("options").Scenarios.Item("typical").Show

- **As it applies to the **SeriesCollection** object.**

This example sets the number of units that the trendline on Chart1 extends forward and backward. The example should be run on a 2-D column chart that contains a single series with a trendline.

With Charts("Chart1").SeriesCollection.Item(1).Trendlines.Item(1)
  .Forward = 5
  .Backward = .5
End With

- **As it applies to the **Shapes** object.**

This example sets the **OnAction** property for shape two in a **Shapes** collection. If the ss variable doesn’t represent a **Shapes** object, this example fails.

Dim ss As Shape
ss.Item(2).OnAction = "ShapeAction"

- **As it applies to the **Trendlines** object.**

This example sets the number of units that the trendline on Chart1 extends forward and backward. The example should be run on a 2-D column chart that contains a single series with a trendline.

With Charts("Chart1").SeriesCollection(1).Trendlines.Item(1)
  .Forward = 5
  .Backward = .5
End With
Justify Method

Rearranges the text in a range so that it fills the range evenly.

\textit{expression}.\texttt{Justify}

\textit{expression} Required. An expression that returns a \texttt{Range} object.
Remarks

If the range isn’t large enough, Microsoft Excel displays a message telling you that text will extend below the range. If you click the OK button, justified text will replace the contents in cells that extend beyond the selected range. To prevent this message from appearing, set the DisplayAlerts property to False. After you set this property, text will always replace the contents in cells below the range.
Example

This example justifies the text in cell A1 on Sheet1.

Worksheets("Sheet1").Range("A1").Justify
LargeScroll Method

Scrolls the contents of the window by pages.

`expression.LargeScroll(Down, Up, ToRight, ToLeft)`

`expression`  Required. An expression that returns a `Window` object.

`Down`  Optional `Variant`. The number of pages to scroll the contents down.

`Up`  Optional `Variant`. The number of pages to scroll the contents up.

`ToRight`  Optional `Variant`. The number of pages to scroll the contents to the right.

`ToLeft`  Optional `Variant`. The number of pages to scroll the contents to the left.
Remarks

If Down and Up are both specified, the contents of the window are scrolled by the difference of the arguments. For example, if Down is 3 and Up is 6, the contents are scrolled up three pages.

IfToLeft and ToRight are both specified, the contents of the window are scrolled by the difference of the arguments. For example, ifToLeft is 3 and ToRight is 6, the contents are scrolled to the right three pages.

Any of the arguments can be a negative number.
Example

This example scrolls the contents of the active window of Sheet1 down three pages.

Worksheets("Sheet1").Activate
ActiveWindow.LargeScroll down:=3
LegendEntries Method

Returns an object that represents either a single legend entry (a LegendEntry object) or a collection of legend entries (a LegendEntries object) for the legend.

expression.LegendEntries(Index)

expression  Required. An expression that returns a Legend object.

Index  Optional Variant. The number of the legend entry.
**Example**

This example sets the font for legend entry one on Chart1.

Charts("Chart1").Legend.LegendEntries(1).Font.Name = "Arial"
**LineGroups Method**

On a 2-D chart, returns an object that represents either a single line chart group (a `ChartGroup` object) or a collection of the line chart groups (a `ChartGroups` collection).

`expression.LineGroups(Index)`

**expression** Required. An expression that returns a `Chart` object.

**Index** Optional `Variant`. Specifies the chart group.
Example

This example sets line group one in Chart1 to use a different color for each data marker. The example should be run on a 2-D chart.

Charts("Chart1").LineGroups(1).VaryByCategories = True
**LinkInfo Method**

Returns the link date and update status. **Variant.**

*expression*.LinkInfo(*Name*, *LinkInfo*, *Type*, *EditionRef*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Name*  Optional **String**.

*LinkInfo*  Required **XlLinkInfo**. The type of information to be returned.

XlLinkInfo can be one of these XlLinkInfo constants.

**xlEditionDate**

**xlLinkInfoStatus**

**xlUpdateState**  This method returns 1 if the link updates automatically, or it returns 2 if the link must be updated manually.

*Type*  Optional **XlLinkInfoType**. The type of link to return.

XlLinkInfoType can be one of these XlLinkInfoType constants.

**xlLinkInfoOLELinks**  (also handles DDE links)

**xlLinkInfoPublishers**

**xlLinkInfoSubscribers**

*EditionRef*  Optional **Variant**. If the link is an edition, this argument specifies the edition reference as a string in R1C1 style. This argument is required if there's more than one publisher or subscriber with the same name in the workbook.
**Example**

This example displays a message box if the link is updated automatically.

```vbnet
If ActiveWorkbook.LinkInfo(_
    "Word.Document|Document1!'!DDE_LINK1", xlUpdateState, _
    xlOLELinks) = 1 Then
MsgBox "Link updates automatically"
End If
```
**LinkSources Method**

Returns an array of links in the workbook. The names in the array are the names of the linked documents, editions, or DDE or OLE servers. Returns **Empty** if there are no links. **Variant**.

```
expression.LinkSources(Type)
```

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Type*  Optional **XlLink**. The type of link to return.

**XlLink** can be one of these **XlLink** constants.

- xlExcelLinks
- xlOLELinks (also handles DDE links)
- xlPublishers
- xlSubscribers
Remarks

The format of the array is a one-dimensional array for all types but publisher and subscriber. The returned strings contain the name of the link source, in the appropriate notation for the link type. For example, DDE links use the "Server|Document!Item" syntax.

For publisher and subscriber links, the returned array is two-dimensional. The first column of the array contains the names of the edition, and the second column contains the references of the editions as text.
Example

This example displays a list of OLE and DDE links in the active workbook. The example should be run on a workbook that contains one or more linked Word objects.

```vba
aLinks = ActiveWorkbook.LinkSources(xlOLELinks)
If Not IsEmpty(aLinks) Then
    For i = 1 To UBound(aLinks)
        MsgBox "Link " & i & ":" & Chr(13) & aLinks(i)
    Next i
End If
```
List Method

Returns or sets the text entries in the specified list box or a combo box, as an array of strings, or returns or sets a single text entry. An error occurs if there are no entries in the list.

`expression.List(Index)`

- **expression**  Required. An expression that returns a `ControlFormat` object.

- **Index**  Optional Variant. The index number of a single text entry to be set or returned. If this argument is omitted, the entire list is returned or set as an array of strings.
Remarks

Setting this property clears any range specified by the ListFillRange property.
Example

This example sets the entries in a list box on worksheet one. If Shapes(2) doesn’t represent a list box, this example fails.

`Worksheets(1).Shapes(2).ControlFormat.List = _
    Array("cogs", "widgets", "sprockets", "gizmos")`

This example sets entry four in a list box on worksheet one. If Shapes(2) doesn’t represent a list box, this example fails.

`Worksheets(1).Shapes(2).ControlFormat.List(4) = "gadgets"`
ListFormulas Method

Creates a list of calculated PivotTable items and fields on a separate worksheet.

`expression.ListFormulas`

`expression`  Required. An expression that returns a `PivotTable` object.
Remarks

This method isn’t available for OLAP data sources.
Example

This example creates a list of calculated items and fields for the first PivotTable report on worksheet one.

Worksheets(1).PivotTables(1).ListFormulas
ListNames Method

Pastes a list of all nonhidden names onto the worksheet, beginning with the first cell in the range.

expression.ListNames

expression Required. An expression that returns a Worksheet object.
Remarks

Use the Names property to return a collection of all the names on a worksheet.
Example

This example pastes a list of defined names into cell A1 on Sheet1. The example pastes both workbook-level names and sheet-level names defined on Sheet1.

Worksheets("Sheet1").Range("A1").ListNames
Location Method

Moves the chart to a new location. Chart object.

expression.Location(Where, Name)

expression  Required. An expression that returns one of the objects in the Applies To list.

Where  Required XlChartLocation. Where to move the chart.

XlChartLocation can be one of these XlChartLocation constants.

xlLocationAsNewSheet
xlLocationAsObject
xlLocationAutomatic

Name  Optional Variant; required if Where is xlLocationAsObject. The name of the sheet where the chart will be embedded if Where is xlLocationAsObject or the name of the new sheet if Where is xlLocationAsNewSheet.
Example

This example moves the embedded chart to a new chart sheet named "Monthly Sales."

Worksheets(1).ChartObjects(1).Chart .Location xlLocationAsNewSheet, "Monthly Sales"
MacroOptions Method

Corresponds to options in the Macro Options dialog box.

expression.MacroOptions(Macro, Description, HasMenu, MenuText, HasShortcutKey, ShortcutKey, Category, StatusBar, HelpContextID, HelpFile)

expression Required. An expression that returns an Application object.

Macro Optional Variant. The macro name.

Description Optional Variant. The macro description.

HasMenu Optional Variant. This argument is ignored.

MenuText Optional Variant. This argument is ignored.

HasShortcutKey Optional Variant. True to assign a shortcut key to the macro (ShortcutKey must also be specified). If this argument is False, no shortcut key is assigned to the macro. If the macro already has a shortcut key, setting this argument to False removes the shortcut key. The default value is False.

ShortcutKey Optional Variant. Required if HasShortcutKey is True; ignored otherwise. The shortcut key.

Category Optional Variant. An integer that specifies the macro function category (Financial, Date & Time, or User Defined, for example).

StatusBar Optional Variant. The status bar text for the macro.

HelpContextId Optional Variant. An integer that specifies the context ID for the Help topic assigned to the macro.

HelpFile Optional Variant. The name of the Help file that contains the Help topic defined by HelpContextId.
Example

This example adds a shortcut key for the DoRand macro.

Application.MacroOptions Macro:="DoRand", _
   HasShortcutKey:=True, ShortcutKey:="Z"
MailLogoff Method

Closes a MAPI mail session established by Microsoft Excel.

expression.MailLogoff

expression  Required. An expression that returns an Application object.
Remarks

You cannot use this method to close or log off Microsoft Mail.
Example

This example closes the established mail session, if there is one.

If Not IsNull(Application.MailSession) Then Application.MailLogoff
MailLogon Method

Logs in to MAPI Mail or Microsoft Exchange and establishes a mail session. If Microsoft Mail isn't already running, you must use this method to establish a mail session before mail or document routing functions can be used.

\[expression\].MailLogon(\textit{Name}, \textit{Password}, \textit{DownloadNewMail})

\textit{expression}  Required. An expression that returns an \textbf{Application} object.

\textit{Name}  Optional \textbf{Variant}. The mail account name or Microsoft Exchange profile name. If this argument is omitted, the default mail account name is used.

\textit{Password}  Optional \textbf{Variant}. The mail account password. This argument is ignored in Microsoft Exchange.

\textit{DownloadNewMail}  Optional \textbf{Variant}. \textbf{True} to download new mail immediately.
Remarks

Microsoft Excel logs off any mail sessions it previously established before attempting to establish the new session.

To piggyback on the system default mail session, omit both the name and password parameters.
Example

This example logs in to mail and downloads any new mail immediately.

If IsNull(Application.MailSession) Then
    Application.MailLogon "oscarx", "mypassword", True
End If
MakeConnection Method

Establishes a connection for the specified PivotTable cache.

expression.MakeConnection

expression  Required. An expression that returns a PivotCache object.
**Remarks**

The **MakeConnection** method can be used after the cache drops a connection and the user wants to re-establish the connection.

Various objects and methods might return a run-time error if the cache is not connected. Use of this method assures a connection before executing other objects or methods.

This method will result in a run-time error if the **MaintainConnection** property of the specified PivotTable cache has been set to False or the **SourceType** property of the specified PivotTable cache has been set to xlExternal.

**Note**  Microsoft Excel might drop a connection temporarily in the course of a session (unknown to the VBA programmer), so this method proves useful.
Example

The following example determines if the cache is connected to its source and makes a connection to the source if necessary. This example assumes a PivotTable cache exists on the active worksheet.

Sub UseMakeConnection()
    Dim pvtCache As PivotCache
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)
    ' Handle run-time error if external source is not an OLEDB data
    On Error GoTo Not_OLEDB
    ' Check connection setting and make connection if necessary.
    If pvtCache.IsConnected = True Then
        MsgBox "The MakeConnection method is not needed."
    Else
        pvtCache.MakeConnection
        MsgBox "A connection has been made."
    End If
    Exit Sub
Not_OLEDB:
    MsgBox "The data source is not an OLEDB data source"
End Sub
Merge Method

- **Merge method as it applies to the Scenarios object.**

Merges the scenarios from another sheet into the Scenarios collection.

`expression.Merge(Source)`

*expression*  Required. An expression that returns the Scenarios object.

*Source*  Required **Variant.** The name of the sheet that contains scenarios to be merged, or a Worksheet object that represents that sheet.

- **Merge method as it applies to the Styles object.**

Merges the styles from another workbook into the Styles collection.

`expression.Merge(Workbook)`

*expression*  Required. An expression that returns the Styles object.

*Workbook*  Required **Variant.** A Workbook object that represents the workbook containing styles to be merged.

- **Merge method as it applies to the Range object.**

Creates a merged cell from the specified Range object.

`expression.Merge(Across)`

*expression*  Required. An expression that returns the Range object.

*Across*  Optional **Variant.** True to merge cells in each row of the specified range as separate merged cells. The default value is False.
Remarks

The value of a merged range is specified in the cell of the range's upper-left corner.
Example

This example merges the styles from the workbook Template.xls into the active workbook.

`ActiveWorkbook.Styles.Merge Workbook:=Workbooks("TEMPLATE.XLS")`
MergeWorkbook Method

Merges changes from one workbook into an open workbook.

expression.MergeWorkbook(Filename)

expression Required. An expression that returns a Workbook object.

Filename Required String. The file name of the workbook that contains the changes to be merged into the open workbook.
Example

This example merges changes from Book1.xls into the active workbook.

ActiveWorkbook.MergeWorkbook  "Book1.xls"
Modify Method

Modifies the data validation or conditional format. For more information, click the object you want to modify.

FormatCondition

Validation
Move Method

Moves the sheet to another location in the workbook.

expression.Move(Before, After)

expression  Required. An expression that returns an object in the Applies To list.

Before  Optional Variant. The sheet before which the moved sheet will be placed. You cannot specify Before if you specify After.

After  Optional Variant. The sheet after which the moved sheet will be placed. You cannot specify After if you specify Before.
Remarks

If you don't specify either Before or After, Microsoft Excel creates a new workbook that contains the moved sheet.
Example

This example moves Sheet1 after Sheet3 in the active workbook.

Worksheets("Sheet1").Move _
    after:=Worksheets("Sheet3")
MoveNode Method

Moves a diagram node and any of its child nodes, within a diagram.

expression.MoveNode(pTargetNode, pos)

expression  Required. An expression that returns one of the objects in the Applies To list.

pTargetNode  Required DiagramNode object. The diagram node where the specified node will be moved.

pos  Required MsoRelativeNodePosition. The position to move the node, relative to TargetNode.

MsoRelativeNodePosition can be one of these MsoRelativeNodePosition constants.

msoAfterLastSibling
msoAfterNode
msoBeforeFirstSibling
msoBeforeNode
**Example**

The following example moves the second diagram node of a newly-created diagram to the last node.

Sub MoveDiagramNode()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add pyramid diagram to the current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramPyramid, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    'Add four child nodes to the pyramid diagram

    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount

    'Move the second node to after where the 'fourth node is currently located.
    dgnNode.Diagram.Nodes(2).MoveNode _
        pTargetNode:=dgnNode.Diagram.Nodes(4), _
        Pos:=msoAfterLastSibling
End Sub
NavigateArrow Method

Navigates a tracer arrow for the specified range to the precedent, dependent, or error-causing cell or cells. Selects the precedent, dependent, or error cells and returns a Range object that represents the new selection. This method causes an error if it's applied to a cell without visible tracer arrows.

expression.NavigateArrow(TowardPrecedent, ArrowNumber, LinkNumber)

expression Required. An expression that returns a Range object.

TowardPrecedent Optional Variant. Specifies the direction to navigate: True to navigate toward precedents, False to navigate toward dependent.

ArrowNumber Optional Variant. Specifies the arrow number to navigate; corresponds to the numbered reference in the cell's formula.

LinkNumber Optional Variant. If the arrow is an external reference arrow, this argument indicates which external reference to follow. If this argument is omitted, the first external reference is followed.
Example

This example navigates along the first tracer arrow from cell A1 on Sheet1 toward the precedent cell. The example should be run on a worksheet containing a formula in cell A1 that includes references to cells D1, D2, and D3 (for example, the formula =D1*D2*D3). Before running the example, display the Auditing toolbar, select cell A1, and click the Trace Precedents button.

Worksheets("Sheet1").Activate
Range("A1").Select
ActiveCell.NavigateArrow True, 1
NewSeries Method

Creates a new series. Returns a **Series** object that represents the new series.

`expression.NewSeries()`

*expression*  Required. An expression that returns a **SeriesCollection** object.
Remarks

This method isn’t available for PivotChart reports.
Example

This example adds a new series to chart one.

Set ns = Charts(1).SeriesCollection.NewSeries
NewWindow Method

Creates a new window or a copy of the specified window.

expression.NewWindow

expression Required. An expression that returns a Window or Workbook object.
**Example**

This example creates a new window for the active workbook.

`ActiveWorkbook.NewWindow`
Next Method

Returns a Comment object that represents the next comment.

expression.Next

expression  Required. An expression that returns a Comment object.
Remarks

This method works only on one sheet. Using this method on the last comment on a sheet returns **Null** (not the next comment on the next sheet).
Example

This example hides the next comment.

Range("a1").Comment.Next.Visible = False
NextNode Method

Selects the next diagram node in a series of nodes. Returns a DiagramNode object representing the newly-selected node.

expression.NextNode

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example creates an organization chart, and adds child nodes to the middle diagram node.

Sub AddChildrenToMiddle()
    Dim dgnRoot As DiagramNode
    Dim shpDiagram As Shape
    Dim dgnNext As DiagramNode
    Dim intCount As Integer

    'Add organization chart to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    'Add three child nodes to organization chart

    For intCount = 1 To 3
        dgnRoot.Children.AddNode
    Next

    'Access the node immediately following
    'the first diagram node
    Set dgnNext = dgnRoot.Children.Item(1).NextNode

    'Add three child nodes to the node immediately
    'following the first diagram node
    For intCount = 1 To 3
        dgnNext.Children.AddNode
    Next intCount

End Sub
NoteText Method

Returns or sets the cell note associated with the cell in the upper-left corner of the range. Read/write String.

Cell notes have been replaced by range comments. For more information, see the Comment object.

expression.NoteText(Text, Start, Length)

expression Required. An expression that returns a Range object.

Text Optional Variant. The text to add to the note (up to 255 characters). The text is inserted starting at position Start, replacing Length characters of the existing note. If this argument is omitted, this method returns the current text of the note starting at position Start, for Length characters.

Start Optional Variant. The starting position for the text that’s set or returned. If this argument is omitted, this method starts at the first character. To append text to the note, specify a number larger than the number of characters in the existing note.

Length Optional Variant. The number of characters to be set or returned. If this argument is omitted, Microsoft Excel sets or returns characters from the starting position to the end of the note (up to 255 characters). If there are more than 255 characters from Start to the end of the note, this method returns only 255 characters.
Remarks

To add a note that contains more than 255 characters, use this method once to specify the first 255 characters, and then use it again to append the remainder of the note (no more than 255 characters at a time).
**Example**

This example sets the cell note text for cell A1 on Sheet1.

`Worksheets("Sheet1").Range("A1").NoteText "This may change!"`
This keyword is not implemented. It is reserved for future use.
OLEObjects Method

Returns an object that represents either a single OLE object (an OLEObject) or a collection of all OLE objects (an OLEObjects collection) on the chart or sheet. Read-only.

expression.OLEObjects(Index)

expression  Required. An expression that returns a Chart or Worksheet object.

Index  Optional Variant. The name or number of the OLE object.
Example

This example creates a list of link types for OLE objects on Sheet1. The list appears on a new worksheet created by the example.

```vba
Set newSheet = Worksheets.Add
i = 2
newSheet.Range("A1").Value = "Name"
newSheet.Range("B1").Value = "Link Type"
For Each obj In Worksheets("Sheet1").OLEObjects
    newSheet.Cells(i, 1).Value = obj.Name
    If obj.OLEType = xlOLELink Then
        newSheet.Cells(i, 2) = "Linked"
    Else
        newSheet.Cells(i, 2) = "Embedded"
    End If
    i = i + 1
Next
```
OneColorGradient Method

- **OneColorGradient method as it applies to the FillFormat object.**

Sets the specified fill to a one-color gradient.

*expression.* **OneColorGradient**(Style, Variant, Degree)

*expression* Required. An expression that returns one of the above objects.

**Style** Required **MsoGradientStyle**.

MsoGradientStyle can be one of these MsoGradientStyle constants.

- msoGradientDiagonalDown
- msoGradientDiagonalUp
- msoGradientFromCenter
- msoGradientFromCorner
- msoGradientFromTitle
- msoGradientHorizontal
- msoGradientMixed
- msoGradientVertical

**Variant** Required **Integer**. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the Gradient tab in the Fill Effects dialog box. If GradientStyle is msoGradientFromCenter, the Variant argument can only be 1 or 2.

**Degree** Required **Single**. The gradient degree. Can be a value from 0.0 (dark) through 1.0 (light).

- **OneColorGradient method as it applies to the ChartFillFormat object.**
Sets the specified fill to a one-color gradient.

expression.OneColorGradient(Style, Variant, Degree)

expression  Required. An expression that returns one of the above objects.

**Style**  Required **MsoGradientStyle**.

MsoGradientStyle can be one of these MsoGradientStyle constants.

- msoGradientDiagonalDown
- msoGradientDiagonalUp
- msoGradientFromCenter
- msoGradientFromCorner
- msoGradientFromTitle
- msoGradientHorizontal
- msoGradientMixed
- msoGradientVertical

**Variant**  Required **Long**. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the Gradient tab in the **Fill Effects** dialog box. If GradientStyle is msoGradientFromCenter, the Variant argument can only be 1 or 2.

**Degree**  Required **Single**. The gradient degree. Can be a value from 0.0 (dark) through 1.0 (light).
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillGradient And _
   c1f.GradientColorType = msoGradientOneColor Then
   With Charts(2).ChartArea.Fill
       .Visible = True
       .OneColorGradient c1f.GradientStyle, _
       c1f.GradientVariant, c1f.GradientDegree
   End With
End If
OnKey Method

Runs a specified procedure when a particular key or key combination is pressed.

\texttt{expression.OnKey(Key, Procedure)}

\textit{expression}  Required. An expression that returns an \texttt{Application} object.

\textit{Key}  Required \texttt{String}. A string indicating the key to be pressed.

\textit{Procedure}  Optional \texttt{Variant}. A string indicating the name of the procedure to be run. If \textit{Procedure} is "" (empty text), nothing happens when \texttt{Key} is pressed. This form of \texttt{OnKey} changes the normal result of keystrokes in Microsoft Excel. If \textit{Procedure} is omitted, \texttt{Key} reverts to its normal result in Microsoft Excel, and any special key assignments made with previous \texttt{OnKey} methods are cleared.
Remarks

The **Key** argument can specify any single key combined with ALT, CTRL, or SHIFT, or any combination of these keys. Each key is represented by one or more characters, such as "a" for the character a, or "{ENTER}" for the ENTER key.

To specify characters that aren't displayed when you press the corresponding key (ENTER or TAB, for example), use the codes listed in the following table. Each code in the table represents one key on the keyboard.

<table>
<thead>
<tr>
<th>Key</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKSPACE</td>
<td>{BACKSPACE} or {BS}</td>
</tr>
<tr>
<td>BREAK</td>
<td>{BREAK}</td>
</tr>
<tr>
<td>CAPS LOCK</td>
<td>{CAPSLOCK}</td>
</tr>
<tr>
<td>CLEAR</td>
<td>{CLEAR}</td>
</tr>
<tr>
<td>DELETE or DEL</td>
<td>{DELETE} or {DEL}</td>
</tr>
<tr>
<td>DOWN ARROW</td>
<td>{DOWN}</td>
</tr>
<tr>
<td>END</td>
<td>{END}</td>
</tr>
<tr>
<td>ENTER (numeric keypad)</td>
<td>{ENTER}</td>
</tr>
<tr>
<td>ENTER</td>
<td>~ (tilde)</td>
</tr>
<tr>
<td>ESC</td>
<td>{ESCAPE} or {ESC}</td>
</tr>
<tr>
<td>HELP</td>
<td>{HELP}</td>
</tr>
<tr>
<td>HOME</td>
<td>{HOME}</td>
</tr>
<tr>
<td>INS</td>
<td>{INSERT}</td>
</tr>
<tr>
<td>LEFT ARROW</td>
<td>{LEFT}</td>
</tr>
<tr>
<td>NUM LOCK</td>
<td>{NUMLOCK}</td>
</tr>
<tr>
<td>PAGE DOWN</td>
<td>{PGDN}</td>
</tr>
<tr>
<td>PAGE UP</td>
<td>{PGUP}</td>
</tr>
<tr>
<td>RETURN</td>
<td>{RETURN}</td>
</tr>
<tr>
<td>RIGHT ARROW</td>
<td>{RIGHT}</td>
</tr>
<tr>
<td>SCROLL LOCK</td>
<td>{SCROLLLOCK}</td>
</tr>
<tr>
<td>TAB</td>
<td>{TAB}</td>
</tr>
<tr>
<td></td>
<td>{UP}</td>
</tr>
</tbody>
</table>
UP ARROW
F1 through F15   {F1} through {F15}

You can also specify keys combined with SHIFT and/or CTRL and/or ALT. To specify a key combined with another key or keys, use the following table.

<table>
<thead>
<tr>
<th>To combine keys with</th>
<th>Precede the key code by</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIFT</td>
<td>+ (plus sign)</td>
</tr>
<tr>
<td>CTRL</td>
<td>^ (caret)</td>
</tr>
<tr>
<td>ALT</td>
<td>% (percent sign)</td>
</tr>
</tbody>
</table>

To assign a procedure to one of the special characters (+, ^, %, and so on), enclose the character in braces. For details, see the example.
Example

This example assigns "InsertProc" to the key sequence CTRL+PLUS SIGN and assigns "SpecialPrintProc" to the key sequence SHIFT+CTRL+RIGHT ARROW.

Application.OnKey "^{+}", "InsertProc"
Application.OnKey "+^{RIGHT}", "SpecialPrintProc"

This example returns SHIFT+CTRL+RIGHT ARROW to its normal meaning.

Application.OnKey "+^{RIGHT}"

This example disables the SHIFT+CTRL+RIGHT ARROW key sequence.

Application.OnKey "+^{RIGHT}", ""
OnRepeat Method

Sets the **Repeat** menu item and the name of the procedure that will run if you choose the **Repeat** command (**Edit** menu) after running the procedure that sets this property.

```
expression.OnRepeat(Text, Procedure)
```

**expression**  Required. An expression that returns an **Application** object.

**Text**  Required **String**. The text that appears with the **Repeat** command (**Edit** menu).

**Procedure**  Required **String**. The name of the procedure that will be run when you choose the **Repeat** command (**Edit** menu).
Remarks

If a procedure doesn’t use the **OnRepeat** method, the **Repeat** command repeats procedure that was run most recently.

The procedure must use the **OnRepeat** and **OnUndo** methods last, to prevent the repeat and undo procedures from being overwritten by subsequent actions in the procedure.
Example

This example sets the repeat and undo procedures.

Application.OnRepeat "Repeat VB Procedure", _
    "Book1.xls!My_Repeat_Sub"
Application.OnUndo "Undo VB Procedure", _
    "Book1.xls!My_Undo_Sub"
OnTime Method

Schedules a procedure to be run at a specified time in the future (either at a specific time of day or after a specific amount of time has passed).

expression.OnTime(EarliestTime, Procedure, LatestTime, Schedule)

eexpression  Required. An expression that returns an Application object.

EarliestTime  Required Variant. The time when you want this procedure to be run.

Procedure  Required String. The name of the procedure to be run.

LatestTime  Optional Variant. The latest time at which the procedure can be run. For example, if LatestTime is set to EarliestTime + 30 and Microsoft Excel is not in Ready, Copy, Cut, or Find mode at EarliestTime because another procedure is running, Microsoft Excel will wait 30 seconds for the first procedure to complete. If Microsoft Excel is not in Ready mode within 30 seconds, the procedure won’t be run. If this argument is omitted, Microsoft Excel will wait until the procedure can be run.

Schedule  Optional Variant. True to schedule a new OnTime procedure. False to clear a previously set procedure. The default value is True.
Remarks

Use `Now + TimeValue(time)` to schedule something to be run when a specific amount of time (counting from now) has elapsed. Use `TimeValue(time)` to schedule something to be run a specific time.
Example

This example runs my_Procedure 15 seconds from now.

```
Application.OnTime Now + TimeValue("00:00:15"), "my_Procedure"
```

This example runs my_Procedure at 5 P.M.

```
Application.OnTime TimeValue("17:00:00"), "my_Procedure"
```

This example cancels the OnTime setting from the previous example.

```
Application.OnTime EarliestTime:=TimeValue("17:00:00"), _
Procedure:="my_Procedure", Schedule:=False
```
OnUndo Method

Sets the text of the Undo and the name of the procedure that’s run if you choose the Undo command (Edit menu) after running the procedure that sets this property.

expression.OnUndo(Text, Procedure)

expression Required. An expression that returns an Application object.

Text Required String. The text that appears with the Undo command (Edit menu).

Procedure Required String. The name of the procedure that’s run when you choose the Undo command (Edit menu).
Remarks

If a procedure doesn’t use the **OnUndo** method, the **Undo** command is disabled.

The procedure must use the **OnRepeat** and **OnUndo** methods last, to prevent the repeat and undo procedures from being overwritten by subsequent actions in the procedure.
Example

This example sets the repeat and undo procedures.

Application.OnRepeat "Repeat VB Procedure", _
   "Book1.xls!My_Repeat_Sub"
Application.OnUndo "Undo VB Procedure", _
   "Book1.xls!My_Undo_Sub"
Show All
Open Method

- Open method as it applies to the Workbooks object.

Opens a workbook.

expression.**Open**(FileName, UpdateLinks, ReadOnly, Format, Password, WriteResPassword, IgnoreReadOnlyRecommended, Origin, Delimiter,Editable, Notify, Converter, AddToMru, Local, CorruptLoad, OpenConflictDocument)

expression  Required. An expression that returns the Workbooks object.

**FileName**  Required String. The file name of the workbook to be opened.

**UpdateLinks**  Optional Variant. Specifies the way links in the file are updated. If this argument is omitted, the user is prompted to specify how links will be updated. Otherwise, this argument is one of the values listed in the following table.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Doesn't update any references</td>
</tr>
<tr>
<td>1</td>
<td>Updates external references but not remote references</td>
</tr>
<tr>
<td>2</td>
<td>Updates remote references but not external references</td>
</tr>
<tr>
<td>3</td>
<td>Updates both remote and external references</td>
</tr>
</tbody>
</table>

If Microsoft Excel is opening a file in the WKS, WK1, or WK3 format and the **UpdateLinks** argument is 2, Microsoft Excel generates charts from the graphs attached to the file. If the argument is 0, no charts are created.

**ReadOnly**  Optional Variant. True to open the workbook in read-only mode.

**Format**  Optional Variant. If Microsoft Excel is opening a text file, this argument specifies the delimiter character, as shown in the following table. If this argument is omitted, the current delimiter is used.
<table>
<thead>
<tr>
<th>Value</th>
<th>Delimiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tabs</td>
</tr>
<tr>
<td>2</td>
<td>Commas</td>
</tr>
<tr>
<td>3</td>
<td>Spaces</td>
</tr>
<tr>
<td>4</td>
<td>Semicolons</td>
</tr>
<tr>
<td>5</td>
<td>Nothing</td>
</tr>
<tr>
<td>6</td>
<td>Custom character (see the Delimiter argument)</td>
</tr>
</tbody>
</table>

**Password** Optional Variant. A string that contains the password required to open a protected workbook. If this argument is omitted and the workbook requires a password, the user is prompted for the password.

**WriteResPassword** Optional Variant. A string that contains the password required to write to a write-reserved workbook. If this argument is omitted and the workbook requires a password, the user will be prompted for the password.

**IgnoreReadOnlyRecommended** Optional Variant. True to have Microsoft Excel not display the read-only recommended message (if the workbook was saved with the Read-Only Recommended option).

**Origin** Optional Variant. If the file is a text file, this argument indicates where it originated (so that code pages and Carriage Return/Line Feed (CR/LF) can be mapped correctly). Can be one of the following XlPlatform constants: xlMacintosh, xlWindows, or xlMSDOS. If this argument is omitted, the current operating system is used.

**Delimiter** Optional Variant. If the file is a text file and the Format argument is 6, this argument is a string that specifies the character to be used as the delimiter. For example, use Chr(9) for tabs, use "," for commas, use ";" for semicolons, or use a custom character. Only the first character of the string is used.

**Editable** Optional Variant. If the file is a Microsoft Excel 4.0 add-in, this argument is True to open the add-in so that it’s a visible window. If this argument is False or omitted, the add-in is opened as hidden, and it cannot be unhidden. This option doesn't apply to add-ins created in Microsoft Excel 5.0 or later. If the file is an Excel template, True to open the specified template for editing. False to open a new workbook based on the specified template. The default value is False.
**Notify**  Optional **Variant**. If the file cannot be opened in read/write mode, this argument is **True** to add the file to the file notification list. Microsoft Excel will open the file as read-only, poll the file notification list, and then notify the user when the file becomes available. If this argument is **False** or omitted, no notification is requested, and any attempts to open an unavailable file will fail.

**Converter**  Optional **Variant**. The index of the first file converter to try when opening the file. The specified file converter is tried first; if this converter doesn’t recognize the file, all other converters are tried. The converter index consists of the row numbers of the converters returned by the **FileConverters** property.

**AddToMru**  Optional **Variant**. **True** to add this workbook to the list of recently used files. The default value is **False**.

**Local**  Optional **Variant**. **True** saves files against the language of Microsoft Excel (including control panel settings). **False** (default) saves files against the language of [Visual Basic for Applications (VBA)](https://en.wikipedia.org/wiki/Visual_Basic_for_Applications) (which is typically US English unless the VBA project where Workbooks.Open is run from is an old internationalized XL5/95 VBA project).

**CorruptLoad**  Optional **Variant**. Can be one of the following constants: **xlNormalLoad**, **xlRepairFile** and **xlExtractData**. The Default behavior if no value is specified is usually normal but may be safe load or data recovery, if Excel has already attempted to open the file. The first attempt is normal. If Excel stops operating while opening the file the second attempt is safe load. If Excel again stops operating the next attempt is data recovery.

**OpenConflictDocument**  Optional **Variant**. **True** to open the local conflict document. Default is **False**.

- **Open method as it applies to the RecentFile object.**

Opens a recent workbook.

```
expression.Open
```

**expression**   Required. An expression that returns the **RecentFile** object.
Example

This example opens the workbook Analysis.xls and then runs its Auto_Open macro.

```vba
Workbooks.Open "ANALYSIS.XLS"
ActiveWorkbook.RunAutoMacros xlAutoOpen
```
OpenDatabase Method

Returns a Workbook object representing a database.

expression.**OpenDatabase**(FileName, CommandText, CommandType, BackgroundQuery, ImportDataAs)

**expression**  Required. An expression that returns one of the objects in the Applies To list.

**FileName**  Required String. The connection string.

**CommandText**  Optional Variant. The command text of the query.

**CommandType**  Optional Variant. The command type of the query. The following command types are available: Default, SQL, and Table.

**BackgroundQuery**  Optional Variant. The background of the query.

**ImportDataAs**  Optional Variant. Determines the format of the query.
Example

In this example, Microsoft Excel opens the "northwind.mdb" file. This example assumes a file called "northwind.mdb file" exists on the C:\ drive.

Sub UseOpenDatabase()

    ' Open the Northwind database.
    Workbooks.OpenDatabase _
        FileName:="C:\northwind.mdb"

End Sub
OpenLinks Method

Opens the supporting documents for a link or links.

expression.**OpenLinks**(*Name, ReadOnly, Type*)

**expression** Required. An expression that returns one of the objects in the Applies To list.

**Name** Required **String**. The name of the Microsoft Excel or DDE/OLE link, as returned from the **LinkSources** method.

**ReadOnly** Optional **Variant**. **True** to open documents as read-only. The default value is **False**.

**Type** Optional **XlLink**. The link type.

XILink can be one of these XILink constants.

**xlExcelLinks**
**xlOLELinks** (also handles DDE links)

**xlPublishers**

**xlSubscribers**
Example

This example opens OLE link one in the active workbook.

```
linkArray = ActiveWorkbook.LinkSources(xlOLELinks)
ActiveWorkbook.OpenLinks linkArray(1)
```

This example opens all supporting Microsoft Excel documents for the active workbook.

```
Sub OpenAllLinks()
    Dim arLinks As Variant
    Dim intIndex As Integer
    arLinks = ActiveWorkbook.LinkSources(xlExcelLinks)
    If Not IsEmpty(arLinks) Then
        For intIndex = LBound(arLinks) To UBound(arLinks)
            ActiveWorkbook.OpenLinks arLinks(intIndex)
        Next intIndex
    Else
        MsgBox "The active workbook contains no external links."
    End If
End Sub
```
OpenText Method

Loads and parses a text file as a new workbook with a single sheet that contains the parsed text-file data.

expression.**OpenText**(FileName, Origin, StartRow, DataType, TextQualifier, ConsecutiveDelimiter, Tab, Semicolon, Comma, Space, Other, OtherChar, FieldInfo, TextVisualLayout, DecimalSeparator, ThousandsSeparator, TrailingMinusNumbers, Local)

expression  Required. An expression that returns one of the objects in the Applies To list.

**FileName**  Required **String**. Specifies the file name of the text file to be opened and parsed.

**Origin**  Optional **Variant**. Specifies the origin of the text file. Can be one of the following **XlPlatform** constants: **xlMacintosh**, **xlWindows**, or **xlMSDOS**. If this argument is omitted, the method uses the current setting of the **File Origin** option in the **Text Import Wizard**.

**StartRow**  Optional **Variant**. The row number at which to start parsing text. The default value is 1.

**DataType**  Optional **Variant**. Specifies the column format of the data in the file. Can be one of the following **XlTextParsingType** constants: **xlDelimited** or **xlFixedWidth**. If this argument is not specified, Microsoft Excel attempts to determine the column format when it opens the file.

**TextQualifier**  Optional **XlTextQualifier**. Specifies the text qualifier.

**XlTextQualifier** can be one of these **XlTextQualifier** constants.

**xlTextQualifierDoubleQuote** default
**xlTextQualifierNone**
**xlTextQualifierSingleQuote**
**ConsecutiveDelimiter** Optional Variant. **True** to have consecutive delimiters considered one delimiter. The default is **False**.

**Tab** Optional Variant. **True** to have the tab character be the delimiter (**DataType** must be **xlDelimited**). The default value is **False**.

**Semicolon** Optional Variant. **True** to have the semicolon character be the delimiter (**DataType** must be **xlDelimited**). The default value is **False**.

**Comma** Optional Variant. **True** to have the comma character be the delimiter (**DataType** must be **xlDelimited**). The default value is **False**.

**Space** Optional Variant. **True** to have the space character be the delimiter (**DataType** must be **xlDelimited**). The default value is **False**.

**Other** Optional Variant. **True** to have the character specified by the **OtherChar** argument be the delimiter (**DataType** must be **xlDelimited**). The default value is **False**.

**OtherChar** Optional Variant (required if **Other** is **True**). Specifies the delimiter character when **Other** is **True**. If more than one character is specified, only the first character of the string is used; the remaining characters are ignored.

**FieldInfo** Optional **xlColumnDataType**. An array containing parse information for individual columns of data. The interpretation depends on the value of **DataType**. When the data is delimited, this argument is an array of two-element arrays, with each two-element array specifying the conversion options for a particular column. The first element is the column number (1-based), and the second element is one of the **XlColumnDataType** constants specifying how the column is parsed.

**XlColumnDataType** can be one of these XlColumnDataType constants.

- **xlGeneralFormat** General
- **xlTextFormat** Text
- **xlMDYFormat** MDY date
- **xlDMYFormat** DMY date
- **xlYMDFormat** YMD date
xlMYDFormat  MYD date
xlDYMFormat  DYM date
xlYDMFormat  YDM date
xlEMDFormat  EMD date
xlSkipColumn  Skip Column

You can use xlEMDFormat only if you have installed and selected Taiwanese language support. The xlEMDFormat constant specifies that Taiwanese era dates are being used.

The column specifiers can be in any order. If there's no column specifier for a particular column in the input data, the column is parsed with the General setting. This example causes the third column to be skipped, the first column to be parsed as text, and the remaining columns in the source data to be parsed with the General setting.

Array(Array(3, 9), Array(1, 2))

If the source data has fixed-width columns, the first element in each two-element array specifies the position of the starting character in the column (as an integer; character 0 (zero) is the first character). The second element in the two-element array specifies the parse option for the column as a number between 1 and 9, as listed in the preceding table.

The following example parses two columns from a fixed-width text file. The first column includes characters 1 through 10. Characters 11, 12, 13, 14, and 15 are skipped. The second column includes character 16 through the last character in the line.

Array(Array(0, 1), Array(10, 9), Array(15, 1))

TextVisualLayout  Optional Variant. The visual layout of the text.

DecimalSeparator  Optional Variant. The decimal separator that Microsoft Excel uses when recognizing numbers. The default setting is the system setting.
**ThousandsSeparator** Optional **Variant**. The thousands separator that Excel uses when recognizing numbers. The default setting is the system setting.

The following table shows the results of importing text into Excel for various import settings. Numeric results are displayed in the rightmost column.

<table>
<thead>
<tr>
<th>System decimal separator</th>
<th>System thousands separator</th>
<th>Decimal separator value</th>
<th>Thousands separator value</th>
<th>Text imported</th>
<th>Cell value (data type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Period</td>
<td>123.123,45</td>
<td>123,123.45 (numeric)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Comma</td>
<td>123,123,45</td>
<td>123.123,45 (text)</td>
</tr>
<tr>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>123,123.45</td>
<td>123,123.45 (numeric)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>123 123.45</td>
<td>123 123.45 (text)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Space</td>
<td>123 123.45</td>
<td>123,123.45 (numeric)</td>
</tr>
</tbody>
</table>

**TrailingMinusNumbers** Optional **Variant**.

**Local** Optional **Variant**.
Example

This example opens the file Data.txt and uses tab delimiters to parse the text file into a worksheet.

Workbooks.OpenText filename:="DATA.TXT", _
  dataType:=xlDelimited, tab:=True
OpenXML Method

Returns a **Workbook** object representing an XML file in Microsoft Excel.

*expression*.OpenXML(*FileName, Stylesheets*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*FileName*  Required **String**. The name of the file to open.

*Stylesheets*  Optional **Variant**. Either a single value or an array of values specifying which XSLT stylesheet processing instructions to apply.
Example

In this example, Microsoft Excel loads the XML file "customers.xml" and applies the first XSLT stylesheet. If the resulting file is XML, it will apply the second XSLT stylesheet processing instruction in the newly transformed file. Finally, if the resulting file is again XML, it will apply the fifth XSLT stylesheet processing instruction. The results are then loaded into Excel and become either an XML-Spreadsheet or a flattened XML. This example assumes the "customers.xml" file exists.

Sub UseOpenXML()
    Application.Workbooks.OpenXML(Filename:="customers.xml", Stylesheets:=Array(1, 2, 5))
End Sub
Parse Method

Parses a range of data and breaks it into multiple cells. Distributes the contents of the range to fill several adjacent columns; the range can be no more than one column wide.

```
expression.Parse(ParseLine, Destination)
```

**expression** Required. An expression that returns a **Range** object.

**ParseLine** Optional **Variant**. A string that contains left and right brackets to indicate where the cells should be split. For example, "[xxx][xxx]" would insert the first three characters into the first column of the destination range, and it would insert the next three characters into the second column. If this argument is omitted, Microsoft Excel guesses where to split the columns based on the spacing of the top left cell in the range. If you want to use a different range to guess the parse line, use a **Range** object as the **ParseLine** argument. That range must be one of the cells that's being parsed. The **ParseLine** argument cannot be longer than 255 characters, including the brackets and spaces.

**Destination** Optional **Variant**. A **Range** object that represents the upper-left corner of the destination range for the parsed data. If this argument is omitted, Microsoft Excel parses in place.
Example

This example divides telephone numbers of the form 206-555-1212 into two columns. The first column contains only the area code, and the second column contains the seven-digit telephone number with the embedded hyphen.

`Worksheets("Sheet1").Columns("A").Parse _
parseLine:="[xxx] [xxxxxxx]", _
destination:=Worksheets("Sheet1").Range("B1")`
Paste Method

- Paste method as it applies to the Chart object.

Pastees chart data from the Clipboard into the specified chart.

```
expression.Paste(Type)
```

- **expression** Required. An expression that returns a Chart object

- **Type** Optional Variant. Specifies the chart information to paste if a chart is on the Clipboard. Can be one of the following XlPasteType constants: xlFormats, xlFormulas, or xlAll. The default value is xlAll. If there’s data other than a chart on the Clipboard, this argument cannot be used.
Remark

This method changes the current selection.

- Paste method as it applies to the Floor, Point, Series, and Walls objects.

For Floor and Walls objects, paste a picture from the Clipboard on the floor or walls of the specified chart. For Point and Series objects, pastes a picture from the Clipboard as the marker on the selected point or series. This method can be used on column, bar, line, or radar charts, and it sets the MarkerStyle property to xlMarkerStylePicture.

expression.Paste

expression Required. An expression that returns one of the above objects.

- Paste method as it applies to the SeriesCollection object.

Paste data from the Clipboard into the specified series collection.

expression.Paste(Rowcol, SeriesLabels, CategoryLabels, Replace, NewSeries)

expression Required. An expression that returns a SeriesCollection object.

Rowcol Optional XlRowCol. Specifies whether the values corresponding to a particular data series are in rows or columns.

XlRowCol can be one of these XlRowCol constants.

xlColumns default

xlRows

SeriesLabels Optional Variant. True to use the contents of the cell in the first column of each row (or the first row of each column) as the name of the data series in that row (or column). False to use the contents of the cell in the first column of each row (or the first row of each column) as the first data point in the data series. The default value is False.

CategoryLabels Optional Variant. True to use the contents of the first row (or
column) of the selection as the categories for the chart. **False** to use the contents of the first row (or column) as the first data series in the chart. The default value is **False**.

**Replace**  Optional **Variant. True** to apply categories while replacing existing categories with information from the copied range. **False** to insert new categories without replacing any old ones. The default value is **True**.

**NewSeries**  Optional **Variant. True** to paste the data as a new series. **False** to paste the data as new points in an existing series. The default value is **True**.

- **Paste method as it applies to the Worksheet object.**

Pastes the contents of the Clipboard onto the sheet.

**expression.Paste(Destination, Link)**

**expression**  Required. An expression that returns a **Worksheet** object.

**Destination**  Optional **Variant. A Range object that specifies where the Clipboard contents should be pasted. If this argument is omitted, the current selection is used. This argument can be specified only if the contents of the Clipboard can be pasted into a range. If this argument is specified, the **Link** argument cannot be used.

**Link**  Optional **Variant. True** to establish a link to the source of the pasted data. If this argument is specified, the **Destination** argument cannot be used. The default value is **False**.
Remarks

If you don’t specify the *Destination* argument, you must select the destination range before you use this method.

This method may modify the sheet selection, depending on the contents of the Clipboard.
Example

- **As it applies to the Chart object.**
  This example pastes data from the range B1:B5 on Sheet1 into Chart1.
  ```vba
  Worksheets("Sheet1").Range("B1:B5").Copy
  Charts("Chart1").Paste
  ```

- **As it applies to the Point or Series objects.**
  This example pastes a picture from the Clipboard into series one in Chart1.
  ```vba
  Charts("Chart1").SeriesCollection(1).Paste
  ```

- **As it applies to the SeriesCollection object.**
  This example pastes a picture from the Clipboard into series one in Chart1.
  ```vba
  Worksheets("Sheet1").Range("C1:C5").Copy
  Charts("Chart1").SeriesCollection.Paste
  ```

- **As it applies to the Worksheet object.**
  This example copies data from cells C1:C5 on Sheet1 to cells D1:D5 on Sheet1.
  ```vba
  Worksheets("Sheet1").Range("C1:C5").Copy
  ActiveSheet.Paste Destination:=Worksheets("Sheet1").Range("D1:D5")
  ```
Show All
PasteSpecial Method

- PasteSpecial method as it applies to the Range object.

Pastes a Range from the Clipboard into the specified range.

expression.PasteSpecial(Paste, Operation, SkipBlanks, Transpose)

expression Required. An expression that returns a Range object.

Paste Optional XIPasteType. The part of the range to be pasted.

XIPasteType can be one of these XIPasteType constants.
  xlPasteAll default
  xlPasteAllExceptBorders
  xlPasteColumnWidths
  xlPasteComments
  xlPasteFormulas
  xlPasteFormulasAndNumberFormats
  xlPasteValidation
  xlPasteValues
  xlPasteValuesAndNumberFormats

Operation Optional XIPasteSpecialOperation. The paste operation.

XIPasteSpecialOperation can be one of these XIPasteSpecialOperation constants.
  xlPasteSpecialOperationAdd
  xlPasteSpecialOperationDivide
  xlPasteSpecialOperationMultiply
  xlPasteSpecialOperationNone default
xlPasteSpecialOperationSubtract

**SkipBlanks**  Optional **Variant. True** to have blank cells in the range on the Clipboard not be pasted into the destination range. The default value is **False**.

**Transpose**  Optional **Variant. True** to transpose rows and columns when the range is pasted. The default value is **False**.

- [PasteSpecial method as it applies to the Worksheet object](#)

Pastes the contents of the Clipboard onto the sheet, using a specified format. Use this method to paste data from other applications or to paste data in a specific format.

```vba
expression.PasteSpecial(Format, Link, DisplayAsIcon, IconFileName, IconIndex, IconLabel, NoHTMLFormatting)
```

- **expression**  Required. An expression that returns a **Worksheet object**.

- **Format**  Optional **Variant. A string that specifies the Clipboard format of the data.**

- **Link**  Optional **Variant. True** to establish a link to the source of the pasted data. If the source data isn’t suitable for linking or the source application doesn't support linking, this parameter is ignored. The default value is **False**.

- **DisplayAsIcon**  Optional **Variant. True** to display the pasted as an icon. The default value is **False**.

- **IconFileName**  Optional **Variant. The name of the file that contains the icon to use if DisplayAsIcon is True.**

- **IconIndex**  Optional **Variant. The index number of the icon within the icon file.**

- **IconLabel**  Optional **Variant. The text label of the icon.**

- **NoHTMLFormatting**  Optional **Variant. True** to remove all formatting, hyperlinks, and images from HTML. **False** to paste HTML as is. The default value is **False**.
Remarks

**Note**  *NoHTMLFormatting* will only matter when *Format* = “HTML”. In all other cases, *NoHTMLFormatting* will be ignored.

You must select the destination range before you use this method.

This method may modify the sheet selection, depending on the contents of the Clipboard.
Example

- **As it applies to the Range object.**

This example replaces the data in cells D1:D5 on Sheet1 with the sum of the existing contents and cells C1:C5 on Sheet1.

```vba
With Worksheets("Sheet1")
    .Range("C1:C5").Copy
    .Range("D1:D5").PasteSpecial _
        Operation:=xlPasteSpecialOperationAdd
End With
```

- **As it applies to the Worksheet object.**

This example pastes a Microsoft Word document object from the Clipboard to cell D1 on Sheet1.

```vba
Worksheets("Sheet1").Range("D1").Select
ActiveSheet.PasteSpecial format:= _
    "Microsoft Word 8.0 Document Object"
```

This example pastes the same Microsoft Word document object and displays it as an icon.

```vba
Worksheets("Sheet1").Range("F5").Select
ActiveSheet.PasteSpecial _
    Format:="Microsoft Word 8.0 Document Object", _
    DisplayAsIcon:=True
```
**Patterned Method**

Sets the specified fill to a pattern.

*expression*.Patterned(*Pattern*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Pattern*  Required [MsoPatternType].

MsoPatternType can be one of these MsoPatternType constants.

- msoPattern10Percent
- msoPattern20Percent
- msoPattern25Percent
- msoPattern30Percent
- msoPattern40Percent
- msoPattern50Percent
- msoPattern5Percent
- msoPattern60Percent
- msoPattern70Percent
- msoPattern75Percent
- msoPattern80Percent
- msoPattern90Percent
- msoPatternDarkDownwardDiagonal
- msoPatternDarkHorizontal
- msoPatternDarkUpwardDiagonal
- msoPatternDarkVertical
- msoPatternDashedDownwardDiagonal
- msoPatternDashedHorizontal
- msoPatternDashedUpwardDiagonal
msoPatternDashedVertical
msoPatternDiagonalBrick
msoPatternDivot
msoPatternDottedDiamond
msoPatternDottedGrid
msoPatternHorizontalBrick
msoPatternLargeCheckerBoard
msoPatternLargeConfetti
msoPatternLargeGrid
msoPatternLightDownwardDiagonal
msoPatternLightHorizontal
msoPatternLightUpwardDiagonal
msoPatternLightVertical
msoPatternMixed
msoPatternNarrowHorizontal
msoPatternNarrowVertical
msoPatternOutlinedDiamond
msoPatternPlaid
msoPatternShingle
msoPatternSmallCheckerBoard
msoPatternSmallConfetti
msoPatternSmallGrid
msoPatternSolidDiamond
msoPatternSphere
msoPatternTrellis
msoPatternWave
msoPatternWeave
msoPatternWideDownwardDiagonal
msoPatternWideUpwardDiagonal
msoPatternZigZag
Example

This example sets the fill pattern for chart one.

With Charts(1).ChartArea.Fill
  .Patterned msoPatternDiagonalBrick
  .Visible = True
End With
PickUp Method

Copies the formatting of the specified shape. Use the **Apply** method to apply the copied formatting to another shape.

```
expression.PickUp
```

*expression* Required. An expression that returns a **Shape** or **ShapeRange** object.
Example

This example copies the formatting of shape one on myDocument and then applies the copied formatting to shape two.

Set myDocument = Worksheets(1)
With myDocument
    .Shapes(1).PickUp
    .Shapes(2).Apply
End With
PieGroups Method

On a 2-D chart, returns an object that represents either a single pie chart group (a ChartGroup object) or a collection of the pie chart groups (a ChartGroups collection).

expression.PieGroups(Index)

expression  Required. An expression that returns a Chart object.

Index  Optional Variant. Specifies the chart group.
Example

This example sets pie group one in Chart1 to use a different color for each data marker. The example should be run on a 2-D chart.

Charts("Chart1").PieGroups(1).VaryByCategories = True
PivotCache Method

Returns a **PivotCache** object that represents the cache for the specified PivotTable report. Read-only.

*expression* .PivotCache

*expression*  Required. An expression that returns a **PivotTable** object.
Example

This example causes the PivotTable cache for the first PivotTable report on worksheet one to be optimized when it’s constructed.

`Worksheets(1).PivotTables("Pivot1") .PivotCache.OptimizeCache = True`
PivotCaches Method

Returns a **PivotCaches** collection that represents all the PivotTable caches in the specified workbook. Read-only.

`expression.PivotCaches`

*expression* Required. An expression that returns a **Workbook** object.
Example

This example causes the PivotTable cache to update automatically each time the workbook is opened.

ActiveWorkbook.PivotCaches(1).RefreshOnFileOpen = True
**PivotFields Method**

Returns an object that represents either a single PivotTable field (a *PivotField* object) or a collection of both the visible and hidden fields (a *PivotFields* object) in the PivotTable report. Read-only.

*expression*.PivotFields(*Index*)

*expression*  Required. An expression that returns a *PivotTable* object.

*Index*  Optional *Variant*. The name or number of the field to be returned.
Remarks

For OLAP data sources, there are no hidden fields, and the object or collection that’s returned reflects what’s currently visible.
Example

This example adds the PivotTable report’s field names to a list on a new worksheet.

```
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.PivotFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
```
Show All
PivotItems Method

Returns an object that represents either a single PivotTable item (a `PivotItem` object) or a collection of all the visible and hidden items (a `PivotItems` object) in the specified field. Read-only.

`expression.PivotItems(Index)`

- `expression` Required. An expression that returns a `PivotField` object.
- `Index` Optional `Variant`. The name or number of the item to be returned.
Remarks

For OLAP data sources, the collection is indexed by the unique name (the name returned by the `SourceName` property), not by the display name.
Example

This example adds the names of all items in the field named "product" to a list on a new worksheet.

```vba
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtitem In pvtTable.PivotFields("product").PivotItems
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtitem.Name
Next
```
Show All
PivotSelect Method

Selects part of a PivotTable report.

(expression).PivotSelect(Name, Mode, UseStandardName)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

**Name**  Required **String**. The selection, in standard PivotTable report selection format.

**Mode**  Optional **XlPTSelectionMode**. Specifies the structured selection mode.

XlPTSelectionMode can be one of these XlPTSelectionMode constants.
- xlBlanks
- xlButton
- xlDataAndLabel **default**
- xlDataOnly
- xlFirstRow
- xlLabelOnly
- xlOrigin

**UseStandardName**  Optional **Variant**. True for recorded macros that will play back in other locales.
Remarks

You can use the specified mode only to select the corresponding item in the PivotTable report. For example, you cannot select data and labels by using **xlButton** mode; likewise, you cannot select buttons by using **xlDataOnly** mode.
Example

This example selects all date labels in the first PivotTable report on worksheet one.

`Worksheets(1).PivotTables(1).PivotSelect "date[All]", xlLabelOnly`
PivotTables Method

Returns an object that represents either a single PivotTable report (a PivotTable object) or a collection of all the PivotTable reports (a PivotTables object) on a worksheet. Read-only.

`expression.PivotTables(Index)`

`expression`  Required. An expression that returns a Worksheet object.

`Index`  Optional Variant. The name or number of the report.
Example

This example sets the Sum of 1994 field in the first PivotTable report on the active sheet to use the SUM function.

```vba
ActiveSheet.PivotTables("PivotTable1").
   PivotFields("Sum of 1994").Function = xlSum
```
PivotTableWizard Method

- PivotTableWizard method as it applies to the Worksheet object.

Creates a PivotTable object. This method doesn’t display the PivotTable Wizard. This method isn’t available for OLE DB data sources. Use the Add method to add a PivotTable cache, and then create a PivotTable report based on the cache. PivotTable object.

expression PivotTableWizard(SourceType, SourceData, TableDestination, TableName, RowGrand, ColumnGrand, SaveData, HasAutoFormat, AutoPage, Reserved, BackgroundQuery, OptimizeCache, PageFieldOrder, PageFieldWrapCount, ReadData, Connection)

expression Required. An expression that returns one of the above objects.

SourceType Optional XlPivotTableSourceType. The source of the report data.

XlPivotTableSourceType can be one of these XlPivotTableSourceType constants.
- xlConsolidation. Multiple consolidation ranges
- xlDatabase. Microsoft Excel list or database
- xlExternal. Data from another application
- xlPivotTable. Same source as another PivotTable report

If you specify this argument, you must also specify SourceData. If SourceType and SourceData are omitted, Microsoft Excel assumes that the source type is xlDatabase, and the source data comes from the named range "Database." If this named range doesn’t exist, Microsoft Excel uses the current region if the current selection is in a range of more than 10 cells that contain data. If this isn’t true, this method will fail.

SourceData Optional Variant. The data for the new report. Can be a Range
object, an array of ranges, or a text constant that represents the name of another report. For an external database, **SourceData** is an array of strings containing the SQL query string, where each element is up to 255 characters in length. You should use the **Connection** argument to specify the ODBC connection string. For compatibility with earlier versions of Excel, **SourceData** can be a two-element array. The first element is the connection string specifying the ODBC source for the data. The second element is the SQL query string used to get the data. If you specify **SourceData**, you must also specify **SourceType**. If the active cell is inside the **SourceData** range, you must specify **TableDestination** as well.

**TableDestination**  Optional **Variant**. A **Range** object specifying where the report should be placed on the worksheet. If this argument is omitted, the report is placed at the active cell.

**TableName**  Optional **Variant**. A string that specifies the name of the new report.

**RowGrand**  Optional **Variant**. **True** to show grand totals for rows in the report.

**ColumnGrand**  Optional **Variant**. **True** to show grand totals for columns in the report.

**SaveData**  Optional **Variant**. **True** to save data with the report. **False** to save only the report definition.

**HasAutoFormat**  Optional **Variant**. **True** to have Microsoft Excel automatically format the report when it’s refreshed or when fields are moved.

**AutoPage**  Optional **Variant**. Valid only if **SourceType** is **xlConsolidation**. **True** to have Microsoft Excel create a page field for the consolidation. If **AutoPage** is **False**, you must create the page field or fields.

**Reserved**  Optional **Variant**. Not used by Microsoft Excel.

**BackgroundQuery**  Optional **Variant**. **True** to have Excel perform queries for the report asynchronously (in the background). The default value is **False**.

**OptimizeCache**  Optional **Variant**. **True** to optimize the PivotTable cache when it’s constructed. The default value is **False**.
**PageFieldOrder**  Optional **Variant**. The order in which page fields are added to the PivotTable report’s layout. Can be one of the following **XLOrder** constants: **xlDownThenOver** or **xlOverThenDown**. The default value is **xlDownThenOver**.

**PageFieldWrapCount**  Optional **Variant**. The number of page fields in each column or row in the PivotTable report. The default value is 0 (zero).

**ReadData**  Optional **Variant**. **True** to create a PivotTable cache that contains all records from the external database; this cache can be very large. If **ReadData** is **False**, you can set some of the fields as server-based page fields before the data is actually read.

**Connection**  Optional **Variant**. A string that contains ODBC settings that allow Excel to connect to an ODBC data source. The connection string has the form "ODBC;<connection string>". This argument overrides any previous setting for the **PivotCache** object’s **Connection** property.

- PivotTableWizard method as it applies to the **PivotTable** and **Workbook** objects.

Creates a **PivotTable** object. This method doesn’t display the PivotTable Wizard. This method isn’t available for OLE DB data sources. Use the **Add** method to add a PivotTable cache, and then create a PivotTable report based on the cache.

expression.PivotTableWizard(SourceType, SourceData, TableDestination, TableName, RowGrand, ColumnGrand, SaveData, HasAutoFormat, AutoPage, Reserved, BackgroundQuery, OptimizeCache, PageFieldOrder, PageFieldWrapCount, ReadData, Connection)

**expression**  Required. An expression that returns one of the above objects.

**SourceType**  Optional **XI PivotTableSourceType**. The source of the report data.

**XI PivotTableSourceType** can be one of these **XI PivotTableSourceType** constants.

**xlConsolidation**. Multiple consolidation ranges
**SourceData** Optional **Variant**. The data for the new report. Can be a **Range** object, an array of ranges, or a text constant that represents the name of another report. For an external database, **SourceData** is an array of strings containing the SQL query string, where each element is up to 255 characters in length. You should use the **Connection** argument to specify the ODBC connection string. For compatibility with earlier versions of Excel, **SourceData** can be a two-element array. The first element is the connection string specifying the ODBC source for the data. The second element is the SQL query string used to get the data. If you specify **SourceData**, you must also specify **SourceType**. If the active cell is inside the **SourceData** range, you must specify **TableDestination** as well.

**TableDestination** Optional **Variant**. A **Range** object specifying where the report should be placed on the worksheet. If this argument is omitted, the report is placed at the active cell.

**TableName** Optional **Variant**. A string that specifies the name of the new report.

**RowGrand** Optional **Variant.** **True** to show grand totals for rows in the report.

**ColumnGrand** Optional **Variant.** **True** to show grand totals for columns in the report.

**SaveData** Optional **Variant.** **True** to save data with the report. **False** to save only the report definition.

**HasAutoFormat** Optional **Variant.** **True** to have Microsoft Excel
automatically format the report when it’s refreshed or when fields are moved.

**AutoPage**  Optional **Variant**. Valid only if **SourceType** is **xlConsolidation**. **True** to have Microsoft Excel create a page field for the consolidation. If **AutoPage** is **False**, you must create the page field or fields.

**Reserved**  Optional **Variant**. Not used by Microsoft Excel.

**BackgroundQuery**  Optional **Variant**. **True** to have Excel perform queries for the report asynchronously (in the background). The default value is **False**.

**OptimizeCache**  Optional **Variant**. **True** to optimize the PivotTable cache when it’s constructed. The default value is **False**.

**PageFieldOrder**  Optional **Variant**. The order in which page fields are added to the PivotTable report’s layout. Can be one of the following **XLOrder** constants: **xlDownThenOver** or **xlOverThenDown**. The default value is **xlDownThenOver**.

**PageFieldWrapCount**  Optional **Variant**. The number of page fields in each column or row in the PivotTable report. The default value is 0 (zero).

**ReadData**  Optional **Variant**. **True** to create a PivotTable cache that contains all records from the external database; this cache can be very large. If **ReadData** is **False**, you can set some of the fields as server-based page fields before the data is actually read.

**Connection**  Optional **Variant**. A string that contains ODBC settings that allow Excel to connect to an ODBC data source. The connection string has the form "ODBC;<connection string>". This argument overrides any previous setting for the **PivotCache** object’s **Connection** property.
Example

This example creates a new PivotTable report from a Microsoft Excel database (contained in the range A1:C100).

ActiveSheet.PivotTableWizard xlDatabase, Range("A1:C100")
Play Method

This method should not be used. Sound notes have been removed from Microsoft Excel.
Points Method

Returns an object that represents a single point (a **Point** object) or a collection of all the points (a **Points** collection) in the series. Read-only.

`expression.Points(Index)`

*expression* Required. An expression that returns a **Series** object.

*Index* Optional **Variant**. The name or number of the point.
Example

This example applies a data label to point one in series one in Chart1.

Charts("Chart1").SeriesCollection(1).Points(1).ApplyDataLabels
PointsToScreenPixelsX Method

Converts a horizontal measurement from points (document coordinates) to screen pixels (screen coordinates). Returns the converted measurement as a Long value.

`expression.PointsToScreenPixelsX(Points)`

- `expression` An expression that returns a Window object.
- `Points` Required Long. The number of points horizontally along the top of the document window, starting from the left.
Example

This example determines the height and width (in pixels) of the selected cells in the active window and returns the values in the `lWinWidth` and `lWinHeight` variables.

```vba
With ActiveWindow
    lWinWidth = _
        .PointsToScreenPixelsX(.Selection.Width)
    lWinHeight = _
        .PointsToScreenPixelsY(.Selection.Height)
End With
```
PointsToScreenPixelsY Method

Converts a vertical measurement from points (document coordinates) to screen pixels (screen coordinates). Returns the converted measurement as a Long value.

expression.PointsToScreenPixelsY(Points)

expression  An expression that returns a Window object.

Points  Required Long. The number of points vertically along the left edge of the document window, starting from the top.
**Example**

This example determines the height and width (in pixels) of the selected cells in the active window and returns the values in the `lWinWidth` and `lWinHeight` variables.

```vba
With ActiveWindow
    lWinWidth = _
        .PointsToScreenPixelsX(.Selection.Width)
    lWinHeight = _
        .PointsToScreenPixelsY(.Selection.Height)
End With
```
Post Method

Posts the specified workbook to a public folder. This method works only with a Microsoft Exchange client connected to a Microsoft Exchange server.

```
expression.Post(DestName)
```

*expression*  Required. An expression that returns a **Workbook** object.

*DestName*  Optional **Variant**. This argument is ignored. The **Post** method prompts the user to specify the destination for the workbook.
**Example**

This example posts the active workbook.

`ActiveWorkbook.Post`
**PresetDrop Method**

Specifies whether the callout line attaches to the top, bottom, or center of the callout text box or whether it attaches at a point that’s a specified distance from the top or bottom of the text box.

\[ expression \text{.PresetDrop(\textit{DropType})} \]

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*DropType*  Required *MsoCalloutDropType*. The starting position of the callout line relative to the text bounding box

MsoCalloutDropType can be one of these MsoCalloutDropType constants.

- msoCalloutDropBottom
- msoCalloutDropCenter
- msoCalloutDropCustom  Specifying msoCalloutDropCustom for this argument will cause your code to fail.
- msoCalloutDropMixed
- msoCalloutDropTop
Example

This example specifies that the callout line attach to the top of the text bounding box for shape one on myDocument. For the example to work, shape one must be a callout.

```vba
Set myDocument = Worksheets(1)
myDocument.Shapes(1).Callout.PresetDrop msoCalloutDropTop
```

This example toggles between two preset drops for shape one on myDocument. For the example to work, shape one must be a callout.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Callout
    If .DropType = msoCalloutDropTop Then
        .PresetDrop msoCalloutDropBottom
    ElseIf .DropType = msoCalloutDropBottom Then
        .PresetDrop msoCalloutDropTop
    End If
End With
```
PresetGradient Method

- `PresetGradient method as it applies to the FillFormat object.`

Sets the specified fill to a preset gradient.

`expression.PresetGradient(Style, Variant, PresetGradientType)`

`expression` Required. An expression that returns one of the above objects.

`Style` Required `MsoGradientStyle`.

MsoGradientStyle can be one of these MsoGradientStyle constants.
- `msoGradientDiagonalDown`
- `msoGradientDiagonalUp`
- `msoGradientFromCenter`
- `msoGradientFromCorner`
- `msoGradientFromTitle`
- `msoGradientHorizontal`
- `msoGradientMixed`
- `msoGradientVertical`

`Variant` Required `Integer`. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the Gradient tab in the Fill Effects dialog box. If `GradientStyle` is `msoGradientFromCenter`, the `Variant` argument can only be 1 or 2.

`PresetGradientType` Required `MsoPresetGradientType`.

MsoPresetGradientType can be one of these MsoPresetGradientType constants.
- `msoGradientRainbow`
- `msoGradientBrass`
- `msoGradientCalmWater`
PresetGradient method as it applies to the ChartFillFormat object.

Sets the specified fill to a preset gradient.

expression.PresetGradient(Style, Variant, PresetGradientType)

expression  Required. An expression that returns one of the above objects.

Style  Required **MsoGradientStyle**.
MsoGradientStyle can be one of these MsoGradientStyle constants.

- msoGradientDiagonalDown
- msoGradientDiagonalUp
- msoGradientFromCenter
- msoGradientFromCorner
- msoGradientFromTitle
- msoGradientHorizontal
- msoGradientMixed
- msoGradientVertical

**Variant** Required Long. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the Gradient tab in the Fill Effects dialog box. If GradientStyle is msoGradientFromCenter, the Variant argument can only be 1 or 2.

**PresetGradientType** Required MsoPresetGradientType.

MsoPresetGradientType can be one of these MsoPresetGradientType constants.

- msoGradientRainbow
- msoGradientBrass
- msoGradientCalmWater
- msoGradientChrome
- msoGradientChromeII
- msoGradientDaybreak
- msoGradientDesert
- msoGradientEarlySunset
- msoGradientFire
- msoGradientFog
- msoGradientGold
- msoGradientGoldII
- msoGradientHorizon
- msoGradientLateSunset
- msoGradientMahogany
- msoGradientMoss
msoGradientNightfall
msoGradientOcean
msoGradientParchment
msoGradientPeacock
msoGradientRainbowII
msoGradientSapphire
msoGradientSilver
msoGradientWheat
msoPresetGradientMixed
Example

This example sets the fill format for chart two to the same style used for chart one.

Set cif = Charts(1).ChartArea.Fill
If cif.Type = msoFillGradient Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        .PresetGradient cif.GradientStyle, _,
        cif.GradientVariant, cif.PresetGradientType
    End With
End If
PresetTextured Method

Sets the specified fill format to a preset texture.

\textit{expression}.\texttt{PresetTextured}(\texttt{PresetTexture})

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.

\texttt{PresetTexture} Required \texttt{MsoPresetTexture}.

\texttt{MsoPresetTexture} can be one of these \texttt{MsoPresetTexture} constants.

\texttt{msoPresetTextureMixed}
\texttt{msoTextureBlueTissuePaper}
\texttt{msoTextureBouquet}
\texttt{msoTextureBrownMarble}
\texttt{msoTextureCanvas}
\texttt{msoTextureCork}
\texttt{msoTextureDenim}
\texttt{msoTextureFishFossil}
\texttt{msoTextureGranite}
\texttt{msoTextureGreenMarble}
\texttt{msoTextureMediumWood}
\texttt{msoTextureNewsprint}
\texttt{msoTextureOak}
\texttt{msoTexturePaperBag}
\texttt{msoTexturePapyrus}
\texttt{msoTextureParchment}
\texttt{msoTexturePinkTissuePaper}
\texttt{msoTexturePurpleMesh}
\texttt{msoTextureRecycledPaper}
msoTextureSand
msoTextureStationery
msoTextureWalnut
msoTextureWaterDroplets
msoTextureWhiteMarble
msoTextureWovenMat
**Example**

This example sets the fill format for chart two to the same style used for chart one.

```vba
Set cif = Charts(1).ChartArea.Fill
If cif.Type = msoFillTextured Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        If cif.TextureType = msoTexturePreset Then
            .PresetTextured cif.PresetTexture
        Else
            .UserTextured cif.TextureName
        End If
    End With
End If
```
Previous Method

Returns a `Comment` object that represents the previous comment.

`expression.Previous`

`expression`  Required. An expression that returns a `Comment` object.
Remarks

This method works only on one sheet. Using this method on the first comment on a sheet returns **Null** (not the last comment on the previous sheet).
Example

This example hides the previous comment.

`Range("a1").Comment.Previous.Visible = False`
**PrevNode Method**

Returns a `DiagramNode` object that represents the previous diagram node in a collection of diagram nodes.

`expression.PrevNode`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds additional child nodes to the first child node in a newly-created diagram.

Sub AddToPrevNode()
    Dim dgnRoot As DiagramNode
    Dim shpDiagram As Shape
    Dim dgnPrev As DiagramNode
    Dim intCount As Integer

    'Add organizational chart to the current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, _
        Left:=10, _
        Top:=15, _
        Width:=400, _
        Height:=475)

    'Add first diagram node

    'Add three child nodes off the first diagram node
    For intCount = 1 To 3
        dgnRoot.Children.AddNode
    Next intCount

    'Access the node immediately preceding
    'the second diagram node

    'Add three child nodes to the node immediately
    'preceding the second node
    For intCount = 1 To 3
        dgnPrev.Children.AddNode
    Next intCount

End Sub
PrintOut Method

Prints the object.

expression.PrintOut(From, To, Copies, Preview, ActivePrinter, PrintToFile, Collate, PrToFileName)

expression Required. An expression that returns an object in the Applies To list.

From Optional Variant. The number of the page at which to start printing. If this argument is omitted, printing starts at the beginning.

To Optional Variant. The number of the last page to print. If this argument is omitted, printing ends with the last page.

Copies Optional Variant. The number of copies to print. If this argument is omitted, one copy is printed.

Preview Optional Variant. True to have Microsoft Excel invoke print preview before printing the object. False (or omitted) to print the object immediately.

ActivePrinter Optional Variant. Sets the name of the active printer.

PrintToFile Optional Variant. True to print to a file. If PrToFileName is not specified, Microsoft Excel prompts the user to enter the name of the output file.

Collate Optional Variant. True to collate multiple copies.

PrToFileName Optional Variant. If PrintToFile is set to True, this argument specifies the name of the file you want to print to.
Remarks

"Pages" in the descriptions of From and To refers to printed pages — not overall pages in the sheet or workbook.
Example

This example prints the active sheet.

ActiveSheet.PrintOut
PrintPreview Method

Shows a preview of the object as it would look when printed.

`expression.PrintPreview`

`expression`  Required. An expression that returns an object in the Applies To list.
Example

This example displays Sheet1 in print preview.

Worksheets("Sheet1").PrintPreview
Show All
Protect Method

- Protect method as it applies to the Chart object.

Protects a chart so that it cannot be modified.

expression . Protect(Password, DrawingObjects, Contents, Scenarios, UserInterfaceOnly)

expression  Required. An expression that returns a Chart object.

Password  Optional Variant. A string that specifies a case-sensitive password for the worksheet or workbook. If this argument is omitted, you can unprotect the worksheet or workbook without using a password. Otherwise, you must specify the password to unprotect the worksheet or workbook. If you forget the password, you cannot unprotect the worksheet or workbook. It's a good idea to keep a list of your passwords and their corresponding document names in a safe place.

DrawingObjects  Optional Variant. True to protect shapes. The default value is False.

Contents  Optional Variant. True to protect contents. For a chart, this protects the entire chart. For a worksheet, this protects the locked cells. The default value is True.

Scenarios  Optional Variant. True to protect scenarios. This argument is valid only for worksheets. The default value is True.

UserInterfaceOnly  Optional Variant. True to protect the user interface, but not macros. If this argument is omitted, protection applies both to macros and to the user interface.

- Protect method as it applies to the Worksheet object.

Protects a worksheet so that it cannot be modified.
expression.Protect(Password, DrawingObjects, Contents, Scenarios, UserInterfaceOnly, AllowFormattingCells, AllowFormattingColumns, AllowFormattingRows, AllowInsertingColumns, AllowInsertingRows, AllowInsertingHyperlinks, AllowDeletingColumns, AllowDeletingRows, AllowSorting, AllowFiltering, AllowUsingPivotTables)

expression  Required. An expression that returns a Worksheet object.

**Password**  Optional Variant. A string that specifies a case-sensitive password for the worksheet or workbook. If this argument is omitted, you can unprotect the worksheet or workbook without using a password. Otherwise, you must specify the password to unprotect the worksheet or workbook. If you forget the password, you cannot unprotect the worksheet or workbook. It's a good idea to keep a list of your passwords and their corresponding document names in a safe place.

**DrawingObjects**  Optional Variant. True to protect shapes. The default value is False.

**Contents**  Optional Variant. True to protect contents. For a chart, this protects the entire chart. For a worksheet, this protects the locked cells. The default value is True.

**Scenarios**  Optional Variant. True to protect scenarios. This argument is valid only for worksheets. The default value is True.

**UserInterfaceOnly**  Optional Variant. True to protect the user interface, but not macros. If this argument is omitted, protection applies both to macros and to the user interface.

**AllowFormattingCells**  Optional Variant. True allows the user to format any cell on a protected worksheet. The default value is False.

**AllowFormattingColumns**  Optional Variant. True allows the user to format any column on a protected worksheet. The default value is False.

**AllowFormattingRows**  Optional Variant. True allows the user to format any row on a protected. The default value is False.

**AllowInsertingColumns**  Optional Variant. True allows the user to insert
columns on the protected worksheet. The default value is **False**.

*AllowInsertingRows* Optional **Variant**. **True** allows the user to insert rows on the protected worksheet. The default value is **False**.

*AllowInsertingHyperlinks* Optional **Variant**. **True** allows the user to insert hyperlinks on the worksheet. The default value is **False**.

*AllowDeletingColumns* Optional **Variant**. **True** allows the user to delete columns on the protected worksheet, where every cell in the column to be deleted is unlocked. The default value is **False**.

*AllowDeletingRows* Optional **Variant**. **True** allows the user to delete rows on the protected worksheet, where every cell in the row to be deleted is unlocked. The default value is **False**.

*AllowSorting* Optional **Variant**. **True** allows the user to sort on the protected worksheet. Every cell in the sort range must be unlocked or unprotected. The default value is **False**.

*AllowFiltering* Optional **Variant**. **True** allows the user to set filters on the protected worksheet. Users can change filter criteria but can not enable or disable an auto filter. Users can set filters on an existing auto filter. The default value is **False**.

*AllowUsingPivotTables* Optional **Variant**. **True** allows the user to use pivot table reports on the protected worksheet. The default value is **False**.
Remarks

If you apply the **Protect** method with the **UserInterfaceOnly** argument set to **True** to a worksheet and then save the workbook, the entire worksheet (not just the interface) will be fully protected when you reopen the workbook. To re-enable the user interface protection after the workbook is opened, you must again apply the **Protect** method with **UserInterfaceOnly** set to **True**.

If changes wanted to be made to a protected worksheet, it is possible to use the **Protect** method on a protected worksheet if the password is supplied. Also, another method would be to unprotect the worksheet, make the necessary changes, and then protect the worksheet again.

**Note** 'Unprotected' means the cell may be locked (Format Cells dialog) but is included in a range defined in the Allow Users to Edit Ranges dialog, and the user has unprotected the range with a password or been validated via NT permissions.

- Protect method as it applies to the **Workbook** object.

Protects a workbook so that it cannot be modified.

*expression*.Protect(*Password*, *Structure*, *Windows*)

*expression*  Required. An expression that returns a **Workbook** object.

**Password** Optional **Variant**. A string that specifies a case-sensitive password for the worksheet or workbook. If this argument is omitted, you can unprotect the worksheet or workbook without using a password. Otherwise, you must specify the password to unprotect the worksheet or workbook. If you forget the password, you cannot unprotect the worksheet or workbook. It's a good idea to keep a list of your passwords and their corresponding document names in a safe place.

**Structure** Optional **Variant**. **True** to protect the structure of the workbook (the relative position of the sheets). The default value is **False**.

**Windows** Optional **Variant**. **True** to protect the workbook windows. If this
argument is omitted, the windows aren’t protected.
Example

- As it applies to the **Chart** and **Worksheet** objects.

This example protects the active worksheet. You can verify the worksheet is protected, by attempting to enter a value into any cell, on the active worksheet.

Sub ProtectSheet()
    ActiveSheet.Protect Scenarios:=True, UserInterfaceOnly:=True
End Sub

This example protects the active chart. You can verify the chart is protected, by attempting to enter a value into any cell, on the active worksheet. This example assumes a chart exists in the application.

Sub ProtectChart()
    ActiveChart.Protect Scenarios:=True, UserInterfaceOnly:=True
End Sub
ProtectSharing Method

Saves the workbook and protects it for sharing.

expression.ProtectSharing(Filename, Password, WriteResPassword, ReadOnlyRecommended, CreateBackup, SharingPassword)

expression  An expression that returns a Workbook object.

Filename  Optional Variant. A string indicating the name of the saved file. You can include a full path; if you don’t, Microsoft Excel saves the file in the current folder.

Password  Optional Variant. A case-sensitive string indicating the protection password to be given to the file. Should be no longer than 15 characters.

WriteResPassword  Optional Variant. A string indicating the write-reservation password for this file. If a file is saved with the password and the password isn’t supplied when the file is opened, the file is opened read-only.

ReadOnlyRecommended  Optional Variant. True to display a message when the file is opened, recommending that the file be opened read-only.

CreateBackup  Optional Variant. True to create a backup file.

SharingPassword  Optional Variant. A string indicating the password to be used to protect the file for sharing.
Example

This example saves workbook one and protects it for sharing.

Workbooks(1).protectsharing Password:="drowssap", _
          SharingPassword:="gnirahs"
Publish Method

Saves an item or a collection of items in a document to a Web page.

expression.Publish(Create)

expression  An expression that returns a PublishObject object or a PublishObjects collection.

Create  Optional Variant. This argument is used only with a PublishObject object. If the HTML file exists, setting this argument to True replaces the file, and setting this argument to False inserts the item or items at the end of the file. If the file does not exist, then the file is created regardless of the value of the Create argument.
Remarks

The **FileName** property returns or sets the location and name of the HTML file.
Example

This example saves the range D5:D9 on the First Quarter worksheet in the active workbook to a Web page called “stockreport.htm.” The Spreadsheet component is used to add interactivity to the Web page.

ActiveWorkbook.PublishObjects.Add(_
  SourceType:=xlSourceRange, _
  Filename:="\\Server2\Q1\stockreport.htm", _
  Sheet:="First Quarter", _
  Source:="D5:D9", _
  HTMLType:=xlHTMLCalc).Publish
PurgeChangeHistoryNow Method

Removes entries from the change log for the specified workbook.

expression.PurgeChangeHistoryNow(Days, SharingPassword)

expression An expression that returns a Workbook object.

Days Required Long. The number of days that changes in the change log are to be retained.

SharingPassword Optional Variant. The password that unprotects the workbook for sharing. If the workbook is protected for sharing with a password and this argument is omitted, the user is prompted for the password.
**Example**

This example removes all changes that are more than one day old from the change log for the active workbook.

```vba
ActiveWorkbook.PurgeChangeHistoryNow Days:=1
```
Quit Method

Quits Microsoft Excel.

`expression.Quit`

`expression` Required. An expression that returns an Application object.
Remarks

If unsaved workbooks are open when you use this method, Microsoft Excel displays a dialog box asking whether you want to save the changes. You can prevent this by saving all workbooks before using the Quit method or by setting the DisplayAlerts property to False. When this property is False, Microsoft Excel doesn’t display the dialog box when you quit with unsaved workbooks; it quits without saving them.

If you set the Saved property for a workbook to True without saving the workbook to the disk, Microsoft Excel will quit without asking you to save the workbook.
Example

This example saves all open workbooks and then quits Microsoft Excel.

For Each w In Application.Workbooks
    w.Save
Next w
Application.Quit
RadarGroups Method

On a 2-D chart, returns an object that represents either a single radar chart group (a ChartGroup object) or a collection of the radar chart groups (a ChartGroups collection).

expression.RadarGroups(Index)

description of expression Required. An expression that returns a Chart object.

Index Optional Variant. Specifies the chart group.
Example

This example sets radar group one in Chart1 to use a different color for each data marker. The example should be run on a 2-D chart.

Charts("Chart1").RadarGroups(1).VaryByCategories = True
RangeFromPoint Method

Returns the Shape or Range object that is positioned at the specified pair of screen coordinates. If there isn’t a shape located at the specified coordinates, this method returns Nothing.

expression.RangeFromPoint(x, y)

expression  An expression that returns a Window object.

x  Required Long. The value (in pixels) that represents the horizontal distance from the left edge of the screen, starting at the top.

y  Required Long. The value (in pixels) that represents the vertical distance from the top of the screen, starting on the left.
Example

This example returns the alternative text for the shape immediately below the mouse pointer if the shape is a chart, line, or picture.

Private Function AltText(ByVal intMouseX As Integer, _
                       ByVal intMouseY as Integer) As String
    Set objShape = ActiveWindow.RangeFromPoint _
                   (x:=intMouseX, y:=intMouseY)
    If Not objShape Is Nothing Then
        With objShape
            Select Case .Type
                Case msoChart, msoLine, msoPicture:
                    AltText = .AlternativeText
                Case Else:
                    AltText = ""
            End Select
        End With
    Else
        AltText = ""
    End If
End Function
RecheckSmartTags Method

Causes a foreground smart tag check to occur automatically annotating data that was not annotated before.

\textit{expression.\texttt{RecheckSmartTags}}

\textit{expression}  Required. An expression that returns one of the objects in the Applies To list.
Example

This example rechecks smart tags on the active workbook in the foreground.

Sub UseRecheckSmartTags()

    ActiveWorkbook.RecheckSmartTags

End Sub
This method should not be used. Sound notes have been removed from Microsoft Excel.
RecordMacro Method

- Records code if the macro recorder is on.

(expression.RecordMacro(BasicCode, XlmCode))

expression  Required. An expression that returns an Application object.

**BasicCode**  Optional Variant. A string that specifies the Visual Basic code that will be recorded if the macro recorder is recording into a Visual Basic module. The string will be recorded on one line. If the string contains a carriage return (ASCII character 10, or chr$(10) in code), it will be recorded on more than one line.

**XlmCode**  Optional Variant. This argument is ignored.
Remarks

The `RecordMacro` method cannot record into the active module (the module in which the `RecordMacro` method exists).

If `BasicCode` is omitted and the application is recording into Visual Basic, Microsoft Excel will record a suitable `Application.Run` statement.

To prevent recording (for example, if the user cancels your dialog box), call this function with two empty strings.
Example

This example records Visual Basic code.

Application.RecordMacro BasicCode:="Application.Run ""MySub"" ""
Refresh Method

- Refresh method as it applies to the QueryTable object.

Updates the query table. **Boolean.**

`expression.Refresh(BackgroundQuery)`

`expression` Required. An expression that returns one of the above objects.

**BackgroundQuery** Optional **Variant.** Used only with query tables based on the results of an SQL query. **True** to return control to the procedure as soon as a database connection is made and the query is submitted (the query is updated in the background). **False** to return control to the procedure only after all data has been fetched to the worksheet. If this argument isn't specified, the setting of the **BackgroundQuery** property determines the query mode.

- Refresh method as it applies to the Chart and PivotCache objects.

Updates the Chart and PivotTable cache.

`expression.Refresh`

`expression` Required. An expression that returns one of the above objects. For the PivotCache object, the cache must have at least one PivotTable report associated with it.
Remarks

- Remarks as it applies to the QueryTable object.

The following remarks apply to QueryTable objects based on the results of a SQL query.

The **Refresh** method causes Microsoft Excel to connect to the query table's data source, execute the SQL query, and return data to the query table destination range. Until this method is called, the query table doesn't communicate with the data source.

When making the connection to the OLE DB or ODBC data source, Microsoft Excel uses the connection string specified by the **Connection** property. If the specified connection string is missing required values, the data access driver manager or the driver (or both) will display modal dialog boxes to prompt the user for the required information. If the **DisplayAlerts** property is **False**, dialog boxes aren't displayed and the **Refresh** method fails with the Insufficient Connection Information exception.

After Microsoft Excel makes a successful connection, it stores the completed connection string so that prompts won't be displayed for subsequent calls to the **Refresh** method during the same editing session. You can obtain the completed connection string by examining the value of the **Connection** property.

After the database connection is made, the SQL query is validated. If the query isn't valid, the **Refresh** method fails with the SQL Syntax Error exception.

If the query requires parameters, the **Parameters** collection must have been initialized with parameter binding information. If not enough parameters have been bound, the **Refresh** method fails with the Parameter Error exception. If parameters are set to prompt for their values, dialog boxes are displayed to the user regardless of the setting of the **DisplayAlerts** property. If the user cancels a parameter dialog box, the **Refresh** method halts and returns **False**. If there are extra parameters bound with the **Parameters** collection, the extra parameters are ignored.

The **Refresh** method returns **True** if the query is successfully completed or
started; it returns False if the user cancels a connection or parameter dialog box.

To see whether the number of fetched rows exceeded the number of available rows on the worksheet, examine the FetchedRowOverflow property. This property is initialized every time the Refresh method is called.
**Example**

This example refreshes the PivotTable cache for the first PivotTable report on worksheet one.

`Worksheets(1).PivotTables(1).PivotCache.Refresh`
RefreshAll Method

Refreshes all external data ranges and PivotTable reports in the specified workbook.

expression.RefreshAll

expression  Required. An expression that returns a Workbook object.
Remarks

Objects that have the BackgroundQuery property set to True are refreshed in the background.
Example

This example refreshes all external data ranges and PivotTable reports in the third workbook.

`Workbooks(3).RefreshAll`
RefreshData Method

- RefreshData method as it applies to the IRtdServer object.

This method is called by Microsoft Excel to get new data. This method call only takes place after being notified by the real-time data server that there is new data.

expression.RefreshData(ByRef TopicCount As Long)

type- Required. An expression that returns an IRtdServer object.

TopicCount  Required Long. The RTD server must change the value of the TopicCount to the number of elements in the array returned.
Remarks

The data returned to Microsoft Excel is a **Variant** containing a two-dimensional array. The first dimension represents the list of topic IDs. The second dimension represents the values associated with the topic IDs.

- **RefreshData method as it applies to the RTD object.**

Requests an update of real-time data from the real-time data server.

```plaintext
expression.RefreshData
```

*expression* Required. An expression that returns an **RTD** object.
Remarks

Using the RefreshData method during recalculation will fail, so it should not be used within user-defined functions.
RefreshTable Method

Refreshes the PivotTable report from the source data. Returns True if it’s successful.

expression.RefreshTable

expression  Required. An expression that returns a PivotTable object.
Example

This example refreshes the PivotTable report.

```
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.RefreshTable
```
RegisterXLL Method

Loads an XLL code resource and automatically registers the functions and commands contained in the resource.

`expression.RegisterXLL(Filename)`

*expression* Required. An expression that returns an *Application* object.

*Filename* Required *String*. Specifies the name of the XLL to be loaded.
Remarks

This method returns True if the code resource is successfully loaded; otherwise, the method returns False.
Example

This example loads an XLL file and registers the functions and commands in the file.

Application.RegisterXLL "XLMAPI.XLL"
Regroup Method

Regroups the group that the specified shape range belonged to previously. Returns the regrouped shapes as a single Shape object.

*expression*.Regroup

*expression*  Required. An expression that returns a ShapeRange object.
Remarks

The **Regroup** method only restores the group for the first previously grouped shape it finds in the specified **ShapeRange** collection. Therefore, if the specified shape range contains shapes that previously belonged to different groups, only one of the groups will be restored.

Note that because a group of shapes is treated as a single shape, grouping and ungrouping shapes changes the number of items in the **Shapes** collection and changes the index numbers of items that come after the affected items in the collection.
Example

This example regroups the shapes in the selection in the active window. If the shapes haven’t been previously grouped and ungrouped, this example will fail.

`ActiveWindow.Selection.ShapeRange.Regoup`
RejectAllChanges Method

Rejects all changes in the specified shared workbook.

expression.AcceptAllChanges(When, Who, Where)

expression Required. An expression that returns a Workbook object

When Optional Variant. Specifies when all the changes are rejected.

Who Optional Variant. Specifies by whom all the changes are rejected.

Where Optional Variant. Specifies where all the changes are rejected.
Example

This example rejects all changes in the active workbook.

ActiveWorkbook.RejectAllChanges
ReloadAs Method

Reloads a workbook based on an HTML document, using the specified document encoding.

`expression.ReloadAs(Encodings)`

`expression` Required. An expression that returns one of the objects in the Applies To list.

`Encodings` Required `MsoEncoding`.

MsoEncoding can be one of these MsoEncoding constants.

- `msoEncodingEBCDICArabic`
- `msoEncodingArabic`
- `msoEncodingArabicASMO`
- `msoEncodingArabicAutoDetect`
- `msoEncodingArabicTransparentASMO`
- `msoEncodingAutoDetect`
- `msoEncodingBaltic`
- `msoEncodingCentralEuropean`
- `msoEncodingCyrillic`
- `msoEncodingCyrillicAutoDetect`
- `msoEncodingEBCDICDenmarkNorway`
- `msoEncodingEBCDICFinlandSweden`
- `msoEncodingEBCDICFrance`
- `msoEncodingEBCDICGermany`
- `msoEncodingEBCDICGreek`
- `msoEncodingEBCDICGreekModern`
- `msoEncodingEBCDICHebrew`
- `msoEncodingEBCDICIcelandic`
msoEncodingEBCDICInternational
msoEncodingEBCDICItaly
msoEncodingEBCDICJapaneseKatakanaExtended
msoEncodingEBCDICJapaneseKatakanaExtendedAndJapanese
msoEncodingEBCDICJapaneseLatinExtendedAndJapanese
msoEncodingEBCDICKoreanExtended
msoEncodingEBCDICKoreanExtendedAndKorean
msoEncodingEBCDICLatinAmericaspain
msoEncodingEBCDICMultilingualROECELatin2
msoEncodingEBCDICRussian
msoEncodingEBCDICSerbianBulgarian
msoEncodingEBCDICSimplifiedChineseExtendedAndSimplifiedChinese
msoEncodingEBCDICThai
msoEncodingEBCDICTurkish
msoEncodingEBCDICTurkishLatin5
msoEncodingEBCDICUnitedKingdom
msoEncodingEBCDICUSCanada
msoEncodingEBCDICUSCanadaAndJapanese
msoEncodingEBCDICUSCanadaAndTraditionalChinese
msoEncodingEUCChineseSimplifiedChinese
msoEncodingEUCJapanese
msoEncodingEUCKorean
msoEncodingEUCTaiwaneseTraditionalChinese
msoEncodingEuropa3
msoEncodingExtAlphaLowercase
msoEncodingGreek
msoEncodingGreekAutoDetect
msoEncodingHebrew
msoEncodingHZZBSimplifiedChinese
msoEncodingIA5German
msoEncodingIA5IRV
msoEncodingIA5Norwegian
msoEncodingIA5Swedish
msoEncodingTurkish
msoEncodingUnicodeBigEndian
msoEncodingUnicodeLittleEndian
msoEncodingUSASCII
msoEncodingUTF7
msoEncodingUTF8
msoEncodingVietnamese
msoEncodingWestern
Example

This example reloads the first workbook, using Western document encoding.

```
Workbooks(1).ReloadAs Encoding:=msoEncodingWestern
```
RemoveAllItems Method

Removes all entries from a Microsoft Excel list box or combo box. Use the `Clear` method to remove all items from an ActiveX list box or combo box.

`expression.RemoveAllItems`

`expression` Required. An expression that returns a `ControlFormat` object.
Example

This example removes all items from a list box. If Shapes(2) doesn’t represent a list box, this example fails.

Worksheets(1).Shapes(2).ControlFormat.RemoveAllItems
RemoveItem Method

Removes one or more items from a list box or combo box.

expression.RemoveItem(Index, Count)

expression  An expression that returns a ControlFormat object.

Index  Required Long. The number of the first item to be removed. Valid values are from 1 to the number of items in the list (returned by the ListCount property).

Count  Optional Variant. The number of items to be removed, starting at item Index. If this argument is omitted, one item is removed. If Index + Count exceeds the number of items in the list, all items from Index through the end of the list are removed without an error.
Remarks

If the specified object has a fill range defined for it, this method fails.

Use the **RemoveAllItems** method to remove all entries from a Microsoft Excel list box or combo box. Use the **Clear** method to remove all items from an ActiveX list box or combo box.
Example

This example removes the selected item from a list box. If Shapes(2) doesn’t represent a list box, this example fails.

Set lbcf = Worksheets(1).Shapes(2).ControlFormat
lbcf.RemoveItem lbcf.ListIndex
RemoveSubtotal Method

- Removes subtotals from a list.

`expression.RemoveSubtotal`

`expression`  Required. An expression that returns a `Range` object.
Example

This example removes subtotals from the range A1:G37 on Sheet1. The example should be run on a list that has subtotals.

`Worksheets("Sheet1").Range("A1:G37").RemoveSubtotal`
RemoveUser Method

Disconnects the specified user from the shared workbook.

\textit{expression.RemoveUser(\textit{Index})}

\textit{expression}  Required. An expression that returns a \texttt{Workbook} object.

\textit{Index}  Required \texttt{Long}. The user index.
Example

This example disconnects user two from the shared workbook.

\texttt{Workbooks(2).RemoveUser\ 2}
Repeat Method

Repeats the last user-interface action.

\textit{expression}.\texttt{Repeat}

\textit{expression} Required. An expression that returns an \texttt{Application} object.
Remarks

This method repeats only the last action taken by the user before running the macro, and it must be the first line in the macro. It cannot be used to repeat Visual Basic commands.
Example

This example repeats the last user-interface command. The example must be the first line in a macro.

Application. **Repeat**
Show All
Replace Method

- Replace method as it applies to the Range object.

Returns a Boolean indicating characters in cells within the specified range. Using this method doesn’t change either the selection or the active cell.

expression.Replace(What, Replacement, LookAt, SearchOrder, MatchCase, MatchByte, SearchFormat, ReplaceFormat)

expression Required. An expression that returns a Range object.

What Required Variant. The string you want Microsoft Excel to search for.

Replacement Required Variant. The replacement string.

LookAt Optional Variant. Can be one of the following XlLookAt constants: xlWhole or xlPart.

SearchOrder Optional Variant. Can be one of the following XlSearchOrder constants: xlByRows or xlByColumns.

MatchCase Optional Variant. True to make the search case sensitive.

MatchByte Optional Variant. You can use this argument only if you’ve selected or installed double-byte language support in Microsoft Excel. True to have double-byte characters match only double-byte characters. False to have double-byte characters match their single-byte equivalents.

SearchFormat Optional Variant. The search format for the method.

ReplaceFormat Optional Variant. The replace format for the method.
Remarks

The settings for LookAt, SearchOrder, MatchCase, and MatchByte are saved each time you use this method. If you don’t specify values for these arguments the next time you call the method, the saved values are used. Setting these arguments changes the settings in the Find dialog box, and changing the settings in the Find dialog box changes the saved values that are used if you omit the arguments. To avoid problems, set these arguments explicitly each time you use this method.

Replace method as it applies to the WorksheetFunction object.

Replaces part of a text string, based on the number of characters you specify, with a different text string.

expression.Replace(Arg1, Arg2, Arg3, Arg4)

expression Required. An expression that returns a WorksheetFunction object.

Arg1 Required String. Text in which you want to replace some characters.

Arg2 Required Double. The position of the character in Arg1 that you want to replace with Arg4.

Arg3 Required Double. The number of characters in Arg1 that you want the Replace method to replace with Arg4.

Arg4 Required String. Text that will replace characters in Arg1.
Example

- **As it applies to the Range object.**

This example replaces every occurrence of the trigonometric function SIN with the function COS. The replacement range is column A on Sheet1.

```vba
Worksheets("Sheet1").Columns("A").Replace _
    What:="SIN", Replacement:="COS", _
    SearchOrder:=xlByColumns, MatchCase:=True
```

- **As it applies to the WorksheetFunction object.**

This example replaces abcdef with ac-ef and notifies the user during this process.

```vba
Sub UseReplace()
    Dim strCurrent As String
    Dim strReplaced As String
    strCurrent = "abcdef"

    ' Notify user and display current string.
    MsgBox "The current string is: " & strCurrent

    ' Replace "cd" with ".".
    strReplaced = Application.WorksheetFunction.Replace _
        (Arg1:=strCurrent, Arg2:=3, _
        Arg3:=2, Arg4:="-")

    ' Notify user and display replaced string.
    MsgBox "The replaced string is: " & strReplaced
End Sub
```
ReplaceNode Method

Replaces a target diagram node with the source diagram node. The target diagram node is deleted, and the source diagram node, including any of its child nodes, are moved to where the target diagram node was.

expression.ReplaceNode(pTargetNode)

expression  Required. An expression that returns one of the objects in the Applies To list.

pTargetNode  Required DiagramNode object. The target diagram node to be replaced.
Example

The following example replaces the last diagram node of a newly-created diagram with the second node.

Sub ReplaceNode()
    Dim nodRoot As DiagramNode
    Dim nodPrev As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer

    Set shDiagram = ActiveSheet.Shapes.AddDiagram _
        (Type:=msoDiagramRadial, Left:=10, Top:=15, _
        Width:=400, Height:=475)

    ' Add 3 child nodes to the root node.
    For intCount = 1 To 3
        nodRoot.Children.AddNode
    Next

    ' The second node will replace the last node.

    ' The count will be 3 since the replaced node was deleted.
    MsgBox nodRoot.Diagram.Nodes.Count

End Sub
ReplyWithChanges Method

Sends an e-mail message to the author of a workbook that has been sent out for review, notifying them that a reviewer has completed review of the workbook.

\[expression.\text{ReplyWithChanges}(\text{ShowMessage})\]

\textit{expression}  Required. An expression that returns one of the objects in the Applies To list.

\textit{ShowMessage}  Optional \textit{Variant}. \texttt{False} does not display the message. \texttt{True} displays the message.
Remarks

Use the **SendForReview** method to start a collaborative review of a workbook. If the **ReplyWithChanges** method is executed on a workbook that is not part of a collaborative review cycle, the user will receive an error.
**Example**

This example automatically sends a notification to the author of a review workbook that a reviewer has completed a review, without first displaying the e-mail message to the reviewer. This example assumes that the active workbook is part of a collaborative review cycle.

```vba
Sub ReplyMsg()
    ActiveWorkbook.ReplyWithChanges ShowMessage:=False
End Sub
```
RerouteConnections Method

Reroutes connectors so that they take the shortest possible path between the shapes they connect. To do this, the RerouteConnections method may detach the ends of a connector and reattach them to different connecting sites on the connected shapes.

This method reroutes all connectors attached to the specified shape; if the specified shape is a connector, it’s rerouted.

expression.RerouteConnections

expression  Required. An expression that returns a Shape or ShapeRange object.
Remarks

If this method is applied to a connector, only that connector will be rerouted. If this method is applied to a connected shape, all connectors to that shape will be rerouted.
Example

This example adds two rectangles to myDocument, connects them with a curved connector, and then reroutes the connector so that it takes the shortest possible path between the two rectangles. Note that the **RerouteConnections** method adjusts the size and position of the connector and determines which connecting sites it attaches to, so the values you initially specify for the **ConnectionSite** arguments used with the **BeginConnect** and **EndConnect** methods are irrelevant.

```vba
Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, _
    100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, _
    300, 300, 200, 100)
Set newConnector = s.AddConnector(msoConnectorCurve, _
    0, 0, 100, 100)
With newConnector.ConnectorFormat
    .BeginConnect firstRect, 1
    .EndConnect secondRect, 1
End With
ewConnector.RerouteConnections
```
Reset Method

 Resets the routing slip so that a new routing can be initiated with the same slip (using the same recipient list and delivery information). The routing must be completed before you use this method. Using this method at other times causes an error.

 `expression.Reset`

 `expression` Required. An expression that returns a `RoutingSlip` object.
**Example**

This example resets the routing slip for Book1.xls if routing has been completed.

```vba
With Workbooks("BOOK1.XLS").RoutingSlip
    If .Status = xlRoutingComplete Then .Reset
Else
    MsgBox "Cannot reset routing; not yet complete"
End If
End With
```
**ResetAllPageBreaks Method**

- Resets all page breaks on the specified worksheet.

`expression.ResetAllPageBreaks()`

- `expression` Required. An expression that returns a `Worksheet` object.
Example

This example resets all page breaks on worksheet one.

Worksheets(1).ResetAllPageBreaks
ResetColors Method

Resets the color palette to the default colors.

`expression.ResetColors`

`expression` Required. An expression that returns a `Workbook` object.
Example

This example resets the color palette in the active workbook.

`ActiveWorkbook.ResetColors`
ResetRotation Method

 Resets the extrusion rotation around the x-axis and the y-axis to 0 (zero) so that
 the front of the extrusion faces forward. This method doesn’t reset the rotation
 around the z-axis.

 expression.ResetRotation

 expression  Required. An expression that returns a ThreeDFormat object.
Remarks

To set the extrusion rotation around the x-axis and the y-axis to anything other than 0 (zero), use the `RotationX` and `RotationY` properties of the `ThreeDFormat` object. To set the extrusion rotation around the z-axis, use the `Rotation` property of the `Shape` object that represents the extruded shape.
Example

This example resets the rotation around the x-axis and the y-axis to 0 (zero) for the extrusion of shape one on myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).ThreeD.ResetRotation
ResetTimer Method

Resets the refresh timer for the specified query table or PivotTable report to the last interval you set using the RefreshPeriod property.

expression.ResetTimer

expression An expression that returns a PivotCache or QueryTable object.
**Example**

This example resets the refresh timer for the first query table on the active worksheet.

`ActiveSheet.QueryTables(1).ResetTimer`
RestartServers Method

Reconnects to servers for real-time data.

expression.RestartServers

expression  Required. An expression that returns an RTD object.
Remarks

Pressing F2+ENTER will not attempt to restart a server when disconnected.
Route Method

Routes the workbook, using the workbook's current routing slip.

*expression*.Route

*expression*  Required. An expression that returns a **Workbook** object.
Remarks

Routing a workbook sets the **Routed** property to **True**.
Example

This example creates a routing slip for Book1.xls and then sends the workbook to three recipients, one after another.

Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", ",
                        "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
End With
Workbooks("BOOK1.XLS").Route
RowDifferences Method

Returns a Range object that represents all the cells whose contents are different from those of the comparison cell in each row.

expression.RowDifferences(Comparison)

expression Required. An expression that returns a range containing the cells to be compared.

Comparison Required Variant. A single cell to compare with the specified range.
Example

This example selects the cells in row one on Sheet1 whose contents are different from those of cell D1.

`Worksheets("Sheet1").Activate`
`Set c1 = ActiveSheet.Rows(1).RowDifferences( _
   comparison:=ActiveSheet.Range("D1"))`
`c1.Select`
RTD Method

This method connects to a source to receive real-time data.

expression: `RTD (progID, server, topic1, topic2, topic3, topic4, topic5, topic6, topic7, topic8, topic9, topic10, topic11, topic12, topic13, topic14, topic15, topic16, topic17, topic18, topic19, topic20, topic21, topic22, topic23, topic24, topic25, topic26, topic27, topic28)`

**expression**  Required. An expression that returns one of the objects in the Applies To list.

**progID**  Required **Variant**. A string representing the real-time server programmatic identifier.

**server**  Required **Variant**. A server name, **Null** string or **vbNullString** constant.

**topic1**  Required **Variant**. A **String** representing a topic.

**topic2-topic28**  Optional **Variant**. A **String** representing a topic.
Remarks

The *server* argument is required in Visual Basic for Applications (VBA), even though it can be omitted within a worksheet.
Show All
Run Method

- Run method as it applies to the Range object.

Runs the Microsoft Excel macro at this location. The range must be on a macro sheet.


expression  Required. An expression that returns a Range object.

Arg1-Arg30  Optional Variant. The arguments that should be passed to the function.

- Run method as it applies to the Application object.

Runs a macro or calls a function. This can be used to run a macro written in Visual Basic or the Microsoft Excel macro language, or to run a function in a DLL or XLL.


expression  Required. An expression that returns an Application object.

Macro  Optional Variant. The macro to run. This can be either a string with the macro name, a Range object indicating where the function is, or a register ID for a registered DLL (XLL) function. If a string is used, the string will be evaluated in the context of the active sheet.

Arg1-Arg30  Optional Variant. The arguments that should be passed to the function.
**Remarks**

You cannot use named arguments with this method. Arguments must be passed by position.

The **Run** method returns whatever the called macro returns. Objects passed as arguments to the macro are converted to values (by applying the **Value** property to the object). This means that you cannot pass objects to macros by using the **Run** method.
Example

This example shows how to call the function macro My(Func_Sum, which is defined on the macro sheet Mycustom.xlm (the macro sheet must be open). The function takes two numeric arguments (1 and 5, in this example).

```vba
mySum = Application.Run("MYCUSTOM.XLM!My.Func_Sum", 1, 5)
MsgBox "Macro result: " & mySum
```
RunAutoMacros Method

Runs the Auto_Open, Auto_Close, Auto_Activate, or Auto_Deactivate macro attached to the workbook. This method is included for backward compatibility. For new Visual Basic code, you should use the Open, Close, Activate and Deactivate events instead of these macros.

description.RunAutoMacros(Which)

description Required. An expression that returns one of the objects in the Applies To list.

Which Required XlRunAutoMacro.

XlRunAutoMacro can be one of these XlRunAutoMacro constants.

xlAutoActivate. Auto_Activate macros
xlAutoClose. Auto_Close macros
xlAutoDeactivate. Auto_Deactivate macros
xlAutoOpen. Auto_Open macros
Example

This example opens the workbook Analysis.xls and then runs its Auto_Open macro.

`Workbooks.Open "ANALYSIS.XLS"
ActiveWorkbook.RunAutoMacros x1AutoOpen`

This example runs the Auto_Close macro for the active workbook and then closes the workbook.

`With ActiveWorkbook
    .RunAutoMacros x1AutoClose
    .Close
End With`
Save Method

Saves changes to the specified workbook.

`expression.Save`

`expression`  Required. An expression that returns a `Workbook` object.
Remarks

To open a workbook file, use the Open method.

To mark a workbook as saved without writing it to a disk, set its Saved property to True.

The first time you save a workbook, use the SaveAs method to specify a name for the file.
Example

This example saves the active workbook.

ActiveWorkbook.Save

This example saves all open workbooks and then closes Microsoft Excel.

For Each w In Application.Workbooks
  w.Save
Next w
Application.Quit
SaveAs Method

- SaveAs method as it applies to the Chart and Worksheet objects.

Saves changes to the chart or worksheet in a different file.

expression.SaveAs(FileName, FileFormat, Password, WriteResPassword, ReadOnlyRecommended, CreateBackup, AddToMru, TextCodepage, TextVisualLayout, Local)

expression   Required. An expression that returns one of the above objects.

Filename   Optional Variant. A string that indicates the name of the file to be saved. You can include a full path; if you don't, Microsoft Excel saves the file in the current folder.

FileFormat   Optional Variant. The file format to use when you save the file. For a list of valid choices, see the FileFormat property. For an existing file, the default format is the last file format specified; for a new file, the default is the format of the version of Excel being used.

Password   Optional Variant. A case-sensitive string (no more than 15 characters) that indicates the protection password to be given to the file.

WriteResPassword   Optional Variant. A string that indicates the write-reservation password for this file. If a file is saved with the password and the password isn't supplied when the file is opened, the file is opened as read-only.

ReadOnlyRecommended   Optional Variant. True to display a message when the file is opened, recommending that the file be opened as read-only.

CreateBackup   Optional Variant. True to create a backup file.

AddToMru   Optional Variant. True to add this workbook to the list of recently used files. The default value is False.


**Local**  Optional Variant. **True** saves files against the language of Microsoft Excel (including control panel settings). **False** (default) saves files against the language of Visual Basic for Applications (VBA) (which is typically US English unless the VBA project where Workbooks.Open is run from is an old internationalized XL5/95 VBA project).

- **SaveAs method as it applies to the Workbook object.**

Saves changes to the workbook in a different file.

```
expression.SaveAs(Filename, FileFormat, Password, WriteResPassword, ReadOnlyRecommended, CreateBackup, AccessMode, ConflictResolution, AddToMru, TextCodepage, TextVisualLayout, Local)
```

**Filename**  Optional Variant. A string that indicates the name of the file to be saved. You can include a full path; if you don't, Microsoft Excel saves the file in the current folder.

**FileFormat**  Optional Variant. The file format to use when you save the file. For a list of valid choices, see the **FileFormat** property. For an existing file, the default format is the last file format specified; for a new file, the default is the format of the version of Excel being used.

**Password**  Optional Variant. A case-sensitive string (no more than 15 characters) that indicates the protection password to be given to the file.

**WriteResPassword**  Optional Variant. A string that indicates the writereservation password for this file. If a file is saved with the password and the password isn't supplied when the file is opened, the file is opened as read-only.

**ReadOnlyRecommended**  Optional Variant. **True** to display a message when the file is opened, recommending that the file be opened as read-only.
CreateBackup  Optional Variant. True to create a backup file.

AccessMode  Optional ExcelSaveAsAccessMode.

ExcelSaveAsAccessMode can be one of these ExcelSaveAsAccessMode constants.
xlExclusive  (exclusive mode)
xlNoChange  default  (don't change the access mode)
xlShared  (share list)

If this argument is omitted, the access mode isn't changed. This argument is ignored if you save a shared list without changing the file name. To change the access mode, use the ExclusiveAccess method.

ConflictResolution  Optional ExcelSaveConflictResolution.

ExcelSaveConflictResolution can be one of these ExcelSaveConflictResolution constants.
xlUserResolution  (display the conflict-resolution dialog box)
xlLocalSessionChanges  (automatically accept the local user's changes)
xlOtherSessionChanges  (accept other changes instead of the local user's changes)

If this argument is omitted, the conflict-resolution dialog box is displayed.

AddToMru  Optional Variant. True to add this workbook to the list of recently used files. The default value is False.


Local  Optional Variant. True saves files against the language of Microsoft Excel (including control panel settings). False (default) saves files against the language of Visual Basic for Applications (VBA) (which is typically US English unless the VBA project where Workbooks.Open is run from is an old internationalized XL5/95 VBA project).
Example

This example creates a new workbook, prompts the user for a file name, and then saves the workbook.

Set NewBook = Workbooks.Add
Do
    fName = Application.GetSaveAsFilename
Loop Until fName <> False
NewBook.SaveAs Filename:=fName
SaveAsODC Method

Saves the PivotTable cache source as an Microsoft Office Data Connection file.

expression.SaveAsODC(ODCFileName, Description, Keywords)

expression  Required. An expression that returns one of the objects in the Applies To list.

ODCFileName  Required String. Location to save the file.

Description  Optional Variant. Description that will be saved in the file.

Keywords  Optional Variant. Space-separated keywords that can be used to search for this file.
Example

The following example saves the cache source as an ODC file titled "ODCFile". This example assumes a PivotTable cache exists on the active worksheet.

Sub UseSaveAsODC()
    Application.ActiveWorkbook.PivotCaches.Item(1).SaveAsODC("ODCFile")
End Sub
SaveCopyAs Method

Saves a copy of the workbook to a file but doesn't modify the open workbook in memory.

expression.SaveCopyAs(Filename)

expression Required. An expression that returns a Workbook object.

Filename Required. Specifies the file name for the copy.
Example

This example saves a copy of the active workbook.

ActiveWorkbook.SaveCopyAs "C:\TEMP\XXXX.XLS"
SaveWorkspace Method

Saves the current workspace.

\textit{expression}\texttt{.SaveWorkspace(Filename)}

\textit{expression} Required. An expression that returns an \texttt{Application} object.

\textit{Filename} Optional \texttt{Variant}. The saved file name.
Example

This example saves the current workspace as "saved workspace.xlw".

Application.**SaveWorkspace** "saved workspace"
ScaleHeight Method

Scales the height of the shape by a specified factor. For pictures and OLE objects, you can indicate whether you want to scale the shape relative to the original or the current size. Shapes other than pictures and OLE objects are always scaled relative to their current height.

expression.ScaleHeight(Factor,RelativeToOriginalSize,Scale)

expression Required. An expression that returns one of the objects in the Applies To list.

Factor Required Single. Specifies the ratio between the height of the shape after you resize it and the current or original height. For example, to make a rectangle 50 percent larger, specify 1.5 for this argument.

RelativeToOriginalSize Required MsoTriState. msoTrue to scale the shape relative to its original size. msoFalse to scale it relative to its current size. You can specify msoTrue for this argument only if the specified shape is a picture or an OLE object.

MsoTriState can be one of these MsoTriState constants.

msoCTrue Does not apply to this property.
msoFalse Scale the shape relative to its current size.
msoTriStateMixed Does not apply to this property.
msoTriStateToggle Does not apply to this property.
msoTrue Scale the shape relative to its original size.

Scale Optional MsoScaleFrom. Specifies which part of the shape retains its position when the shape is scaled.

MsoScaleFrom can be one of these MsoScaleFrom constants.
msoScaleFromBottomRight
msoScaleFromMiddle
Example

This example scales all pictures and OLE objects on myDocument to 175 percent of their original height and width, and it scales all other shapes to 175 percent of their current height and width.

Set myDocument =Worksheets(1)
For Each s In myDocument.Shapes
    Select Case s.Type
        Case msoEmbeddedOLEObject, _
            msoLinkedOLEObject, _
            msoOLEControlObject, _
            msoLinkedPicture, msoPicture
            s.ScaleHeight 1.75, msoTrue
            s.ScaleWidth 1.75, msoTrue
        Case Else
            s.ScaleHeight 1.75, msoFalse
            s.ScaleWidth 1.75, msoFalse
    End Select
Next
ScaleWidth Method

Scales the width of the shape by a specified factor. For pictures and OLE objects, you can indicate whether you want to scale the shape relative to the original or the current size. Shapes other than pictures and OLE objects are always scaled relative to their current width.

expression.ScaleWidth(Factor, RelativeToOriginalSize, Scale)

expression Required. An expression that returns one of the objects in the Applies To list.

Factor Required Single. Specifies the ratio between the width of the shape after you resize it and the current or original width. For example, to make a rectangle 50 percent larger, specify 1.5 for this argument.

RelativeToOriginalSize Required MsoTriState. False to scale it relative to its current size. You can specify True for this argument only if the specified shape is a picture or an OLE object.

MsoTriState can be one of these MsoTriState constants.

msoCTrue Does not apply to this property.
msoFalse To scale it relative to its current size.
msoTriStateMixed Does not apply to this property.
msoTriStateToggle Does not apply to this property.
msoTrue Can only use this argument if the specified shape is a picture or an OLE object.

Scale Optional MsoScaleFrom. Specifies which part of the shape retains its position when the shape is scaled.

MsoScaleFrom can be one of these MsoScaleFrom constants.
msoScaleFromBottomRight
msoScaleFromMiddle
Example

This example scales all pictures and OLE objects on myDocument to 175 percent of their original height and width, and it scales all other shapes to 175 percent of their current height and width.

Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    Select Case s.Type
    Case msoEmbeddedOLEObject, msoLinkedOLEObject, msoOLEControlObject, msoLinkedPicture, msoPicture
        s.ScaleHeight 1.75, msoTrue
        s.ScaleWidth 1.75, msoTrue
    Case Else
        s.ScaleHeight 1.75, msoFalse
        s.ScaleWidth 1.75, msoFalse
    End Select
Next
Scenarios Method

Returns an object that represents either a single scenario (a Scenario object) or a collection of scenarios (a Scenarios object) on the worksheet.

expression.Scenarios(Index)

expression Required. An expression that returns a Worksheet object.

Index Optional Variant. The name or number of the scenario. Use an array to specify more than one scenario.
Example

This example sets the comment for the first scenario on Sheet1.

`Worksheets("Sheet1").Scenarios(1).Comment = "Worst-case July 1993 sales"`
ScrollIntoView Method

Scrolls the document window so that the contents of a specified rectangular area are displayed in either the upper-left or lower-right corner of the document window or pane (depending on the value of the Start argument).

expression.ScrollIntoView(Left, Top, Width, Height, Start)

expression An expression that returns a Pane or Window object.

Left Required Long. The horizontal position of the rectangle (in points) from the left edge of the document window or pane.

Top Required Long. The vertical position of the rectangle (in points) from the top of the document window or pane.

Width Required Long. The width of the rectangle, in points.

Height Required Long. The height of the rectangle, in points.

Start Optional Variant. True to have the upper-left corner of the rectangle appear in the upper-left corner of the document window or pane. False to have the lower-right corner of the rectangle appear in the lower-right corner of the document window or pane. The default value is True.
Remarks

The *Start* argument is useful for orienting the screen display when the rectangle is larger than the document window or pane.
Example

This example defines a 100-by-200-pixel rectangle in the active document window, positioned 20 pixels from the top of the window and 50 pixels from the left edge of the window. The example then scrolls the document up and to the left so that the upper-left corner of the rectangle is aligned with the upper-left corner of the window.

ActiveWindow.Dispose
ActiveWindow.ScrollIntoView _
    Left:=50, Top:=20,
    Width:=100, Height:=200
ScrollWorkbookTabs Method

Scrolls through the workbook tabs at the bottom of the window. Doesn't affect the active sheet in the workbook.

expression.ScrollWorkbookTabs(Sheets, Position)

expression Required. An expression that returns a Window object.

Sheets Optional Variant. The number of sheets to scroll by. Use a positive number to scroll forward, a negative number to scroll backward, or 0 (zero) to not scroll at all. You must specify Sheets if you don't specify Position.

Position Optional Variant. Use xlFirst to scroll to the first sheet, or use xlLast to scroll to the last sheet. You must specify Position if you don't specify Sheets.
Example

This example scrolls through the workbook tabs to the last sheet in the workbook.

ActiveWindow.ScrollWorkbookTabs position:=xlLast
Select Method

- Select method as it applies to the ChartObject, ChartObjects, OLEObject, and OLEObjects objects.

Selects the object.

expression.Select(Replace)

expression Required. An expression that returns one of the above objects.

Replace Optional Variant. True to replace the current selection with the specified object. False to extend the current selection to include any previously selected objects and the specified object.

- Select method as it applies to the DataTable and LeaderLines objects.

Selects the object.

expression.Select

expression Required. An expression that returns one of the above objects.

- Select method as it applies to the Chart, Charts, Shape, ShapeRange, Sheets, Worksheet, and Worksheets objects.

Selects the object.

expression.Select(Replace)

expression Required. An expression that returns one of the above objects.

Replace Optional Variant. The object to replace.

- Select method as it applies to all other objects in the Applies To list.
Selects the object.

*expression*.Select

*expression*  Required. An expression that returns all other objects in the Applies To list.
Remarks

To select a cell or a range of cells, use the **Select** method. To make a single cell the active cell, use the **Activate** method.
Example

This example selects cells A1:B3 on Sheet1.

Worksheets("Sheet1").Activate
Range("A1:B3").Select
**SelectAll Method**

Selects all the shapes in the specified CanvasShapes, DiagramNodeChildren, DiagramNodes, or Shapes collection.

*expression.SelectAll*

*expression*    Required. An expression that returns one of the objects in the Applies To list.
Example

This example selects all the shapes on myDocument and creates a ShapeRange collection containing all the shapes.

Set myDocument = Worksheets(1)
myDocument.Shapes.SelectAll

Set sr = Selection.ShapeRange
SendForReview Method

Sends a workbook in an e-mail message for review to the specified recipients.

expression.SendForReview(Recipients, Subject, ShowMessage, IncludeAttachment)

expression  Required. An expression that returns one of the objects in the Applies To list.

Recipients  Optional Variant. A string that lists the people to whom to send the message. These can be unresolved names and aliases in an e-mail phone book or full e-mail addresses. Separate multiple recipients with a semicolon (;). If left blank and ShowMessage is False, you will receive an error message, and the message will not be sent.

Subject  Optional Variant. A string for the subject of the message. If left blank, the subject will be: Please review "filename".

ShowMessage  Optional Variant. A Boolean value that indicates whether the message should be displayed when the method is executed. The default value is True. If set to False, the message is automatically sent to the recipients without first showing the message to the sender.

IncludeAttachment  Optional Variant. A Boolean value that indicates whether the message should include an attachment or a link to a server location. The default value is True. If set to False, the document must be stored at a shared location.
Remarks

The **SendForReview** method starts a collaborative review cycle. Use the **EndReview** method to end a review cycle.
Example

This example automatically sends the active workbook as an attachment in an e-mail message to the specified recipients.

Sub WebReview()
    ActiveWorkbook.SendForReview _
    Recipients:="someone@microsoft.com; amy jones; lewjudy", _
    Subject:="Please review this document.", _
    ShowMessage:=False, _
    IncludeAttachment:=True
End Sub
SendKeys Method

Sends keystrokes to the active application.

expression.SendKeys(Keys, Wait)

expression  Optional. An expression that returns an Application object.

Keys  Required Variant. The key or key combination you want to send to the application, as text.

Wait  Optional Variant. True to have Microsoft Excel wait for the keys to be processed before returning control to the macro. False (or omitted) to continue running the macro without waiting for the keys to be processed.
Remarks

This method places keystrokes in a key buffer. In some cases, you must call this method before you call the method that will use the keystrokes. For example, to send a password to a dialog box, you must call the SendKeys method before you display the dialog box.

The Keys argument can specify any single key or any key combined with ALT, CTRL, or SHIFT (or any combination of those keys). Each key is represented by one or more characters, such as "a" for the character a, or "{ENTER}" for the ENTER key.

To specify characters that aren't displayed when you press the corresponding key (for example, ENTER or TAB), use the codes listed in the following table. Each code in the table represents one key on the keyboard.

<table>
<thead>
<tr>
<th>Key</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACKSPACE</td>
<td>{BACKSPACE} or {BS}</td>
</tr>
<tr>
<td>BREAK</td>
<td>{BREAK}</td>
</tr>
<tr>
<td>CAPS LOCK</td>
<td>{CAPSLOCK}</td>
</tr>
<tr>
<td>CLEAR</td>
<td>{CLEAR}</td>
</tr>
<tr>
<td>DELETE or DEL</td>
<td>{DELETE} or {DEL}</td>
</tr>
<tr>
<td>DOWN ARROW</td>
<td>{DOWN}</td>
</tr>
<tr>
<td>END</td>
<td>{END}</td>
</tr>
<tr>
<td>ENTER (numeric keypad)</td>
<td>{ENTER}</td>
</tr>
<tr>
<td>ENTER</td>
<td>~ (tilde)</td>
</tr>
<tr>
<td>ESC</td>
<td>{ESCAPE} or {ESC}</td>
</tr>
<tr>
<td>HELP</td>
<td>{HELP}</td>
</tr>
<tr>
<td>HOME</td>
<td>{HOME}</td>
</tr>
<tr>
<td>INS</td>
<td>{INSERT}</td>
</tr>
<tr>
<td>LEFT ARROW</td>
<td>{LEFT}</td>
</tr>
<tr>
<td>NUM LOCK</td>
<td>{NUMLOCK}</td>
</tr>
<tr>
<td>PAGE DOWN</td>
<td>{PGDN}</td>
</tr>
<tr>
<td>PAGE UP</td>
<td>{PGUP}</td>
</tr>
</tbody>
</table>
RETURN {RETURN}
RIGHT ARROW {RIGHT}
SCROLL LOCK {SCROLLLOCK}
TAB {TAB}
UP ARROW {UP}
F1 through F15 {F1} through {F15}

You can also specify keys combined with SHIFT and/or CTRL and/or ALT. To specify a key combined with another key or keys, use the following table.

**To combine a key with**  
**Precede the key code with**

SHIFT + (plus sign)
CTRL ^ (caret)
ALT % (percent sign)
**Example**

This example uses the **SendKeys** method to quit Microsoft Excel.

`Application.SendKeys("%fx")`
SendMail Method

Sends the workbook by using the installed mail system.

`expression.SendMail(Recipients, Subject, ReturnReceipt)`

`expression` Required. An expression that returns a `Workbook` object.

**Recipients** Required `Variant`. Specifies the name of the recipient as text, or as an array of text strings if there are multiple recipients. At least one recipient must be specified, and all recipients are added as To recipients.

**Subject** Optional `Variant`. Specifies the subject of the message. If this argument is omitted, the document name is used.

**ReturnReceipt** Optional `Variant`. `True` to request a return receipt. `False` to not request a return receipt. The default value is `False`. 
Example

This example sends the active workbook to a single recipient.

ActiveWorkbook.SendMail recipients:="Jean Selva"
SendToBack Method

Sends the object to the back of the z-order.

expression.SendToBack

expression Required. An expression that returns an object in the Applies To list.
Example

This example sends embedded chart one on Sheet1 to the back of the z-order.

`Worksheets("Sheet1").ChartObjects(1).SendToBack`
SeriesCollection Method

Returns an object that represents either a single series (a Series object) or a collection of all the series (a SeriesCollection collection) in the chart or chart group.

expression.SeriesCollection(Index)

expression  Required. An expression that returns a Chart or ChartGroup object.

Index  Optional Variant. The name or number of the series.
Example

This example turns on data labels for series one in Chart1.

Charts("Chart1").SeriesCollection(1).HasDataLabels = True
ServerStart Method

The ServerStart method is called immediately after a real-time data server is instantiated. Returns a Long; negative value or zero indicates failure to start the server; positive value indicates success.

expression.ServerStart(CallbackObject)

expression  Required. An expression that returns an IRtdServer object.

CallbackObject  Required IRTDUpdateEvent object. The callback object.
ServerTerminate Method

Terminates the connection to the real-time data server.

expression.ServerTerminate

expression Required. An expression that returns an IRtdServer object.
SetBackgroundPicture Method

Sets the background graphic for a worksheet or chart.

*expression*.SetBackgroundPicture(*FileName*)

*expression* Required. An expression that returns a `Worksheet` or `Chart` object.

*FileName* Required `String`. The name of the graphic file.
Example

This example sets the background graphic for worksheet one.

`Worksheets(1).SetBackgroundPicture "c:\graphics\watermark.gif"`
This keyword is not implemented. It is reserved for future use.
SetDefaultChart Method

Specifies the name of the chart template that Microsoft Excel will use when creating new charts.

`expression.SetDefaultChart(FormatName)`

`expression`  Required. An expression that returns an Application object.

`FormatName`  Optional Variant. Specifies the name of a custom autoformat. This name can be a string naming a custom autoformat, or it can be the special constant `xlBuiltIn` to specify the built-in chart template.
Example

This example sets the default chart template to the custom autoformat named "Monthly Sales."

Application.SetDefaultChart FormatName:="Monthly Sales"
SetEditingType Method

Sets the editing type of the node specified by `Index`. If the node is a control point for a curved segment, this method sets the editing type of the node adjacent to it that joins two segments. Note that, depending on the editing type, this method may affect the position of adjacent nodes.

```
expression.SetEditingType(Index, EditingType)
```

*expression* Required. An expression that returns one of the objects in the Applies To list.

*Index* Required `Integer`. The node whose editing type is to be set.

*EditingType* Required `MsoEditingType`. The editing property of the vertex.

`MsoEditingType` can be one of these `MsoEditingType` constants.

- `msoEditingAuto`
- `msoEditingCorner`
- `msoEditingSmooth`
- `msoEditingSymmetric`
Example

This example changes all corner nodes to smooth nodes in shape three on myDocument. Shape three must be a freeform drawing.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    For n = 1 to .Count
        If .Item(n).EditingType = msoEditingCorner Then
            .SetEditingType n, msoEditingSmooth
        End If
    Next
End With
SetExtrusionDirection Method

Sets the direction that the extrusion's sweep path takes away from the extruded shape.

expression.SetExtrusionDirection(PresetExtrusionDirection)

 expression Required. An expression that returns one of the objects in the Applies To list.

PresetExtrusionDirection Required MsoPresetExtrusionDirection. Specifies the extrusion direction.

MsoPresetExtrusionDirection can be one of these MsoPresetExtrusionDirection constants.

msoExtrusionBottom
msoExtrusionBottomLeft
msoExtrusionBottomRight
msoExtrusionLeft
msoExtrusionNone
msoExtrusionRight
msoExtrusionTop
msoExtrusionTopLeft
msoExtrusionTopRight
msoPresetExtrusionDirectionMixed
Remarks

This method sets the `PresetExtrusionDirection` property to the direction specified by the `PresetExtrusionDirection` argument.
Example

This example specifies that the extrusion for shape one on myDocument extend toward the top of the shape and that the lighting for the extrusion come from the left.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
    .Visible = True
    .SetExtrusionDirection msoExtrusionTop
    .PresetLightingDirection = msoLightingLeft
End With
SetLinkOnData Method

Sets the name of a procedure that runs whenever a DDE link is updated.

```
expression.SetLinkOnData(Name, Procedure)
```

**expression**  Required. An expression that returns a **Workbook** object.

**Name**  Required **String**. The name of the DDE/OLE link, as returned from the **LinkSources** method.

**Procedure**  Required **String**. The name of the procedure to be run when the link is updated. This can be either a Microsoft Excel 4.0 macro or a Visual Basic procedure. Set this argument to an empty string ("") to indicate that no procedure should run when the link is updated.
Example

This example sets the name of the procedure that runs whenever the DDE link is updated.

`ActiveWorkbook.SetLinkOnData _
  "WinWord|'C:\MSGFILE.DOC'!DDE_LINK1", _
  "my_Link_Update_Macro"`
SetParam Method

Defines a parameter for the specified query table.

expression.SetParam(Type, Value)

expression  Required. An expression that returns one of the objects in the Applies To list.

Type  Required **XlParameterType**.

XlParameterType can be one of these XlParameterType constants.

**xlConstant**. Uses the value specified by the **Value** argument.

**xlPrompt**. Displays a dialog box that prompts the user for the value. The **Value** argument specifies the text shown in the dialog box.

**xlRange**. Uses the value of the cell in the upper-left corner of the range. The **Value** argument specifies a **Range** object

**Value**  Required **Variant**. The value of the specified parameter, as shown in the description of the **Type** argument.
Example

This example changes the SQL statement for query table one. The clause “(city=?)” indicates that the query is a parameter query, and the example sets the value of city to the constant “Oakland.”

```vba
Set qt = Sheets("sheet1").QueryTables(1)
qt.Sql = "SELECT * FROM authors WHERE (city=?)"
Set param1 = qt.Parameters.Add("City Parameter", _
    xlParamTypeVarChar)
param1.SetParam xlConstant, "Oakland"
qt.Refresh
```

This example sets the value of city to the value of cell A2 on worksheet two.

```vba
Set qt = Sheets("sheet1").QueryTables(1)
qt.Sql = "SELECT * FROM authors WHERE (city=?)"
Set param1 = qt.Parameters.Add("City Parameter", _
    xlParamTypeVarChar)
param1.SetParam xlRange, Range("sheet2!a1")
qt.Refresh
```
SetPasswordEncryptionOptions
Method

Sets the options for encrypting workbooks using passwords.

`expression.SetPasswordEncryptionOptions(PasswordEncryptionProvider, PasswordEncryptionAlgorithm, PasswordEncryptionKeyLength, PasswordEncryptionFileProperties)`

`expression` Required. An expression that returns one of the objects in the Applies To list.

`PasswordEncryptionProvider` Optional `Variant`. A case sensitive string of the encryption provider.

`PasswordEncryptionAlgorithm` Optional `Variant`. A case sensitive string of the algorithmic short name (i.e. "RC4").

`PasswordEncryptionKeyLength` Optional `Variant`. The encryption key length which is a multiple of 8 (40 or greater).

`PasswordEncryptionFileProperties` Optional `Variant`. True (default) to encrypt file properties.
Remarks

The PasswordEncryptionProvider, PasswordEncryptionAlgorithm, and PasswordEncryptionKeyLength arguments are not independent of each other. A selected encryption provider limits the set of algorithms and key length that can be chosen.

For the PasswordEncryptionKeyLength argument there is no inherent limit on the range of the key length. The range is determined by the Cryptographic Service Provider which also determines the cryptographic algorithm.
Example

This example sets the password encryption options for the active workbook.

Sub SetPasswordOptions()
    ActiveWorkbook.SetPasswordEncryptionOptions _
        PasswordEncryptionProvider:="Microsoft RSA SChannel Cryptogr_
        PasswordEncryptionAlgorithm:="RC4", _
        PasswordEncryptionKeyLength:=56, _
        PasswordEncryptionFileProperties:=True
End Sub
SetPhonetic Method

Creates **Phonetic** objects for all the cells in the specified range.

`expression.SetPhonetic`

**expression**  An expression that returns a **Range** object.

**Remarks**

Any existing **Phonetic** objects in the specified range are automatically overwritten (deleted) by the new objects you add using this method.
Example

This example creates a **Phonetic** object for each cell in the range A1:A10 on the active worksheet.

`ActiveSheet.Range("A1:A10").SetPhonetic`
SetPosition Method

Sets the location of the node specified by Index. Note that, depending on the editing type of the node, this method may affect the position of adjacent nodes.

\[ expression.SetPosition(\text{Index, } X1, Y1) \]

**Expression** Required. An expression that returns a ShapeNodes object.

**Index** Required Long. The node whose position is to be set.

**X1, Y1** Required Single. The position (in points) of the new node relative to the upper-left corner of the document.
Example

This example moves node two in shape three on myDocument to the right 200 points and down 300 points. Shape three must be a freeform drawing.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    pointsArray = .Item(2).Points
    currXvalue = pointsArray(0, 0)
    currYvalue = pointsArray(0, 1)
    .SetPosition 2, currXvalue + 200, currYvalue + 300
End With
SetSegmentType Method

Sets the segment type of the segment that follows the node specified by **Index**. If the node is a control point for a curved segment, this method sets the segment type for that curve. Note that this may affect the total number of nodes by inserting or deleting adjacent nodes.

*expression*.SetSegmentType(*Index*, *SegmentType*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Index*  Required **Integer**. The node whose segment type is to be set.

*SegmentType*  Required **MsoSegmentType**. Specifies if the segment is straight or curved.

MsoSegmentType can be one of these MsoSegmentType constants.

- **msoSegmentCurve**
- **msoSegmentLine**
Example

This example changes all straight segments to curved segments in shape three on myDocument. Shape three must be a freeform drawing.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    n = 1
    While n <= .Count
        If .Item(n).SegmentType = msoSegmentLine Then
            .SetSegmentType n, msoSegmentCurve
        End If
        n = n + 1
    Wend
End With
```
SetShapesDefaultProperties Method

Makes the formatting of the specified shape the default formatting for the shape.

`expression.SetShapesDefaultProperties`

`expression` Required. An expression that returns a `Shape` object or `ShapeRange` collection.
Example

This example adds a rectangle to myDocument, formats the rectangle's fill, sets the rectangle's formatting as the default shape formatting, and then adds another smaller rectangle to the document. The second rectangle has the same fill as the first one.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    With .AddShape(msoShapeRectangle, 5, 5, 80, 60)
        With .Fill
            .ForeColor.RGB = RGB(0, 0, 255)
            .BackColor.RGB = RGB(0, 204, 255)
            .Patterned msoPatternHorizontalBrick
        End With
        ' Set formatting as default formatting
        .SetShapesDefaultProperties
    End With
    ' Create new shape with default formatting
    .AddShape msoShapeRectangle, 90, 90, 40, 30
End With
**SetSourceData Method**

Sets the source data range for the chart.

`expression.SetSourceData(Source, PlotBy)`

*expression*  Required. An expression that returns a **Chart** object.

*Source*  Required **Range**. The range that contains the source data.

*PlotBy*  Optional **Variant**. Specifies the way the data is to be plotted. Can be either of the following **XlRowCol** constants: **xlColumns** or **xlRows**.
Example

This example sets the source data range for chart one.

Charts(1).SetSourceData Source:=Sheets(1).Range("a1:a10"), _
PlotBy:=xlColumns
SetThreeDFormat Method

Sets the preset extrusion format. Each preset extrusion format contains a set of preset values for the various properties of the extrusion.

\textit{expression}.\textit{SetThreeDFormat}(\textit{PresetThreeDFormat})

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.

\textit{PresetThreeDFormat} Required \textit{MsoPresetThreeDFormat}. Specifies a preset extrusion format that corresponds to one of the options (numbered from left to right, from top to bottom) displayed when you click the \textbf{3-D} button on the Drawing toolbar.

MsoPresetThreeDFormat can be one of these MsoPresetThreeDFormat constants.
\textit{msoPresetThreeDFormatMixed}
\textit{msoThreeD1}
\textit{msoThreeD10}
\textit{msoThreeD11}
\textit{msoThreeD12}
\textit{msoThreeD13}
\textit{msoThreeD14}
\textit{msoThreeD15}
\textit{msoThreeD16}
\textit{msoThreeD17}
\textit{msoThreeD18}
\textit{msoThreeD19}
\textit{msoThreeD2}
\textit{msoThreeD20}
\textit{msoThreeD3}
Remarks

This method sets the `PresetThreeDFormat` property to the format specified by the `PresetThreeDFormat` argument.
Example

This example adds an oval to myDocument and sets its extrusion format to 3D Style 12.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeOval, _
    30, 30, 50, 25).ThreeD
    .Visible = True
    .SetThreeDFormat msoThreeD12
End With
Show Method

- Show method as it applies to the Dialog object.

Displays the built-in dialog box and waits for the user to input data. **Boolean.**


`expression`  Required. An expression that returns one of the above objects.

`arg1, arg2, ..., arg30`  Optional **Variant.** For built-in dialog boxes only, the initial arguments for the command. For more information, see the "Remarks" section.

`Arg1`  Optional **Variant.**

`Arg2`  Optional **Variant.**

`Arg3`  Optional **Variant.**

`Arg4`  Optional **Variant.**

`Arg5`  Optional **Variant.**

`Arg6`  Optional **Variant.**

`Arg7`  Optional **Variant.**

`Arg8`  Optional **Variant.**

`Arg9`  Optional **Variant.**

`Arg10`  Optional **Variant.**
Arg11 Optional Variant.

Arg12 Optional Variant.

Arg13 Optional Variant.

Arg14 Optional Variant.

Arg15 Optional Variant.

Arg16 Optional Variant.

Arg17 Optional Variant.

Arg18 Optional Variant.

Arg19 Optional Variant.

Arg20 Optional Variant.

Arg21 Optional Variant.

Arg22 Optional Variant.

Arg23 Optional Variant.

Arg24 Optional Variant.

Arg25 Optional Variant.

Arg26 Optional Variant.

Arg27 Optional Variant.

Arg28 Optional Variant.

Arg29 Optional Variant.

Arg30 Optional Variant.
Show method as it applies to the **Range** and **Scenario** objects.

For **Range** objects, scrolls through the contents of the active window to move the range into view. The range must consist of a single cell in the active document. For **Scenario** objects, shows the scenario by inserting its values on the worksheet. The affected cells are the changing cells of the scenario. **Variant**.

```
expression.Show
```

*expression*  Required. An expression that returns one of the above objects.

---

Show method as it applies to the **CustomView** object.

Displays the custom view.

```
expression.Show
```

*expression*  Required. An expression that returns one of the above objects.
Remarks

For built-in dialog boxes, this method returns True if the user clicks OK, or it returns False if the user clicks Cancel.

You can use a single dialog box to change many properties at the same time. For example, you can use the Format Cells dialog box to change all the properties of the Font object.

For some built-in dialog boxes (the Open dialog box, for example), you can set initial values using arg1, arg2, ..., arg30. To find the arguments to set, locate the corresponding dialog box constant in Built-In Dialog Box Argument Lists. For example, search for the xlDialogOpen constant to find the arguments for the Open dialog box. For more information about built-in dialog boxes, see the Dialogs collection.
Example

This example displays the **Open** dialog box.

Application.Dialogs(xlDialogOpen).**Show**
ShowAllData Method

Makes all rows of the currently filtered list visible. If AutoFilter is in use, this method changes the arrows to "All."

`expression.ShowAllData`

`expression`  Required. An expression that returns a `Worksheet` object.
Example

This example makes all data on Sheet1 visible. The example should be run on a worksheet that contains a list you filtered using the **AutoFilter** command.

```vba
Worksheets("Sheet1").ShowAllData
```
ShowDataForm Method

Displays the data form associated with the worksheet.

expression.ShowDataForm

expression Required. An expression that returns a Worksheet object.
Remarks

The macro pauses while you’re using the data form. When you close the data form, the macro resumes at the line following the `ShowDataForm` method.

This method runs the custom data form, if one exists.
**Example**

This example displays the data form for Sheet1.

`Worksheets(1).ShowDataForm`
ShowDependents Method

Draws tracer arrows to the direct dependents of the range.

expression.ShowDependents(Remove)

expression Required. An expression that returns a Range object. Must be a single cell.

Remove Optional Variant. True to remove one level of tracer arrows to direct dependents. False to expand one level of tracer arrows. The default value is False.
**Example**

This example draws tracer arrows to dependents of the active cell on Sheet1.

```vba
Worksheets("Sheet1").Activate
ActiveCell.ShowDependents
```

This example removes the tracer arrow for one level of dependents of the active cell on Sheet1.

```vba
Worksheets("Sheet1").Activate
ActiveCell.ShowDependents Remove:=True
```
**ShowErrors Method**

Draws tracer arrows through the precedents tree to the cell that’s the source of the error, and returns the range that contains that cell.

`expression.ShowErrors`

*expression*  Required. An expression that returns a **Range** object.
Example

This example displays a red tracer arrow if there’s an error in the active cell on Sheet1.

Worksheets("Sheet1").Activate
If IsError(ActiveCell.Value) Then
    ActiveCell.ShowErrors
End If
ShowLevels Method

Displays the specified number of row and/or column levels of an outline.

```
expression.ShowLevels(RowLevels, ColumnLevels)
```

*expression* Required. An expression that returns an **Outline** object.

**RowLevels** Optional **Variant**. Specifies the number of row levels of an outline to display. If the outline has fewer levels than the number specified, Microsoft Excel displays all the levels. If this argument is 0 (zero) or is omitted, no action is taken on rows.

**ColumnLevels** Optional **Variant**. Specifies the number of column levels of an outline to display. If the outline has fewer levels than the number specified, Microsoft Excel displays all the levels. If this argument is 0 (zero) or is omitted, no action is taken on columns.
Remarks

You must specify at least one argument.
Example

This example displays row levels one through three and column level one of the outline on Sheet1.

Worksheets("Sheet1").Outline .ShowLevels rowLevels:=3, columnLevels:=1
ShowPages Method

Creates a new PivotTable report for each item in the page field. Each new report is created on a new worksheet.

`expression.ShowPages(PageField)`

`expression` Required. An expression that returns a `PivotTable` object.

`PageField` Optional `Variant`. A string that names a single page field in the report.
Remarks

This method isn’t available for OLAP data sources.
Example

This example creates a new PivotTable report for each item in the page field, which is the field named “Country.”

```
Set pvtTable =Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.ShowPages "Country"
```
ShowPrecedents Method

Draws tracer arrows to the direct precedents of the range.

(expression).ShowPrecedents(Remove)

expression Required. An expression that returns a Range object. Must be a single cell.

Remove Optional Variant. True to remove one level of tracer arrows to direct precedents. False to expand one level of tracer arrows. The default value is False.
Example

This example draws tracer arrows to the precedents of the active cell on Sheet1.

Worksheets("Sheet1").Activate
ActiveCell.ShowPrecedents

This example removes the tracer arrow for one level of precedents of the active cell on Sheet1.

Worksheets("Sheet1").Activate
ActiveCell.ShowPrecedents remove:=True
SmallScroll Method

Scrolls the contents of the window by rows or columns.

```
expression.SmallScroll(Down, Up, ToRight, ToLeft)
```

*expression*  Required. An expression that returns a `Window` object.

*Down*  Optional `Variant`. The number of rows to scroll the contents down.

*Up*  Optional `Variant`. The number of rows to scroll the contents up.

*ToRight*  Optional `Variant`. The number of columns to scroll the contents to the right.

*ToLeft*  Optional `Variant`. The number of columns to scroll the contents to the left.
Remarks

If *Down* and *Up* are both specified, the contents of the window are scrolled by the difference of the arguments. For example, if *Down* is 3 and *Up* is 6, the contents are scrolled up three rows.

If *ToLeft* and *ToRight* are both specified, the contents of the window are scrolled by the difference of the arguments. For example, if *ToLeft* is 3 and *ToRight* is 6, the contents are scrolled to the right three columns.

Any of these arguments can be a negative number.
Example

This example scrolls the contents of the active window of Sheet1 down three rows.

`Worksheets("Sheet1").Activate
ActiveWindow.SmallScroll down:=3`
**Solid Method**

Sets the specified fill to a uniform color. Use this method to convert a gradient, textured, patterned, or background fill back to a solid fill.

`expression.Solid`

`expression`  Required. An expression that returns a `FillFormat` object.
Example

This example converts all fills on myDocument to uniform red fills.

Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    With s.Fill
        .Solid
        .ForeColor.RGB = RGB(255, 0, 0)
    End With
Next
Sort Method

Sorts a PivotTable report, a range, or the active region if the specified range contains only one cell.

\[ \text{expression.Sort(} \text{Key1, Order1, Key2, Type, Order2, Key3, Order3, Header, OrderCustom, MatchCase, Orientation, SortMethod, DataOption1, DataOption2, DataOption3)} \]

expression Required. An expression that returns one of the objects in the Applies To list.

Key1 Optional Variant. The first sort field, as either text (a PivotTable field or range name) or a Range object ("Dept" or Cells(1, 1), for example).

Order1 Optional XLSortOrder. The sort order for the field or range specified in Key1.

XLSortOrder can be one of these XLSortOrder constants.

xIDescending. Sorts Key1 in descending order.

xIAscending default. Sorts Key1 in ascending order.

Key2 Optional Variant. The second sort field, as either text (a PivotTable field or range name) or a Range object. If you omit this argument, there’s no second sort field. Cannot be used when sorting Pivot Table reports.

Type Optional Variant. Specifies which elements are to be sorted. Use this argument only when sorting PivotTable reports.

XLSortType can be one of these XLSortType constants.

xISortLabels. Sorts the PivotTable report by labels.

xISortValues. Sorts the PivotTable report by values.

Order2 Optional XLSortOrder. The sort order for the field or range specified
in **Key2**. Cannot be used when sorting PivotTable reports.

XlSortOrder can be one of these XlSortOrder constants.

**xlDescending**. Sorts **Key2** in descending order.

**xlAscending** *default*. Sorts **Key2** in ascending order.

**Key3** Optional Variant. The third sort field, as either text (a range name) or a Range object. If you omit this argument, there’s no third sort field. Cannot be used when sorting PivotTable reports.

**Order3** Optional XlSortOrder. The sort order for the field or range specified in **Key3**. Cannot be used when sorting PivotTable reports.

XlSortOrder can be one of these XlSortOrder constants.

**xlDescending**. Sorts **Key3** in descending order.

**xlAscending** *default*. Sorts **Key3** in ascending order.

**Header** Optional XlYesNoGuess. Specifies whether or not the first row contains headers. Cannot be used when sorting PivotTable reports.

XlYesNoGuess can be one of these XlYesNoGuess constants.

**xlGuess**. Let Microsoft Excel determine whether there’s a header, and to determine where it is, if there is one.

**xlNo** *default*. (The entire range should be sorted).

**xlYes**. (The entire range should not be sorted).

**OrderCustom** Optional Variant. This argument is a one-based integer offset to the list of custom sort orders. If you omit **OrderCustom**, a normal sort is used.

**MatchCase** Optional Variant. **True** to do a case-sensitive sort; **False** to do a sort that’s not case sensitive. Cannot be used when sorting PivotTable reports.

**Orientation** Optional XlSortOrientation. The sort orientation.

XlSortOrientation can be one of these XlSortOrientation constants.

**xlSortRows** *default*. Sorts by row.

**xlSortColumns**. Sorts by column.
**SortMethod** Optional **XlSortMethod**. The type of sort. Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.

XlSortMethod can be one of these XlSortMethod constants.

**xlStroke** Sorting by the quantity of strokes in each character.

**xlPinYin** default. Phonetic Chinese sort order for characters.

**DataOption1** Optional **XlSortDataOption**. Specifies how to sort text in key 1. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

**xlSortTextAsNumbers**. Treat text as numeric data for the sort.

**xlSortNormal** default. Sorts numeric and text data separately.

**DataOption2** Optional **XlSortDataOption**. Specifies how to sort text in key 2. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

**xlSortTextAsNumbers**. Treats text as numeric data for the sort.

**xlSortNormal** default. Sorts numeric and text data separately.

**DataOption3** Optional **XlSortDataOption**. Specifies how to sort text in key 3. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

**xlSortTextAsNumbers**. Treats text as numeric data for the sort.

**xlSortNormal** default. Sorts numeric and text data separately.
Remarks

The settings for *Header, Order1, Order2, Order3, OrderCustom*, and *Orientation* are saved, for the particular worksheet, each time you use this method. If you don’t specify values for these arguments the next time you call the method, the saved values are used. Set these arguments explicitly each time you use *Sort* method, if you choose not to use the saved values.

Text strings which are not convertible to numeric data are sorted normally.

**Note** If no arguments are defined with the *Sort* method, Microsoft Excel will sort the selection, chosen to be sorted, in ascending order.
Example

This example sorts the range A1:C20 on Sheet1, using cell A1 as the first sort key and cell B1 as the second sort key. The sort is done in ascending order by row, and there are no headers. This example assumes there is data in the range A1:C20.

Sub SortRange1()
    Worksheets("Sheet1").Range("A1:C20").Sort _
        Key1:=Worksheets("Sheet1").Range("A1"), _
        Key2:=Worksheets("Sheet1").Range("B1")
End Sub

This example sorts the region that contains cell A1 (the active region) on Sheet1, sorting by the data in the first column and automatically using a header row if one exists. This example assumes there is data in the active region, which includes cell A1. The **Sort** method determines the active region automatically.

Sub SortRange2()
    Worksheets("Sheet1").Range("A1").Sort _
        Key1:=Worksheets("Sheet1").Columns("A"), _
        Header:=xlGuess
End Sub
SortSpecial Method

Uses East Asian sorting methods to sort the range, a PivotTable report, or uses the method for the active region if the range contains only one cell. For example, Japanese sorts in the order of the Kana syllabary. For more information, see the argument list.

expression.SortSpecial(SortMethod, Key1, Order1, Type, Key2, Order2, Key3, Order3, Header, OrderCustom, MatchCase, Orientation, DataOption1, DataOption2, DataOption3)

expression Required. An expression that returns one of the objects in the Applies To list.

SortMethod Optional XLSortMethod. The type of sort. Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.

XLSortMethod can be one of these XLSortMethod constants.

xlStroke. Sorting by the quantity of strokes in each character.

xlPinYin default. Phonetic Chinese sort order for characters.

Key1 Optional Variant. The first sort field, as either text (a PivotTable field or range name) or a Range object ("Dept" or Cells(1, 1), for example).

Order1 Optional XLSortOrder. The sort order for the field or range specified in the Key1 argument.

XLSortOrder can be one of these XLSortOrder constants.

xlDescending. Sorts Key1 in descending order.

xlAscending default. Sorts Key1 in ascending order.

Type Optional Variant. Specifies which elements are to be sorted. Use this argument only when sorting PivotTable reports.
Key2  Optional Variant. The second sort field, as either text (a PivotTable field or range name) or a Range object. If you omit this argument, there’s no second sort field. Cannot be used when sorting PivotTable reports.

XlSortType can be one of these XlSortType constants.
xlSortLabels. Sorts the PivotTable report by labels.
xlSortValues. Sorts the PivotTable report by values.

Order2  Optional XlSortOrder. The sort order for the field or range specified in the Key2 argument. Cannot be used when sorting PivotTable reports.

XlSortOrder can be one of these XlSortOrder constants.
xlDescending. Sorts Key2 in descending order.
xlAscending default. Sorts Key2 in ascending order.

Key3  Optional Variant. The third sort field, as either text (a range name) or a Range object. If you omit this argument, there’s no third sort field. Cannot be used when sorting PivotTable reports.

Order3  Optional XlSortOrder. The sort order for the field or range specified in the Key3 argument. Cannot be used when sorting PivotTable reports.

XlSortOrder can be one of these XlSortOrder constants.
xlDescending. Sorts Key3 in descending order.
xlAscending default. Sorts Key3 in ascending order.

Header  Optional XlYesNoGuess. Specifies whether or not the first row contains headers. Cannot be used when sorting PivotTable reports.

XlYesNoGuess can be one of these XlYesNoGuess constants.
xlGuess. Lets Microsoft Excel determine whether there’s a header, and to determine where it is, if there is one.
xlNo default. The entire range should be sorted.
xlYes. The entire range should not be sorted.

OrderCustom  Optional Variant. This argument is a one-based integer offset to the list of custom sort orders. If you omit OrderCustom, (normal sort order) is
used.

**MatchCase** Optional **Variant. True** to do a case-sensitive sort; **False** to do a sort that’s not case sensitive. Cannot be used when sorting PivotTable reports.

**Orientation** Optional **XlSortOrientation**. The sort orientation.

XlSortOrientation can be one of these XlSortOrientation constants.

- **xlSortRows default**. The sort is done by row.
- **xlSortColumns**. The sort is done by column.

**DataOption1** Optional **XlSortDataOption**. Specifies how to sort text in key1. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

- **xlSortTextAsNumbers**. Treats text as numeric data for the sort.
- **xlSortNormal default**. Sorts numeric and text data separately.

**DataOption2** Optional **XlSortDataOption**. Specifies how to sort text in key 2. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

- **xlSortTextAsNumbers**. Treats text as numeric data for the sort.
- **xlSortNormal default**. Sorts numeric and text data separately.

**DataOption3** Optional **XlSortDataOption**. Specifies how to sort text in key 3. Cannot be used when sorting PivotTable reports.

XlSortDataOption can be one of these XlSortDataOption constants.

- **xlSortTextAsNumbers**. Treats text numeric data for the sort.
- **xlSortNormal default**. Sorts numeric and text data separately.
Remarks

**Note:** If no arguments are defined with the `Sort` method, Microsoft Excel will sort the selection, chosen to be sorted, in ascending order.
Example

This example sorts the range A1:A5 using Pin Yin (phonetic Chinese sort order for characters). In order to sort Chinese characters, this example assumes the user has Chinese language support for Microsoft Excel. Even without Chinese language support, Excel will default to sorting any numbers placed within the specified range for this example. This example assumes there is data contained in the range A1:A5.

Sub SpecialSort()
    Application.Range("A1:A5").SortSpecial SortMethod:=xlPinYin
End Sub
Show All
Speak Method

- **Speak method as it applies to the Range object.**

Causes the cells of the range to be spoken in row order or column order.

expression.

expression  **Required.** An expression that returns a **Range** object.

**SpeakDirection**  **Optional Variant.** The speak direction, by rows or columns.

**SpeakFormulas**  **Optional Variant.** **True** will cause formulas to be sent to the Text-To-Speech (TTS) engine for cells that have formulas. The value is sent if the cells do not have formulas. **False** (default) will cause values to always be sent to the TTS engine.

- **Speak method as it applies to the Speech object.**

Microsoft Excel plays back the text string that is passed as an argument.

expression.

expression  **Required.** An expression that returns a **Speech** object.

**Text**  **Required String.** The text to be spoken.

**SpeakAsync**  **Optional Variant.** **True** will cause the **Text** to be spoken asynchronously (the method will not wait of the Text to be spoken). **False** will cause the **Text** to be spoken synchronously (the method waits for the **Text** to be spoken before continuing). The default is **False**.

**SpeakXML**  **Optional Boolean.** **True** will cause the **Text** to be interpreted as XML. **False** will cause the **Text** to not be interpreted as XML, so any XML tags will be read and not interpreted. The default is **False**.
**Purge**  Optional **Variant**. **True** will cause current speech to be terminated and any buffered text to be purged before **Text** is spoken. **False** will not cause the current speech to be terminated and will not purge the buffered text before **Text** is spoken. The default is **False**.
Example

In this example, Microsoft Excel speaks "Hello".

Sub UseSpeech()

    Application.Speech.Speak "Hello"

End Sub
SpecialCells Method

Returns a **Range** object that represents all the cells that match the specified type and value. **Range** object.

```
expression.SpecialCells(Type, Value)
```

**expression**  Required. An expression that returns one of the objects in the Applies To list.

**Type**  Required **XlCellType**. The cells to include.

XlCellType can be one of these XlCellType constants.

- **xlCellTypeAllFormatConditions**. Cells of any format
- **xlCellTypeAllValidation**. Cells having validation criteria
- **xlCellTypeBlanks**. Empty cells
- **xlCellTypeComments**. Cells containing notes
- **xlCellTypeConstants**. Cells containing constants
- **xlCellTypeFormulas**. Cells containing formulas
- **xlCellTypeLastCell**. The last cell in the used range
- **xlCellTypeSameFormatConditions**. Cells having the same format
- **xlCellTypeSameValidation**. Cells having the same validation criteria
- **xlCellTypeVisible**. All visible cells

**Value**  Optional **Variant**. If **Type** is either **xlCellTypeConstants** or **xlCellTypeFormulas**, this argument is used to determine which types of cells to include in the result. These values can be added together to return more than one type. The default is to select all constants or formulas, no matter what the type. Can be one of the following **XlSpecialCellsValue** constants:

- **XlSpecialCellsValue** can be one of these XlSpecialCellsValue constants.
- **xlErrors**
- **xlLogical**
xlNumbers
xlTextValues
Example

This example selects the last cell in the used range of Sheet1.

Worksheets("Sheet1").Activate
ActiveSheet.Cells.SpecialCells(xlCellTypeLastCell).Activate
Subtotal Method

- Subtotal method as it applies to the WorksheetFunction object.

Creates subtotals. For information about using the Subtotal worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.


expression  Required. An expression that returns a WorksheetFunction object.

Arg1  Required Double.

Arg2  Required Range object.

Arg3-Arg30  Optional Variant.

- Subtotal method as it applies to the Range object.

Creates subtotals for the range (or the current region, if the range is a single cell).

For information about using the Subtotal worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.

expression.Subtotal(GroupBy, Function, TotalList, Replace, PageBreaks, SummaryBelowData)

expression  Required. An expression that returns a Range object.

GroupBy  Required Long. The field to group by, as a one-based integer offset. For more information, see the example.
**Function**  Required **XlConsolidationFunction**. The subtotal function.

XlConsolidationFunction can be one of these XlConsolidationFunction constants.
- xlAverage
- xlCount
- xlCountNums
- xlMax
- xlMin
- xlProduct
- xlStDev
- xlStDevP
- xlSum
- xlUnknown
- xLVar
- xLVarP

**TotalList**  Required **Variant**. An array of 1-based field offsets, indicating the fields to which the subtotals are added. For more information, see the example.

**Replace**  Optional **Variant**. True to replace existing subtotals. The default value is False.

**PageBreaks**  Optional **Variant**. True to add page breaks after each group. The default value is False.

**SummaryBelowData**  Optional **XlSummaryRow**. Places the summary data relative to the subtotal.

XlSummaryRow can be one of these XlSummaryRow constants.
- xlSummaryAbove
- xlSummaryBelow default
Example

This example creates subtotals for the selection on Sheet1. The subtotals are sums grouped by each change in field one, with the subtotals added to fields two and three.

Worksheets("Sheet1").Activate
Selection.Subtotal GroupBy:=1, Function:=xlSum, _
    TotalList:=Array(2, 3)
**SwapNode Method**

Swaps the source diagram node with a target diagram node.

`expression.SwapNode(pTargetNode, swapChildren)`

- `expression` Required. An expression that returns one of the objects in the Applies To list.
- `pTargetNode` Required `DiagramNode` object. The target diagram node to be replaced.
- `swapChildren` Optional `Boolean`. The child nodes of the target and source nodes being swapped. Any child diagram nodes are moved along with their corresponding root nodes. Default is `True`, which swaps the child nodes.
Example

The following example swaps the second diagram node of a newly-created diagram with the last node.

Sub SwapNode()
    Dim nodRoot As DiagramNode
    Dim nodPrev As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer

    Set shDiagram = ActiveSheet.Shapes.AddDiagram (Type:=msoDiagramRadial, Left:=10, Top:=15, _
        Width:=400, Height:=475)

    ' Add 3 child nodes to the root node.
    For intCount = 1 To 3
        nodRoot.Children.AddNode
    Next

    ' Swap the second node with the fourth node.
    nodRoot.Children.Item(2).SwapNode _
        pTargetNode:=nodRoot.Diagram.Nodes(4), _
        swapChildren:=True

End Sub
Table Method

Creates a data table based on input values and formulas that you define on a worksheet.

*expression*.Table(*RowInput*, *ColumnInput*)

*expression* Required. An expression that returns an object in the Applies To list.

*RowInput* Optional Variant. A single cell to use as the row input for your table.

*ColumnInput* Optional Variant. A single cell to use as the column input for your table.
Remarks

Use data tables to perform a what-if analysis by changing certain constant values on your worksheet to see how values in other cells are affected.
Example

This example creates a formatted multiplication table in cells A1:K11 on Sheet1.

```vba
Set dataTableRange = Worksheets("Sheet1").Range("A1:K11")
Set rowInputCell = Worksheets("Sheet1").Range("A12")
Set columnInputCell = Worksheets("Sheet1").Range("A13")

Worksheets("Sheet1").Range("A1").Formula = "+=A12*A13"
For i = 2 To 11
    Worksheets("Sheet1").Cells(i, 1) = i - 1
    Worksheets("Sheet1").Cells(1, i) = i - 1
Next i
dataTableRange.Table rowInputCell, columnInputCell
With Worksheets("Sheet1").Range("A1").CurrentRegion
    .Rows(1).Font.Bold = True
    .Columns(1).Font.Bold = True
    .Columns.AutoFit
End With
```
Text Method

- Text method as it applies to the WorksheetFunction object.

Converts a value to text in a specific number format.

\textit{expression}.\texttt{Text(Arg1, Arg2)}

\textit{expression}  Required. An expression that returns one of the above objects.

\textit{Arg1}  Required \textbf{Variant}. A numeric value, a formula that evaluates to a numeric value, or a reference to a cell containing a numeric value.

\textit{Arg2}  Required \textbf{String}. A number format in text form in the \textbf{Category} box on the \textbf{Number} tab in the \textbf{Format Cells} dialog box.

- Text method as it applies to the Comment object.

Sets comment text.

\textit{expression}.\texttt{Text(Text, Start, Overwrite)}

\textit{expression}  Required. An expression that returns one of the above objects.

\textit{Text}  Optional \textbf{Variant}. The text to be added.

\textit{Start}  Optional \textbf{Variant}. The character number where the added text will be placed. If this argument is omitted, any existing text in the comment is deleted.

\textit{Overwrite}  Optional \textbf{Variant}. \textbf{True} to overwrite the existing text. The default value is \textbf{False} (text is inserted).
Example

This example adds a comment to cell E5 on sheet one.

With Worksheets(1).Range("e5").AddComment
  .Visible = False
  .Text "reviewed on " & Date
End With
TextToColumns Method

Parses a column of cells that contain text into several columns.

\[ \text{expression}.\text{TextToColumns}(\text{Destination, DataType, TextQualifier, ConsecutiveDelimiter, Tab, Semicolon, Comma, Space, Other, OtherChar, FieldInfo, DecimalSeparator, ThousandsSeparator, TrailingMinusNumbers}) \]

\text{expression} \quad \text{Required. An expression that returns one of the objects in the Applies To list.} \\
\text{Destination} \quad \text{Optional Variant. A Range object that specifies where Microsoft Excel will place the results. If the range is larger than a single cell, the top left cell is used.} \\
\text{DataType} \quad \text{Optional XlTextParsingType. The format of the text to be split into columns.} \\
\text{XlTextParsingType} \text{ can be one of these XlTextParsingType constants.} \\
xlDelimited \text{ default} \\
xlFixedWidth \\
\text{TextQualifier} \quad \text{Optional XlTextQualifier.} \\
\text{XlTextQualifier} \text{ can be one of these XlTextQualifier constants.} \\
xlTextQualifierDoubleQuote \text{ default} \\
xlTextQualifierNone \\
xlTextQualifierSingleQuote \\
\text{ConsecutiveDelimiter} \quad \text{Optional Variant. True to have Microsoft Excel consider consecutive delimiters as one delimiter. The default value is False.} \\
\text{Tab} \quad \text{Optional Variant. True to have DataType be xlDelimited and to have the tab character be a delimiter. The default value is False.}
**Semicolon**  Optional Variant. True to have *DataType* be *xlDelimited* and to have the semicolon be a delimiter. The default value is False.

**Comma**  Optional Variant. True to have *DataType* be *xlDelimited* and to have the comma be a delimiter. The default value is False.

**Space**  Optional Variant. True to have *DataType* be *xlDelimited* and to have the space character be a delimiter. The default value is False.

**Other**  Optional Variant. True to have *DataType* be *xlDelimited* and to have the character specified by the *OtherChar* argument be a delimiter. The default value is False.

**OtherChar**  Optional Variant (required if Other is True). The delimiter character when Other is True. If more than one character is specified, only the first character of the string is used; the remaining characters are ignored.

**FieldInfo**  Optional Variant. An array containing parse information for the individual columns of data. The interpretation depends on the value of *DataType*. When the data is delimited, this argument is an array of two-element arrays, with each two-element array specifying the conversion options for a particular column. The first element is the column number (1-based), and the second element is one of the *xlColumnDataType* constants specifying how the column is parsed.

*xlColumnDataType* can be one of these *xlColumnDataType* constants.

*xlGeneralFormat*. General

*xlTextFormat*. Text

*xlMDYFormat*. MDY Date

*xlDMYFormat*. DMY Date

*xlYMDFormat*. YMD Date

*xlMYDFormat*. MYD Date

*xlYDMFormat*. YDM Date

*xlDYMFormat*. DYM Date

*xlYDMFormat*. YDM Date
xlEMDFormat. EMD Date

xlSkipColumn. Skip Column

You can use xlEMDFormat only if Taiwanese language support is installed and selected. The xlEMDFormat constant specifies that Taiwanese era dates are being used.

The column specifiers can be in any order. If a given column specifier is not present for a particular column in the input data, the column is parsed with the General setting. This example causes the third column to be skipped, the first column to be parsed as text, and the remaining columns in the source data to be parsed with the General setting.

Array(Array(3, 9), Array(1, 2))

If the source data has fixed-width columns, the first element of each two-element array specifies the starting character position in the column (as an integer; 0 (zero) is the first character). The second element of the two-element array specifies the parse option for the column as a number from 1 through 9, as listed above.

The following example parses two columns from a fixed-width file, with the first column starting at the beginning of the line and extending for 10 characters. The second column starts at position 15 and goes to the end of the line. To avoid including the characters between position 10 and position 15, Microsoft Excel adds a skipped column entry.

Array(Array(0, 1), Array(10, 9), Array(15, 1))

DecimalSeparator. Optional String. The decimal separator that Microsoft Excel uses when recognizing numbers. The default setting is the system setting.

ThousandsSeparator. Optional String. The thousands separator that Excel uses when recognizing numbers. The default setting is the system setting.

TrailingMinusNumbers. Optional Variant. Numbers that begin with a minus character.
The following table shows the results of importing text into Excel for various import settings. Numeric results are displayed in the rightmost column.

<table>
<thead>
<tr>
<th>System decimal separator</th>
<th>System thousands separator</th>
<th>Decimal separator value</th>
<th>Thousands separator value</th>
<th>Original text</th>
<th>Cell value (data type)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Period</td>
<td>123.123,45</td>
<td>123,123.45 (numeric)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Comma</td>
<td>123.123,45</td>
<td>123,123.45 (text)</td>
</tr>
<tr>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>123,123.45</td>
<td>123,123.45 (numeric)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>123 123.45</td>
<td>123 123.45 (text)</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Space</td>
<td>123 123.45</td>
<td>123,123.45 (numeric)</td>
</tr>
</tbody>
</table>
Example

This example converts the contents of the Clipboard, which contains a space-delimited text table, into separate columns on Sheet1. You can create a simple space-delimited table in Notepad or WordPad (or another text editor), copy the text table to the Clipboard, switch to Microsoft Excel, and then run this example.

Worksheets("Sheet1").Activate
ActiveSheet.Paste
Selection.TextToColumns DataType:=xlDelimited, _
    ConsecutiveDelimiter:=True, Space:=True
**ToggleVerticalText Method**

Switches the text flow in the specified WordArt from horizontal to vertical, or vice versa.

`expression.ToggleVerticalText`

*expression*  Required. An expression that returns a `TextEffectFormat` object.
Remarks

Using the `ToggleVerticalText` method swaps the values of the `Width` and `Height` properties of the `Shape` object that represents the WordArt and leaves the `Left` and `Top` properties unchanged.

The `Flip` method and `Rotation` property of the `Shape` object and the `RotatedChars` property and `ToggleVerticalText` method of the `TextEffectFormat` object all affect the character orientation and the direction of text flow in a `Shape` object that represents WordArt. You may have to experiment to find out how to combine the effects of these properties and methods to get the result you want.
Example

This example adds WordArt that contains the text "Test" to myDocument and switches from horizontal text flow (the default for the specified WordArt style, msoTextEffect1) to vertical text flow.

Set myDocument = Worksheets(1)
Set newWordArt = myDocument.Shapes.AddTextEffect(_
    PresetTextEffect:=msoTextEffect1, Text:="Test", _
    FontName:="Arial Black", FontSize:=36, _
    FontBold:=False, FontItalic:=False, Left:=100, _
    Top:=100)
newWordArt.TextEffect.ToggleVerticalText
TransferChildren Method

Transfers the child nodes of a source diagram node to a receiving diagram node.

*expression*.TransferChildren(*pReceivingNode*)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*pReceivingNode*  Required *DiagramNode* object. The diagram node receiving the child nodes being transferred from the node signified in *expression*.
Example

The following example transfers the child nodes of a newly-created diagram from one node to another.

Sub TransferChildNodes()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add organizational chart to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram _
        (Type:=msoDiagramOrgChart, Left:=10, _
         Top:=15, Width:=400, Height:=475)

    'Add first node to organizational chart

    'Add three child nodes to first node
    For intCount = 1 To 3
        dgnNode.Children.AddNode
    Next intCount

    'Add three child nodes to the first child node
    'of the first node
    For intCount = 1 To 3
    Next intCount

    'Moves the child nodes of the first child node
    'so they become child nodes of the third child node
    dgnNode.Children.Item(1).TransferChildren _
        pReceivingNode:=dgnNode.Children.Item(3)
End Sub
Trendlines Method

Returns an object that represents a single trendline (a Trendline object) or a collection of all the trendlines (a Trendlines collection) for the series.

`object.Trendlines(Index)`

*object*  Required. The Series object.

*Index*  Optional Variant. The name or number of the trendline.
Example

This example adds a linear trendline to series one in Chart1.

Charts("Chart1").SeriesCollection(1).Trendlines.Add Type:=xlLinear
TwoColorGradient Method

- TwoColorGradient method as it applies to the FillFormat object.

Sets the specified fill to a two-color gradient.

expression.TwoColorGradient(Style, Variant)

evaluation Expression. Required. An expression that returns one of the above objects.

Style Required MsoGradientStyle.

MsoGradientStyle can be one of these MsoGradientStyle constants.

- msoGradientDiagonalDown
- msoGradientDiagonalUp
- msoGradientFromCenter
- msoGradientFromCorner
- msoGradientFromTitle
- msoGradientHorizontal
- msoGradientMixed
- msoGradientVertical

Variant Required Integer. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the Gradient tab in the Fill Effects dialog box. If Style is msoGradientFromCenter, the Variant argument can only be 1 or 2.

- TwoColorGradient method as it applies to the ChartFillFormat object.

Sets the specified fill to a two-color gradient.

expression.TwoColorGradient(Style, Variant)
expression  Required. An expression that returns one of the above objects.

Style  Required **MsoGradientStyle**.

MsoGradientStyle can be one of these MsoGradientStyle constants.

- **msoGradientDiagonalDown**
- **msoGradientDiagonalUp**
- **msoGradientFromCenter**
- **msoGradientFromCorner**
- **msoGradientFromTitle**
- **msoGradientHorizontal**
- **msoGradientMixed**
- **msoGradientVertical**

**Variant**  Required **Long**. The gradient variant. Can be a value from 1 through 4, corresponding to one of the four variants on the **Gradient** tab in the **Fill Effects** dialog box. If **Style** is **msoGradientFromCenter**, the **Variant** argument can only be 1 or 2.
Example

This example sets the foreground color, background color, and gradient for the chart area fill on chart one.

With Charts(1).ChartArea.Fill
  .Visible = True
  .ForeColor.SchemeColor = 15
  .BackColor.SchemeColor = 17
  .TwoColorGradient msoGradientHorizontal, 1
End With
Undo Method

- Cancels the last user-interface action.

expression.\texttt{Undo}

\textit{expression}  Required. An expression that returns an \texttt{Application} object.
**Remarks**

This method undoes only the last action taken by the user before running the macro, and it must be the first line in the macro. It cannot be used to undo Visual Basic commands.
Example

This example cancels the last user-interface action. The example must be the first line in a macro.

Application. **Undo**
Show All
Ungroup Method

- Ungroup method as it applies to the Range object.

Promotes a range in an outline (that is, decreases its outline level). The specified range must be a row or column, or a range of rows or columns. If the range is in a PivotTable report, this method ungroups the items contained in the range.

expression.**Ungroup**

**expression**  Required. An expression that returns a Range object.
Remarks

If the active cell is in a field header of a parent field, all the groups in that field are ungrouped and the field is removed from the PivotTable report. When the last group in a parent field is ungrouped, the entire field is removed from the report.

- **Ungroup method as it applies to the Shape and ShapeRange objects.**

Ungroups any grouped shapes in the specified shape or range of shapes. Disassembles pictures and OLE objects within the specified shape or range of shapes. Returns the ungrouped shapes as a single ShapeRange object.

expression.**Ungroup**

expression  Required. An expression that returns one of the above objects.
Remarks

Because a group of shapes is treated as a single object, grouping and ungrouping shapes changes the number of items in the Shapes collection and changes the index numbers of items that come after the affected items in the collection.
Example

- **As it applies to the Range object.**

This example ungroups the ORDER_DATE field.

```
Set pvtTable =Worksheets("Sheet1").Range("A3").PivotTable
Set groupRange = pvtTable.PivotFields("ORDER_DATE").DataRange
groupRange.Cells(1).Ungroup
```

- **As it applies to the Shape and ShapeRange objects.**

This example ungroups any grouped shapes and disassembles any pictures or OLE objects on myDocument.

```
Set myDocument =Worksheets(1)
For Each s In myDocument.Shapes
    s.Ungroup
Next
```

This example ungroups any grouped shapes on myDocument without disassembling pictures or OLE objects on the document.

```
Set myDocument =Worksheets(1)
For Each s In myDocument.Shapes
    If s.Type = msoGroup Then s.Ungroup
```
**Union Method**

Returns the union of two or more ranges.

*expression*.Union(*Arg1, Arg2, ...*)

*expression*  Optional. An expression that returns an *Application* object.

*Arg1, Arg2, ...*  Required *Range*. At least two *Range* objects must be specified.
Example

This example fills the union of two named ranges, Range1 and Range2, with the formula =RAND().

Worksheets("Sheet1").Activate
Set bigRange = Application.Union(Range("Range1"), Range("Range2"))
bigRange.Formula = "=RAND()"
**UnMerge Method**

Separates a merged area into individual cells.

*expression*.UnMerge

*expression*  Required. An expression that returns a Range object.
Example

This example separates the merged range that contains cell A3.

With Range("a3")
    If .MergeCells Then
        .MergeArea.UnMerge
    Else
        MsgBox "not merged"
    End If
End With
Unprotect Method

Removes protection from a sheet or workbook. This method has no effect if the sheet or workbook isn't protected.

```
expression.Unprotect(Password)
```

**expression** Required. An expression that returns a **Chart**, **Workbook**, or **Worksheet** object.

**Password** Optional **Variant**. A string that denotes the case-sensitive password to use to unprotect the sheet or workbook. If the sheet or workbook isn't protected with a password, this argument is ignored. If you omit this argument for a sheet that's protected with a password, you'll be prompted for the password. If you omit this argument for a workbook that's protected with a password, the method fails.
Remarks

If you forget the password, you cannot unprotect the sheet or workbook. It's a good idea to keep a list of your passwords and their corresponding document names in a safe place.
Example

This example removes protection from the active workbook.

ActiveWorkbook.Unprotect
UnprotectSharing Method

Turns off protection for sharing and saves the workbook.

expression.UnprotectSharing(SharingPassword)

expression Required. An expression that returns a Workbook object.

SharingPassword Optional Variant. The workbook password.
Example

This example turns off protection for sharing and saves the active workbook.

ActiveWorkbook.UnprotectSharing Password:="drowssap"
Update Method

Updates the link or PivotTable report.

\textit{expression.Update}

\textit{expression} Required. An expression that returns an \texttt{OLEObject} or \texttt{PivotTable} object.
Example

This example updates the link to OLE object one on Sheet1.

Worksheets("Sheet1").OLEObjects(1).Update
UpdateFromFile Method

Updates a read-only workbook from the saved disk version of the workbook if the disk version is more recent than the copy of the workbook that is loaded in memory. If the disk copy hasn't changed since the workbook was loaded, the in-memory copy of the workbook isn't reloaded.

expression.UpdateFromFile

expression Required. An expression that returns a Workbook object.
Remarks

This method is useful when a workbook is opened as read-only by user A and opened as read/write by user B. If user B saves a newer version of the workbook to disk while user A still has the workbook open, user A cannot get the updated copy without closing and reopening the workbook and losing view settings. The **UpdateFromFile** method updates the in-memory copy of the workbook from the disk file.
Example

This example updates the active workbook from the disk version of the file.

ActiveWorkbook.**UpdateFromFile**
UpdateLink Method

- Updates a Microsoft Excel, DDE, or OLE link (or links).

expression.UpdateLink(Name, Type)

expression  Required. An expression that returns a Workbook object.

Name  Optional String. The name of the Microsoft Excel or DDE/OLE link to be updated, as returned from the LinkSources method.

Type  Optional XlLinkType.

XlReferenceStyle can be one of these XlReferenceStyle constants.

xlLinkTypeExcelLinks default.

xlLinkTypeOLELinks (also used for DDE links)
Remark

Note When the **UpdateLink** method is called without any parameters, Excel defaults to updating all worksheet links.
Example

This example updates all links in the active workbook.

```
ActiveWorkbook.UpdateLink Name:=ActiveWorkbook.LinkSources
```
UpdateNotify Method

The RTD server informs Microsoft Excel that new data has been received.

expression.UpdateNotify

expression  Required. An expression that returns an IRTDUpdateEvent object.
UseDefaultFolderSuffix Method

Sets the folder suffix for the specified document to the default suffix for the language support you have selected or installed.

`expression.UseDefaultFolderSuffix`

`expression`  An expression that returns a `WebOptions` object.
Remarks

Microsoft Excel uses the folder suffix when you save a document as a Web page, use long file names, and choose to save supporting files in a separate folder (that is, if the `UseLongFileNames` and `OrganizeInFolder` properties are set to `True`).

The suffix appears in the folder name after the document name. For example, if the document is called "Book1" and the language is English, the folder name is Book1_files. The available folder suffixes are listed in the `FolderSuffix` property topic.
Example

This example sets the folder suffix for the first workbook to the default suffix.

`Workbooks(1).WebOptions.UseDefaultFolderSuffix`
Show All
UserPicture Method

- UserPicture method as it applies to the FillFormat object.

Fills the specified shape with an image.

expression.UserPicture(PictureFile)

eexpression Required. An expression that returns one of the above objects.

PictureFile Required String. The name of the picture file.

- UserPicture method as it applies to the ChartFillFormat object.

Fills the specified shape with an image.

expression.UserPicture(PictureFile, PictureFormat, PictureStackUnit, PicturePlacement)

eexpression Required. An expression that returns one of the above objects.

PictureFile Optional Variant.

PictureFormat Required XlChartPictureType.

XlChartPictureType can be one of these XlChartPictureType constants.
xlStack
xlStackScale
xlStretch

PictureStackUnit Required Long. The picture stack or scale unit (depends on the PictureFormat argument).
**PicturePlacement** Required **XlChartPicturePlacement**.

XlChartPicturePlacement can be one of these XlChartPicturePlacement constants.
- xlAllFaces
- xlEnd
- xlEndSides
- xlFront
- xlFrontEnd
- xlFrontSides
- xlSides
Example

This example sets the fill format for chart two.

Charts(2).ChartArea.Fill.UserPicture "brick.gif"
UserTextured Method

Fills the specified shape with small tiles of an image. If you want to fill the shape with one large image, use the UserPicture method.

\( \text{expression}.\text{UserTextured} (\text{TextureFile}) \)

\textit{expression}  Required. An expression that returns a \texttt{FillFormat} object.

\textit{TextureFile}  Required \texttt{String}. The name of the picture file.
Example

This example sets the fill format for chart two.

Charts(2).ChartArea.Fill.UserTextured "brick.gif"
Verb Method

Sends a verb to the server of the specified OLE object.

expression.Verb(Verb)

expression  Required. An expression that returns an OLEObject object.

Verb  Optional Variant. The verb that the server of the OLE object should act on. If this argument is omitted, the default verb is sent. The available verbs are determined by the object's source application. Typical verbs for an OLE object are Open and Primary (represented by the XIOLEVerb constants xlOpen and xlPrimary).
**Example**

This example sends the default verb to the server for OLE object one on Sheet1.

`Worksheets("Sheet1").OLEObjects(1).Verb`
Volatile Method

Marks a user-defined function as volatile. A volatile function must be recalculated whenever calculation occurs in any cells on the worksheet. A nonvolatile function is recalculated only when the input variables change. This method has no effect if it's not inside a user-defined function used to calculate a worksheet cell.

expression.Volatile(Volatile)

expression  Required. An expression that returns an Application object.

Volatile  Optional Variant. True to mark the function as volatile. False to mark the function as nonvolatile. The default value is True
Example

This example marks the user-defined function "My_Func" as volatile. The function will be recalculated whenever calculation occurs in any cells on the worksheet on which this function appears.

Function My_Func()
    Application.Volatile
    '
    ' Remainder of the function
    ">
End Function
Wait Method

Pauses a running macro until a specified time. Returns True if the specified time has arrived.

Important The Wait method suspends all Microsoft Excel activity and may prevent you from performing other operations on your computer while Wait is in effect. However, background processes such as printing and recalculation continue.

expression.Wait(Time)

expression Required. An expression that returns an Application object.

Time Required Variant. The time at which you want the macro to resume, in Microsoft Excel date format.
**Example**

This example pauses a running macro until 6:23 P.M. today.

```
Application.Wait "18:23:00"
```

This example pauses a running macro for approximately 10 seconds.

```
newHour = Hour(Now())
newMinute = Minute(Now())
newSecond = Second(Now()) + 10
waitTime = TimeSerial(newHour, newMinute, newSecond)
Application.Wait waitTime
```

This example displays a message indicating whether 10 seconds have passed.

```
If Application.Wait(Now + TimeValue("0:00:10")) Then
    MsgBox "Time expired"
End If
```
WebPagePreview Method

Displays a preview of the specified workbook as it would look if saved as a Web page.

\textit{expression}.\textbf{WebPagePreview}

\textit{expression}  An expression that returns a \textbf{Workbook} object.
Example

This example displays a preview of the first workbook as a Web page.

Workbooks(1).WebPagePreview
XYGroups Method

On a 2-D chart, returns an object that represents either a single scatter chart group (a ChartGroup object) or a collection of the scatter chart groups (a ChartGroups collection).

expression.XYGroups(Index)

expression  Required. An expression that returns a Chart object.

Index  Optional Variant. Specifies the chart group.
Example

This example sets X-Y group (scatter group) one to use a different color for each data marker. The example should be run on a 2-D chart.

`Charts("Chart1").XYGroups(1).VaryByCategories = True`
ZOrder Method

Moves the specified shape in front of or behind other shapes in the collection (that is, changes the shape's position in the z-order).

expression.ZOrder(ZOrderCmd)

expression Required. An expression that returns one of the objects in the Applies To list.

ZOrderCmd Required MsoZOrderCmd. Specifies where to move the specified shape relative to the other shapes.

MsoZOrderCmd can be one of these MsoZOrderCmd constants.

msoBringForward
msoBringInFrontOfText. Used only in Microsoft Word.
msoBringToFront
msoSendBackward
msoSendBehindText. Used only in Microsoft Word.
msoSendToBack
Remarks

Use the **ZOrderPosition** property to determine a shape's current position in the z-order.
Example

This example adds an oval to myDocument and then places the oval second from the back in the z-order if there is at least one other shape on the document.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeOval, 100, 100, 100, 300)
  .ZOrderPosition > 2
    .ZOrder msoSendBackward
  Wend
End With
```
Accent Property

Allows the user to place a vertical accent bar to separate the callout text from the callout line. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue  A vertical accent bar separates the callout text from the callout line.

expression.Accent

eexpression  Required. An expression that returns one of the objects in the Applies To list.
**Example**

This example adds to myDocument an oval and a callout that points to the oval. The callout text won’t have a border, but it will have a vertical accent bar that separates the text from the callout line.

```vba
Set myDocument =Worksheets(1)
With myDocument.Shapes
    .AddShape msoShapeOval, 180, 200, 280, 130
    With .AddCallout(msoCalloutTwo, 420, 170, 170, 40)
        .TextFrame.Characters.Text = "My oval"
        With .Callout
            .Accent = msoTrue
            .Border = False
        End With
    End With
End With
```
AcceptLabelsInFormulas Property

**True** if labels can be used in worksheet formulas. The default value is **True**. Read/write **Boolean**.

`expression.AcceptLabelsInFormula`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the `AcceptLabelsInFormulas` property for the active workbook and then sets cells B1:D1 on worksheet one to be column labels.

```vba
ActiveWorkbook.AcceptLabelsInFormulas = True
Worksheets(1).Range("b1:d1").FormulaLabel = xlColumnLabels
```
ActiveCell Property

Returns a `Range` object that represents the active cell in the active window (the window on top) or in the specified window. If the window isn't displaying a worksheet, this property fails. Read-only.
**Remarks**

If you don't specify an object qualifier, this property returns the active cell in the active window.

Be careful to distinguish between the active cell and the selection. The active cell is a single cell inside the current selection. The selection may contain more than one cell, but only one is the active cell.

The following expressions all return the active cell, and are all equivalent.

ActiveCell
Application.ActiveCell
ActiveWindow.ActiveCell
Application.ActiveWindow.ActiveCell
Example

This example uses a message box to display the value in the active cell. Because the ActiveCell property fails if the active sheet isn't a worksheet, the example activates Sheet1 before using the ActiveCell property.

Worksheets("Sheet1").Activate
MsgBox ActiveCell.Value

This example changes the font formatting for the active cell.

Worksheets("Sheet1").Activate
With ActiveCell.Font
  .Bold = True
  .Italic = True
End With
ActiveChart Property

Returns a Chart object that represents the active chart (either an embedded chart or a chart sheet). An embedded chart is considered active when it's either selected or activated. When no chart is active, this property returns Nothing. Read-only.
Remarks

If you don't specify an object qualifier, this property returns the active chart in the active workbook.
Example

This example turns on the legend for the active chart.

ActiveChart.HasLegend = True
ActivePane Property

Returns a Pane object that represents the active pane in the window. Read-only.
Remarks

This property can be used only on worksheets and macro sheets.

This property returns a Pane object. You must use the Index property to obtain the index of the active pane.
Example

This example activates the next pane of the active window in Book1.xls. You cannot activate the next pane if the panes are frozen. The example must be run from a workbook other than Book1.xls. Before running the example, make sure that Book1.xls has either two or four panes in the active worksheet.

Workbooks("BOOK1.XLS").Activate
If not ActiveWindow.FreezePanes Then
    With ActiveWindow
        i = .ActivePane.Index
        If i = .Panes.Count Then
            .Panes(1).Activate
        Else
            .Panes(i+1).Activate
        End If
    End With
End If
ActivePrinter Property

- Returns or sets the name of the active printer. Read/write String.
Example

This example displays the name of the active printer.

MsgBox "The name of the active printer is " & _
Application.ActivePrinter
ActiveSheet Property

Returns an object that represents the active sheet (the sheet on top) in the active workbook or in the specified window or workbook. Returns Nothing if no sheet is active. Read-only.
Remarks

If you don’t specify an object qualifier, this property returns the active sheet in the active workbook.

If a workbook appears in more than one window, the `ActiveSheet` property may be different in different windows.
Example

This example displays the name of the active sheet.

MsgBox "The name of the active sheet is " & ActiveSheet.Name
ActiveWindow Property

Returns a Window object that represents the active window (the window on top). Read-only. Returns Nothing if there are no windows open.
**Example**

This example displays the name *(Caption property)* of the active window.

MsgBox "The name of the active window is " & ActiveWindow.Caption
ActiveWorkbook Property

Returns a Workbook object that represents the workbook in the active window (the window on top). Read-only. Returns Nothing if there are no windows open or if either the Info window or the Clipboard window is the active window.
Example

This example displays the name of the active workbook.

MsgBox "The name of the active workbook is " & ActiveWorkbook.Name
AddIndent Property

- AddIndent property as it applies to the Style object.

True if text is automatically indented when the text alignment in a cell is set to equal distribution either horizontally or vertically. Read/write Boolean.

equation.AddIndent

equation Required. An expression that returns a Style object.

- AddIndent property as it applies to the CellFormat and Range objects.

True if text is automatically indented when the text alignment in a cell is set to equal distribution either horizontally or vertically. Read/write Variant.

equation.AddIndent

equation Required. An expression that returns one of the above objects.
Remarks

To set text alignment to equal distribution, you can set the `VerticalAlignment` property to `xlVertAlignDistributed` when the value of the `Orientation` property is `xlVertical`, and you can set the `HorizontalAlignment` property to `xlHAlignDistributed` when the value of the `Orientation` property is `xlHorizontal`. 
Example

This example sets the horizontal alignment for text in cell A1 on Sheet1 to equal distribution and then indents the text.

```vbnet
With Worksheets("Sheet1").Range("A1")
    .HorizontalAlignment = xlHAlignDistributed
    .AddIndent = True
End With
```
AddIns Property

Returns an AddIns collection that represents all the add-ins listed in the Add-Ins dialog box (Tools menu). Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Remarks

Using this method without an object qualifier is equivalent to Application.Addins.
Example

This example displays the status of the Analysis ToolPak add-in. Note that the string used as the index to the `AddIns` collection is the title of the add-in, not the add-in’s file name.

```vba
If AddIns("Analysis ToolPak").Installed = True Then
    MsgBox "Analysis ToolPak add-in is installed"
Else
    MsgBox "Analysis ToolPak add-in is not installed"
End If
```
Address Property

- Address property as it applies to the Hyperlink object.

Returns or sets the address of the target document. Read/write String.

expression.Address

expression Required. An expression that returns one of the above objects.

- Address property as it applies to the Range object.

Returns the range reference in the language of the macro. Read-only String.

expression.Address(RowAbsolute, ColumnAbsolute, ReferenceStyle, External,RelativeTo)

expression Required. An expression that returns one of the above objects.

RowAbsolute Optional Variant. True to return the row part of the reference as an absolute reference. The default value is True.

ColumnAbsolute Optional Variant. True to return the column part of the reference as an absolute reference. The default value is True.

ReferenceStyle Optional XlReferenceStyle.

XlReferenceStyle can be one of these XlReferenceStyle constants. xLA1 default. Use xLA1 to return an A1-style reference. xLR1C1. Use xLR1C1 to return an R1C1-style reference.

External Optional Variant. True to return an external reference. False to return a local reference. The default value is False.
**RelativeTo** Optional Variant. If **RowAbsolute** and **ColumnAbsolute** are False, and **ReferenceStyle** is **xlR1C1**, you must include a starting point for the relative reference. This argument is a **Range** object that defines the starting point.
Remarks

If the reference contains more than one cell, \textit{RowAbsolute} and \textit{ColumnAbsolute} apply to all rows and columns.
**Example**

The following example displays four different representations of the same cell address on Sheet1. The comments in the example are the addresses that will be displayed in the message boxes.

```vba
Set mc = Worksheets("Sheet1").Cells(1, 1)
MsgBox mc.Address() ' $A$1
MsgBox mc.Address(RowAbsolute:=False) ' $A1
MsgBox mc.Address(ReferenceStyle:=xlR1C1) ' R1C1
MsgBox mc.Address(ReferenceStyle:=xlR1C1, _
    RowAbsolute:=False, _
    ColumnAbsolute:=False, _
    RelativeTo:=Worksheets(1).Cells(3, 3)) ' R[-2]C[-2]
```
**AddressLocal Property**

Returns the range reference for the specified range in the language of the user. Read-only **String**.

`expression.AddressLocal(RowAbsolute, ColumnAbsolute, ReferenceStyle, External, RelativeTo)`

- **expression** Required. An expression that returns one of the objects in the Applies To list.

- **RowAbsolute** Optional **Variant**. **True** to return the row part of the reference as an absolute reference. The default value is **True**.

- **ColumnAbsolute** Optional **Variant**. **True** to return the column part of the reference as an absolute reference. The default value is **True**.

- **ReferenceStyle** Optional **XlReferenceStyle**.

  XlReferenceStyle can be one of these XlReferenceStyle constants.

  - **xlA1 default**. Use **xlA1** to return an A1-style reference
  - **xlR1C1**. Use **xlR1C1** to return an R1C1-style reference.

- **External** Optional **Variant**. **True** to return an external reference. **False** to return a local reference. The default value is **False**.

- **RelativeTo** Optional **Variant**. If **RowAbsolute** and **ColumnAbsolute** are both set to **False** and **ReferenceStyle** is set to **xlR1C1**, you must include a starting point for the relative reference. This argument is a **Range** object that defines the starting point for the reference.
Remarks

If the reference contains more than one cell, *RowAbsolute* and *ColumnAbsolute* apply to all rows and all columns, respectively.
Example

Assume that this example was created using U.S. English language support and was then run in using German language support. The example displays the text shown in the comments.

```vba
Set mc =Worksheets(1).Cells(1, 1)
MsgBox mc.AddressLocal() ' $A$1
MsgBox mc.AddressLocal(RowAbsolute:=False) ' $A1
MsgBox mc.AddressLocal(ReferenceStyle:=xlR1C1) ' Z1S1
MsgBox mc.AddressLocal(ReferenceStyle:=xlR1C1, _
    RowAbsolute:=False, _
    ColumnAbsolute:=False, _
    RelativeTo:=Worksheets(1).Cells(3, 3)) ' Z(-2)S(-2)
```
AdjustColumnWidth Property

*True* if the column widths are automatically adjusted for the best fit each time you refresh a query table. *False* if the column widths aren’t automatically adjusted with each refresh. The default value is *True*. Read/write *Boolean*. 
Remarks

The maximum column width is two-thirds the width of the screen.
Example

This example turns off automatic column-width adjustment for the newly added query table on the first worksheet in the first workbook.

```
With Workbooks(1).Worksheets(1).QueryTables _
    .Add(Connection:= varDBConnStr, _
        Destination:=Range("B1"), _
        Sql:="Select Price From CurrentStocks " & _
            "Where Symbol = 'MSFT'")
    .AdjustColumnWidth = False
    .Refresh
End With
```
Returns an Adjustments object that contains adjustment values for all the adjustments in the specified shape. Applies to any Shape or ShapeRange object that represents an AutoShape, WordArt, or a connector. Read-only.
Example

This example sets to 0.25 the value of adjustment one on shape one on myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).Adjustments(1) = 0.25
ADOConnection Property

Returns an ADO connection object if the PivotTable cache is connected to an OLE DB data source. The ADOConnection property exposes Microsoft Excel's connection to the data provider allowing the user to write code within the context of the same session that Excel is using with ADO (relational source) or ADOMD (OLAP source). Read-only.

expression.ADOConnection

expression Required. An expression that returns one a PivotCache object.
Remarks

The **ADOConnection** property is available only for sessions where the data source is an OLE DB data source. When there is no ADO session the query will result in a run-time error.

The **ADOConnection** property can be used for any OLEDB-based cache with ADO. The ADO connection object can be used with ADOMD for finding information about OLAP Cubes on which the cache is based.
Example

This example sets an ADODB Connection object to the **ADOCConnection** property of the PivotTable cache. The example assumes a PivotTable report exists on the active worksheet.

**Sub UseADOConnection()**

```vba
Dim ptOne As PivotTable
Dim cmdOne As New ADODB.Command
Dim cfOne As CubeField

Set ptOne = Sheet1.PivotTables(1)
ptOne.PivotCache.MaintainConnection = True
Set cmdOne.ActiveConnection = ptOne.PivotCache.ADOConnection

ptOne.PivotCache.MakeConnection

' Create a set.
cmdOne.CommandText = "Create Set [Warehouse].[My Set] as '[[Prod
cmdOne.CommandType = adCmdUnknown
cmdOne.Execute

' Add a set to the CubeField.
Set cfOne = ptOne.CubeFields.AddSet("My Set", "My Set")
```

End Sub

This example adds a calculated member, assuming a PivotTable report exists on the active worksheet.

**Sub AddMember()**

```vba
Dim cmd As New ADODB.Command

If Not ActiveSheet.PivotTables(1).PivotCache.IsConnected Then
    ActiveSheet.PivotTables(1).PivotCache.MakeConnection
End If

Set cmd.ActiveConnection = ActiveSheet.PivotTables(1).PivotCache

' Add a calculated member.
cmd.CommandText = "CREATE MEMBER [Warehouse].[Product].[All Prod
```
cmd.CommandType = adCmdUnknown
cmd.Execute

ActiveSheet.PivotTables(1).PivotCache.Refresh

End Sub
AlertBeforeOverwriting Property

**True** if Microsoft Excel displays a message before overwriting nonblank cells during a drag-and-drop editing operation. Read/write **Boolean**.
Example

This example causes Microsoft Excel to display an alert before overwriting nonblank cells during drag-and-drop editing.

Application.**AlertBeforeOverwriting** = True
AlertStyle Property

Returns the validation alert style. Read-only XlDVAAlertStyle.

XlDVAAlertStyle can be one of these XlDVAAlertStyle constants.

xlValidAlertInformation
xlValidAlertStop
xlValidAlertWarning

expression.AlertStyle

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the **Add** method to set the alert style for a range. If the range already has data validation, use the **Modify** method to change the alert style.
Example

This example displays the alert style for cell E5.

MsgBox Range("e5").Validation.AlertStyle
Alignment Property

- **Alignment property as it applies to the TextEffectFormat object.**

Returns or sets the alignment for WordArt. Read/write **MsoTextEffectAlignment**.

MsoTextEffectAlignment can be one of these MsoTextEffectAlignment constants.

- `msoTextEffectAlignmentCentered`
- `msoTextEffectAlignmentLeft`
- `msoTextEffectAlignmentLetterJustify`
- `msoTextEffectAlignmentMixed`
- `msoTextEffectAlignmentRight`
- `msoTextEffectAlignmentStretchJustify`
- `msoTextEffectAlignmentWordJustify`

`expression.Alignment`

`expression` Required. An expression that returns one of the above objects.

- **Alignment property as it applies to the Phonetic, Phonetics, and TickLabels objects.**

Returns or sets the alignment for the specified phonetic text or tick label. Read/write **Long**.

`expression.Alignment`

`expression` Required. An expression that returns one of the above objects.

Phoentic or Phonetics can be one of these XlPhoneticAlignment constants.
TickLabels can be one of these XLHAlign constants:

- XLHAlignCenter
- XLHAlignLeft
- XLHAlignRight
Example

This example adds a WordArt object to worksheet one and then right aligns the WordArt.

Set mySh = Worksheets(1).Shapes
Set myTE = mySh.AddTextEffect(PresetTextEffect:=msoTextEffect1, _
    Text:="Test Text", FontName:="Palatino", FontSize:=54, _
    FontBold:=True, FontItalic:=False, Left:=100, Top:=50)
myTE.TextEffect.Alignment = msoTextEffectAlignmentRight
AllowDeletingColumns Property

Returns **True** if the deletion of columns is allowed on a protected worksheet. Read-only **Boolean**.

`expression.AllowDeletingColumns`

*expression* Required. An expression that returns a [Protection](#) object.
Remarks

The AllowDeletingColumns property can be set by using the Protect method arguments.

The columns containing the cells to be deleted must be unlocked when the sheet is protected.
Example

This example unlocks column A then allows the user to delete column A on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect

    'Unlock column A.
    Columns("A: A").Locked = False

    ' Allow column A to be deleted on a protected worksheet.
    If ActiveSheet.Protection.AllowDeletingColumns = False Then
        ActiveSheet.Protect AllowDeletingColumns:=True
    End If

    MsgBox "Column A can be deleted on this protected worksheet."
End Sub
AllowDeletingRows Property

Returns **True** if the deletion of rows is allowed on a protected worksheet. Read-only **Boolean**.

*expression*.AllowDeletingRows

*expression*  Required. An expression that returns a **Protection** object.
Remarks

The **AllowDeletingRows** property can be set by using the **Protect** method arguments.

The rows containing the cells to be deleted must be unlocked when the sheet is protected.
Example

This example unlocks row 1 then allows the user to delete row 1 on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    'Unlock row 1.
    Rows("1:1").Locked = False
    ' Allow row 1 to be deleted on a protected worksheet.
    If ActiveSheet.Protection.AllowDeletingRows = False Then
        ActiveSheet.Protect AllowDeletingRows:=True
    End If
    MsgBox "Row 1 can be deleted on this protected worksheet."
End Sub
AllowEdit Property

- AllowEdit property as it applies to the UserAccess object.

True if the user is allowed access to the specified range on a protected worksheet. Read/write Boolean.

expression.AllowEdit

expression Required. An expression that returns a UserAccess object.

- AllowEdit property as it applies to the Range object.

True if the range can be edited on a protected worksheet. Read-only Boolean.

expression.AllowEdit

expression Required. An expression that returns a Range object.
Example

As it applies to the **Range** object.

In this example, Microsoft Excel notifies the user if cell A1 can be edited or not on a protected worksheet.

Sub UseAllowEdit()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet

    ' Protect the worksheet
    wksOne.Protect

    ' Notify the user about editing cell A1.
    If wksOne.Range("A1").AllowEdit = True Then
        MsgBox "Cell A1 can be edited."  
    Else
        MsgBox "Cell A1 cannot be edited."
    End If

End Sub
AllowEditRanges Property

Returns an AllowEditRanges object.

expression.AllowEditRanges

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel allows edits to range A1:A4 on the active worksheet and notifies the user of the title and address of the specified range.

Sub UseAllowEditRanges()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet
    ' Unprotect worksheet.
    wksOne.Unprotect
    ' Establish a range that can allow edits on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
        Title:="Classified", _
        Range:=Range("A1:A4"), _
        Password:="secret"
    ' Notify the user the title and address of the range.
    With wksOne.Protection.AllowEditRanges.Item(1)
        MsgBox "Title of range: " & .Title
        MsgBox "Address of range: " & .Range.Address
    End With
End Sub
AllowFiltering Property

Returns **True** if the user is allowed to make use of an AutoFilter that was created before the sheet was protected. Read-only **Boolean**.

`expression.AllowFiltering`

*expression*  Required. An expression that returns a **Protection** object.
Remarks

The **AllowFiltering** property can be set by using the **Protect** method arguments.

The **AllowFiltering** property allows the user to change filter criteria on an existing AutoFilter. The user cannot create or remove an AutoFilter on a protected worksheet.

The cells to be filtered must be unlocked when the sheet is protected.
Example

This example allows the user to filter row 1 on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Unlock row 1.
    Rows("1:1").Locked = False
    ' Allow row 1 to be filtered on a protected worksheet.
    If ActiveSheet.Protection.AllowFiltering = False Then
        ActiveSheet.Protect AllowFiltering:=True
    End If
    MsgBox "Row 1 can be filtered on this protected worksheet."
End Sub
AllowFormattingCells Property

Returns True if the formatting of cells is allowed on a protected worksheet. Read-only Boolean.

expression.AllowFormattingCells

expression  Required. An expression that returns a Protection object.
Remarks

The AllowFormattingCells property can be set by using the Protect method arguments.

Use of this property disables the protection tab, allowing the user to change all formats, but not to unlock or unhide ranges.
Example

This example allows the user to format cells on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect

    ' Allow cells to be formatted on a protected worksheet.
    If ActiveSheet.Protection.AllowFormattingCells = False Then
        ActiveSheet.Protect AllowFormattingCells:=True
    End If

    MsgBox "Cells can be formatted on this protected worksheet."
End Sub
AllowFormattingColumns Property

Returns True if the formatting of columns is allowed on a protected worksheet. Read-only Boolean.

expression.AllowFormattingColumns

expression  Required. An expression that returns a Protection object.
**Remarks**

The **AllowFormattingColumns** property can be set by using the **Protect** method arguments.
Example

This example allows the user to format columns on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Allow columns to be formatted on a protected worksheet.
    If ActiveSheet.Protection.AllowFormattingColumns = False Then
        ActiveSheet.Protect AllowFormattingColumns:=True
    End If

    MsgBox "Columns can be formatted on this protected worksheet."
End Sub
AllowFormattingRows Property

Returns **True** if the formatting of rows is allowed on a protected worksheet. Read-only **Boolean**.

`expression.AllowFormattingRows`

`expression`  Required. An expression that returns a **Protection** object.
Remarks

The `AllowFormattingRows` property can be set by using the `Protect` method arguments.
Example

This example allows the user to format the rows on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Allow rows to be formatted on a protected worksheet.
    If ActiveSheet.Protection.AllowFormattingRows = False Then
        ActiveSheet.Protect AllowFormattingRows:=True
    End If
    MsgBox "Rows can be formatted on this protected worksheet."
End Sub
AllowInsertingColumns Property

Returns True if the insertion of columns is allowed on a protected worksheet. Read-only Boolean.

expression.AllowInsertingColumns

expression  Required. An expression that returns a Protection object.
Remarks

An inserted column inherits its formatting (by default) from the column to its left, which means that it may have locked cells. In other words, users may not be able to delete columns that they have inserted.

The `AllowInsertingColumns` property can be set by using the `Protect` method arguments.
Example

This example allows the user to insert columns on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Allow columns to be inserted on a protected worksheet.
    If ActiveSheet.Protection.AllowInsertingColumns = False Then
        ActiveSheet.Protect AllowInsertingColumns:=True
    End If
    MsgBox "Columns can be inserted on this protected worksheet."
End Sub
AllowInsertingHyperlinks Property

Returns True if the insertion of hyperlinks is allowed on a protected worksheet. Read-only Boolean.

expression.AllowInsertingHyperlinks

expression  Required. An expression that returns a Protection object.
Remarks

Hyperlinks can only be inserted in unlocked or unprotected cells on a protected worksheet.

The `AllowInsertingHyperlinks` property can be set by using the `Protect` method arguments.
Example

This example allows the user to insert a hyperlink in cell A1 on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Unlock cell A1.
    Range("A1").Locked = False
    ' Allow hyperlinks to be inserted on a protected worksheet.
    If ActiveSheet.Protection.AllowInsertingHyperlinks = False Then
        ActiveSheet.Protect AllowInsertingHyperlinks:=True
    End If
    MsgBox "Hyperlinks can be inserted on this protected worksheet."
End Sub
AllowInsertingRows Property

- Returns True if the insertion of rows is allowed on a protected worksheet. Read-only Boolean.

eexpression.AllowInsertingRows

expression Required. An expression that returns a Protection object.
Remarks

The AllowInsertingRows property can be set by using the Protect method arguments.
Example

This example allows the user to insert rows on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect
    ' Allow rows to be inserted on a protected worksheet.
    If ActiveSheet.Protection.AllowInsertingRows = False Then
        ActiveSheet.Protect AllowInsertingRows:=True
    End If
    MsgBox "Rows can be inserted on this protected worksheet."
End Sub
AllowPNG Property

True if PNG (Portable Network Graphics) is allowed as an image format when you save documents as a Web page. False if PNG is not allowed as an output format. The default value is False. Read/write Boolean.
Remarks

If you save images in the PNG format as opposed to any other file format, you might improve the image quality or reduce the size of those image files, and therefore decrease the download time, assuming that the Web browsers you are targeting support the PNG format.
Example

This example enables PNG as an output format for the first workbook.

Application.Workbooks(1).WebOptions.AllowPNG = True

Alternatively, PNG can be enabled as the global default for the application for newly created documents.

Application.DefaultWebOptions.AllowPNG = True
AllowSorting Property

Returns True if the sorting option is allowed on a protected worksheet. Read-only Boolean.

expression.AllowSorting

expression  Required. An expression that returns a Protection object.
Remarks

Sorting can only be performed on unlocked or unprotected cells in a protected worksheet.

The AllowSorting property can be set by using the Protect method arguments.
Example

This example allows the user to sort unlocked or unprotected cells on the protected worksheet and notifies the user.

Sub ProtectionOptions()
    ActiveSheet.Unprotect

    ' Unlock cells A1 through B5.
    Range("A1:B5").Locked = False

    ' Allow sorting to be performed on the protected worksheet.
    If ActiveSheet.Protection.AllowSorting = False Then
        ActiveSheet.Protect AllowSorting:=True
    End If

    MsgBox "For cells A1 through B5, sorting can be performed on the"
End Sub
**AllowUsingPivotTables Property**

Returns **True** if the user is allowed to manipulate pivot tables on a protected worksheet. Read-only **Boolean**.

_**expression**.AllowUsingPivotTables_

_**expression**  Required. An expression that returns a **Protection** object._
Remarks

The `AllowUsingPivotTables` property applies to non-OLAP source data.

The `AllowUsingPivotTables` property can be set by using the `Protect` method arguments.
Example

This example allows the user to access the PivotTable report and notifies the user. It assumes a non-OLAP Pivot Table report exists on the active worksheet.

Sub ProtectionOptions()
    ActiveSheet.Unprotect

    ' Allow pivot tables to be manipulated on a protected worksheet.
    If ActiveSheet.Protection.Allow UsingPivotTables = False Then
        ActiveSheet.Protect AllowUsingPivotTables:=True
    End If

    MsgBox "Pivot tables can be manipulated on the protected worksheet."
End Sub
AlternativeText Property

Returns or sets the descriptive (alternative) text string for a Shape or ShapeRange object when the object is saved to a Web page. Read/write String.
Remarks

The alternative text can be displayed either in place of the shape’s image in the Web browser, or directly over the image when the mouse pointer hovers over the image (in browsers that support these features).
Example

This example sets the alternative text for the first shape on the first worksheet to a description of the shape.

`Worksheets(1).Shapes(1).AlternativeText = "Concentric circles"`
AltStartupPath Property

Returns or sets the name of the alternate startup folder. Read/write String.
Example

This example sets the alternate startup folder.

Application.AltStartupPath = "C:\EXCEL\MACROS"
**AlwaysSaveInDefaultEncoding Property**

*True* if the default encoding is used when you save a Web page or plain text document, independent of the file's original encoding when opened. *False* if the original encoding of the file is used. The default value is *False*. Read/write *Boolean*. 
Remarks

The **Encoding** property can be used to set the default encoding.
Example

This example sets the encoding to the default encoding. The encoding is used when you save the document as a Web page.

Application.DefaultWebOptions.AlwaysSaveInDefaultEncoding = True
Angle Property

Returns or sets the angle of the callout line. If the callout line contains more than one line segment, this property returns or sets the angle of the segment that is farthest from the callout text box. Read/write **MsoCalloutAngleType**.

MsoCalloutAngleType can be one of these MsoCalloutAngleType constants.  

- `msoCalloutAngle30`  
- `msoCalloutAngle45`  
- `msoCalloutAngle60`  
- `msoCalloutAngle90`  
- `msoCalloutAngleAutomatic`  
- `msoCalloutAngleMixed`

**expression.Angle**

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

If you set the value of this property to anything other than `msoCalloutAngleAutomatic`, the callout line maintains a fixed angle as you drag the callout.
Example

This example sets to 90 degrees the callout angle for a callout named "callout1" on myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes("callout1").Callout.Angle = msoCalloutAngle90
AnswerWizard Property

Some of the content in this topic may not be applicable to some languages.

Returns the AnswerWizard object for Microsoft Excel. Read-only.
Example

This example resets the Answer Wizard file list.

Application.\texttt{AnswerWizard.ResetFileList}
Application Property

Used without an object qualifier, this property returns an `Application` object that represents the Microsoft Excel application. Used with an object qualifier, this property returns an `Application` object that represents the creator of the specified object (you can use this property with an OLE Automation object to return that object's application). Read-only.

`expression.Application`

`expression`  Required. An expression that returns one of the above objects.
Example

This example displays a message about the application that created myObject.

Set myObject = ActiveWorkbook
If myObject.Application.Value = "Microsoft Excel" Then
    MsgBox "This is a Microsoft Excel object"
Else
    MsgBox "This is not a Microsoft Excel object"
End If
ApplyPictToEnd Property

True if a picture is applied to the end of the point or all points in the series. Read/write Boolean.
Example

This example applies pictures to the end of all points in series one. The series must already have pictures applied to it (setting this property changes the picture orientation).

Charts(1).SeriesCollection(1).ApplyPictToEnd = True
ApplyPictToFromt Property

True if a picture is applied to the front of the point or all points in the series. Read/write Boolean.
Example

This example applies pictures to the front of all points in series one. The series must already have pictures applied to it (setting this property changes the picture orientation).

Charts(1).SeriesCollection(1).ApplyPictToFront = True
ApplyPictToSides Property

True if a picture is applied to the sides of the point or all points in the series. Read/write Boolean.
Example

This example applies pictures to the sides of all points in series one. The series must already have pictures applied to it (setting this property changes the picture orientation).

Charts(1).SeriesCollection(1).ApplyPictToSides = True
Show All
ArabicModes Property

- Returns or sets the mode for the Arabic spelling checker. Read/write **XlArabicModes**.

XlArabicModes can be one of these XlArabicModes constants.

- **xlArabicNone**  The spelling checker ignores spelling rules regarding either Arabic words ending with the letter yaa or Arabic words beginning with an alef hamza.
- **xlArabicBothStrict**  The spelling checker uses spelling rules regarding both Arabic words ending with the letter yaa and Arabic words beginning with an alef hamza.
- **xlArabicStrictAlefHamza**  The spelling checker uses spelling rules regarding Arabic words beginning with an alef hamza.
- **xlArabicStrictFinalYaa**  The spelling checker uses spelling rules regarding Arabic words ending with the letter yaa.

expression.**ArabicModes**

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks the setting for the spell checking option for Arabic mode and sets it to check for words ending with the letter yaa and words beginning with an alef hamza, if the Arabic mode is not set to this already. Before running this code example, the Arabic modes option must be enabled in the spelling options.

Sub SpellCheck()
    If Application.SpellingOptions.ArabicModes <> xlArabicBothStrict Then
        Application.SpellingOptions.ArabicModes = xlArabicBothStrict
        MsgBox "Spell checking for Arabic mode has been changed to a strict setting."
    Else
        MsgBox "Spell checking for Arabic mode is already in a strict setting."
    End If
End Sub
Area3DGroup Property

Returns a ChartGroup object that represents the area chart group on a 3-D chart. Read-only.
Example

This example turns on drop lines for the 3-D area chart group.

`Charts(1).Area3DGroup.HasDropLines = True`
Areas Property

Returns an Areas collection that represents all the ranges in a multiple-area selection. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Remarks

For a single selection, the *Areas* property returns a collection that contains one object — the original *Range* object itself. For a multiple-area selection, the *Areas* property returns a collection that contains one object for each selected area.
**Example**

This example displays a message if the user tries to carry out a command when more than one area is selected. This example must be run from a worksheet.

```
If Selection.Areas.Count > 1 Then
    MsgBox "Cannot do this to a multi-area selection."
End If
```
AskToUpdateLinks Property

**True** if Microsoft Excel asks the user to update links when opening files with links. **False** if links are automatically updated with no dialog box. Read/write Boolean.
**Example**

This example sets Microsoft Excel to ask the user to update links whenever a file that contains links is opened.

```plaintext
Application.AskToUpdateLinks = True
```
Assistant Property

Some of the content in this topic may not be applicable to some languages.

Returns an Assistant object for Microsoft Excel.
Remarks

Using this property without an object qualifier is equivalent to using Application.Assistant.
Example

This example makes the Office Assistant visible.

Assistant.Visible = True
Author Property

Returns or sets the author of the comment. Read-only String.
Example

This example deletes all comments added by Jean Selva on the active sheet.

For Each c in ActiveSheet.Comments
    If c.Author = "Jean Selva" Then c.Delete
Next
AutoAttach Property

True if the place where the callout line attaches to the callout text box changes depending on whether the origin of the callout line (where the callout points to) is to the left or right of the callout text box. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue
- msoFalse
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The place where the callout line attaches to the callout text box changes depending on whether the origin of the callout line (where the callout points to) is to the left or right of the callout text box.
Remarks

When the value of this property is **True**, the drop value (the vertical distance from the edge of the callout text box to the place where the callout line attaches) is measured from the top of the text box when the text box is to the right of the origin, and it’s measured from the bottom of the text box when the text box is to the left of the origin. When the value of this property is **False**, the drop value is always measured from the top of the text box, regardless of the relative positions of the text box and the origin. Use the [CustomDrop](#) method to set the drop value, and use the [Drop](#) property to return the drop value.

Setting this property affects a callout only if it has an explicitly set drop value — that is, if the value of the [DropType](#) property is [msoCalloutDropCustom](#). By default, callouts have explicitly set drop values when they’re created.
Example

This example adds two callouts to myDocument. If you drag the text box for each of these callouts to the left of the callout line origin, the place on the text box where the callout line attaches will change for the automatically attached callout.

```vba
Set myDocument =Worksheets(1)
With myDocument.Shapes
    With .AddCallout(msoCalloutTwo, 420, 170, 200, 50)
        .TextFrame.Characters.Text = "auto-attached"
        .Callout.AutoAttach = True
    End With
    With .AddCallout(msoCalloutTwo, 420, 350, 200, 50)
        .TextFrame.Characters.Text = "not auto-attached"
        .Callout.AutoAttach = False
    End With
End With
```
AutoCorrect Property

Returns an AutoCorrect object that represents the Microsoft Excel AutoCorrect attributes. Read-only.
Example

This example substitutes the word "Temp." for the word "Temperature" in the array of AutoCorrect replacements.

With Application.AutoCorrect
    .AddReplacement "Temperature", "Temp."
End With
AutoFilter Property

Returns an AutoFilter object if filtering is on. Returns Nothing if filtering is off. Read-only.
Remarks

To create an `AutoFilter` object for a worksheet, you must turn autofiltering on for a range on the worksheet either manually or using the `AutoFilter` method of the `Range` object.
**Example**

The following example sets a variable to the value of the `Criteria1` property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
With Worksheets("Crew")
    If .AutoFilterMode Then
        With .AutoFilter.Filters(1)
            If .On Then c1 = .Criteria1
            End With
        End If
    End With
End With
```
AutoFilterMode Property

True if the AutoFilter drop-down arrows are currently displayed on the sheet. This property is independent of the FilterMode property. Read/write Boolean.
Remarks

This property returns **True** if the drop-down arrows are currently displayed. You can set this property to **False** to remove the arrows, but you cannot set it to **True**. Use the **AutoFilter** method to filter a list and display the drop-down arrows.
Example

This example displays the current status of the AutoFilterMode property on Sheet1.

If Worksheets("Sheet1").AutoFilterMode Then
    isOn = "On"
Else
    isOn = "Off"
End If
MsgBox "AutoFilterMode is " & isOn
AutoFormat Property

Sets or returns an MsoTriState constant indicating the automatic formatting state for a diagram. Read/write.

MsoTriState can be one of these MsoTriState constants.
- **msoCTrue** Does not apply to this property.
- **msoFalse** Disables automatic formatting for the diagram.
- **msoTriStateMixed** Does not apply to this property.
- **msoTriStateToggle** Does not apply to this property.
- **msoTrue** Enables automatic formatting for the diagram.

`expression.AutoFormat`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example creates a diagram in the current document and turns on the automatic format for the diagram.

Sub CreatePyramidDiagram()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add a pyramid diagram to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram(_
        Type:=msoDiagramPyramid, _
        Left:=10, _
        Top:=15, _
        Width:=400, _
        Height:=475)

    'Add first child node

    'Add three more child nodes
    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount

    'Enable automatic formatting for the diagram and convert it to a radial diagram
    With dgnNode.Diagram
        .AutoFormat = msoTrue
        .Convert Type:=msoDiagramRadial
    End With
End Sub
AutoFormatAsYouTypeReplaceHyperlinks Property

- True (default) if Microsoft Excel automatically formats hyperlinks as you type. False if Excel does not automatically format hyperlinks as you type. Read/write Boolean.

expression.AutoFormatAsYouTypeReplaceHyperlinks

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the ability to automatically format hyperlinks as they are typed in is enabled and notifies the user.

Sub CheckHyperlinks()

    ' Determine if automatic formatting is enabled and notify user.
    If Application.AutoFormatAsYouTypeReplaceHyperlinks = True Then
        MsgBox "Automatic formatting for typing in hyperlinks is enabled."
    Else
        MsgBox "Automatic formatting for typing in hyperlinks is not enabled."
    End If

End Sub
AutoLayout Property

Returns or sets an **MsoTriState** constant which determines the automatic positioning of the nodes and connectors in a diagram. Read/write.

MsoTriState can be one of these MsoTriState constants.

**msoCTrue** Does not apply to this property.

**msoFalse** Disables automatic formatting for the diagram.

**msoTriStateMixed** Does not apply to this property.

**msoTriStateToggle** Does not apply to this property.

**msoTrue** Enables automatic formatting for the diagram.

`expression.AutoLayout`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example creates a diagram in the current document and automatically positions the nodes and connectors.

Sub CreatePyramidDiagram()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramPyramid, _
        Left:=10, _
        Top:=15, _
        Width:=400, _
        Height:=475)

    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount

    With dgnNode.Diagram
        .AutoLayout = msoTrue
        .Convert Type:=msoDiagramRadial
    End With
End Sub
AutoLength Property

Applies only to callouts whose lines consist of more than one segment (types msoCalloutThree and msoCalloutFour). Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

- msoCTrue
- msoFalse The first segment of the callout retains the fixed length specified by the Length property whenever the callout is moved.
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The first segment of the callout line (the segment attached to the text callout box) is scaled automatically whenever the callout is moved.
Remarks

This property is read-only. Use the **AutomaticLength** method to set this property to **msoTrue**, and use the **CustomLength** method to set this property to **mosFalse**.
Example

This example toggles between an automatically scaling first segment and one with a fixed length for the callout line for shape one on myDocument. For the example to work, shape one must be a callout.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Callout
    If .AutoLength Then
        .CustomLength 50
    Else
        .AutomaticLength
    End If
End With
```
AutoLoad Property

*True* if the OLE object is automatically loaded when the workbook that contains it is opened. Read/write *Boolean*. 
Remarks

This property is ignored by ActiveX controls. ActiveX controls are always loaded when a workbook is opened.

For most OLE object types, this property shouldn’t be set to True. By default, the AutoLoad property is set to False for new OLE objects; this saves time and memory when Microsoft Excel is loading workbooks. The benefit of automatically loading OLE objects is that, for objects that represent volatile data, links to source data can be reestablished immediately and the objects can be rendered again, if necessary.
**Example**

This example sets the **AutoLoad** property for OLE object one on the active sheet.

`ActiveSheet.OLEObjects(1).AutoLoad = False`
AutoMargins Property

True if Microsoft Excel automatically calculates text frame margins. Read/write Boolean.
Remarks

When this property is True, the MarginLeft, MarginRight, MarginTop, and MarginBottom properties are ignored.
Example

This example causes Microsoft Excel to automatically calculate text frame margins for text in shape one.

`Worksheets(1).Shapes(1).TextFrame.AutoMargins = True`
AutomaticStyles Property

True if the outline uses automatic styles. Read/write Boolean.
Example

This example sets the outline on Sheet1 to use automatic styles.

Worksheets("Sheet1").Outline.**AutomaticStyles** = True
Returns or sets an MsoAutomationSecurity constant that represents the security mode Microsoft Excel uses when programmatically opening files. This property is automatically set to msoAutomationSecurityLow when the application is started. Therefore, to avoid breaking solutions that rely on the default setting, you should be careful to reset this property to msoAutomationSecurityLow after programmatically opening a file. Also, this property should be set immediately before and after opening a file programmatically to avoid malicious subversion. Read/write.

MsoAutomationSecurity can be one of these MsoAutomationSecurity constants.

msoAutomationSecurityByUI  Uses the security setting specified in the Security dialog box.
msoAutomationSecurityForceDisable  Disables all macros in all files opened programmatically without showing any security alerts.
msoAutomationSecurityLow  Enables all macros. This is the default value when the application is started.

expression.AutomationSecurity

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting `ScreenUpdating` to `False` does not affect alerts and will not affect security warnings. The `DisplayAlerts` setting will not apply to security warnings. For example, if the user sets `DisplayAlerts` equal to `False` and `AutomationSecurity` to `msoAutomationSecurityByUI`, while the user is on Medium security level, then there will be security warnings while the macro is running. This allows the macro to trap file open errors, while still showing the security warning if the file open succeeds.
**Example**

This example captures the current automation security setting, changes the setting to disable macros, displays the Open dialog box, and after opening the selected document, sets the automation security back to its original setting.

```vba
Sub Security()
    Dim secAutomation As MsoAutomationSecurity

    secAutomation = Application.automationSecurity

    Application.automationSecurity = msoAutomationSecurityForceDisable
    Application.FileDialog(msoFileDialogOpen).Show

    Application.automationSecurity = secAutomation

End Sub
```
**AutoPercentEntry Property**

*True* if entries in cells formatted as percentages aren’t automatically multiplied by 100 as soon as they are entered. Read/write *Boolean*. 
Example

This example enables automatic multiplication by 100 for subsequent entries in cells formatted as percentages.

`Application.AutoPercentEntry = False`
AutoRecover Property

Returns an AutoRecover object, which backs up all file formats on a timed interval.

expression.AutoRecover

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Valid time intervals are whole numbers from 1 to 120.
Example

In this example, the **Time** property is used in conjunction with the **AutoRecover** property to set the time interval for Microsoft Excel to wait before saving another copy to 5 minutes.

Sub UseAutoRecover()

    Application.AutoRecover.Time = 5

    MsgBox "The time that will elapse between each automatic " & _
    "save has been set to " & _
    Application.AutoRecover.Time & " minutes."

End Sub
AutoRepublish Property

When a workbook is saved, Microsoft Excel determines if any item in the PublishObjects collection has the AutoRepublish property set to True and, if so republishes it. The default value is False. Read/write Boolean.

expression.AutoRepublish

expression  Required. An expression that returns a PublishObject object.
Example

This example publishes a range on a worksheet to an HTML file on drive C. When the user saves the workbook containing the worksheet, Excel will automatically republish the range to the same HTML file. This example assumes that the user has read/write access to the web page and that cells A1 through D10 in the worksheet have values in them.

Sub PublishToWeb()
    With ActiveWorkbook.PublishObjects.Add( _
        SourceType:=xlSourceRange, _
        Filename:="C:\Work.htm", _
        Sheet:="Sheet1", _
        Source:="A1:D10", _
        HtmlType:=xlHtmlStatic, _
        DivID:="Book1.xls_130489")
        .Publish
            .AutoRepublish = True
    End With
End Sub
AutoScaleFont Property

True if the text in the object changes font size when the object size changes. The default value is True. Read/write Variant.
Example

This example adds a title to embedded chart one on the active worksheet, and it causes the title font to remain the same size whenever the chart size changes.

```vba
With ActiveSheet.ChartObjects(1).Chart
    .HasTitle = True
    .ChartTitle.Text = "1996 sales"
    .ChartTitle.AutoScaleFont = False
End With
```
AutoScaling Property

True if Microsoft Excel scales a 3-D chart so that it's closer in size to the equivalent 2-D chart. The RightAngleAxes property must be True. Read/write Boolean.
Example

This example automatically scales Chart1. The example should be run on a 3-D chart.

With Charts("Chart1")
    .RightAngleAxes = True
    .AutoScaling = True
End With
AutoShapeType Property

Returns or sets the shape type for the specified Shape or ShapeRange object, which must represent an AutoShape other than a line, freeform drawing, or connector. Read/write MsoAutoShapeType.

Note  When you change the type of a shape, the shape retains its size, color, and other attributes.

MsoAutoShapeType can be one of these MsoAutoShapeType constants.

msoShape24pointStar
msoShape4pointStar
msoShape8pointStar
msoShapeActionButtonBeginning
msoShapeActionButtonDocument
msoShapeActionButtonForwardorNext
msoShapeActionButtonHome
msoShapeActionButtonMovie
msoShapeActionButtonSound
msoShapeBalloon
msoShapeBentUpArrow
msoShapeBlockArc
msoShapeChevron
msoShapeCloudCallout
msoShapeCube
msoShapeCurvedDownRibbon
msoShapeCurvedRightArrow
msoShapeCurvedUpRibbon
msoShapeDonut
msoShapeDoubleBracket
msoShapeDownArrow
msoShapePlaque
msoShapeQuadArrowCallout
msoShapeRectangularCallout
msoShapeRightArrow
msoShapeRightBrace
msoShapeRightTriangle
msoShapeRoundedRectangularCallout
msoShapeStripedRightArrow
msoShapeTrapezoid
msoShapeUpArrowCallout
msoShapeUpDownArrowCallout
msoShapeUTurnArrow
msoShapeWave
msoShape16pointStar
msoShape32pointStar
msoShape5pointStar
msoShapeActionButtonBackorPrevious
msoShapeActionButtonCustom
msoShapeActionButtonEnd
msoShapeActionButtonHelp
msoShapeActionButtonInformation
msoShapeActionButtonReturn
msoShapeArc
msoShapeBentArrow
msoShapeBevel
msoShapeCan
msoShapeCircularArrow
msoShapeCross
msoShapeCurvedDownArrow
msoShapeCurvedLeftArrow
msoShapeCurvedUpArrow
msoShapeDiamond
msoShapeDoubleBrace
expression.AutoShapeType

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the **Type** property of the **ConnectorFormat** object to set or return the connector type.
Example

This example replaces all 16-point stars with 32-point stars in myDocument.

Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.AutoShapeType = msoShape16pointStar Then
        s.AutoShapeType = msoShape32pointStar
    End If
Next
AutoShowCount Property

Returns the number of top or bottom items that are automatically shown in the specified PivotTable field. Read-only Long.
Example

This example displays a message box showing the AutoShow parameters for the Salesman field.

With Worksheets(1).PivotTables(1).PivotFields("salesman")
    If .AutoShowType = xlAutomatic Then
        r = .AutoShowRange
        If r = xlTop Then
            rn = "top"
        Else
            rn = "bottom"
        End If
        MsgBox "PivotTable report is showing " & rn & " " & _
            .AutoShowCount & " items in " & .Name & _
            " field by " & .AutoShowField
    Else
        MsgBox "PivotTable report is not using AutoShow for this fie"
    End If
End With
AutoShowField Property

Returns the name of the data field used to determine the top or bottom items that are automatically shown in the specified PivotTable field. Read-only String.
Example

This example displays a message box showing the AutoShow parameters for the Salesman field.

With Worksheets(1).PivotTables(1).PivotFields("salesman")
    If .AutoShowType = xlAutomatic Then
        r = .AutoShowRange
        If r = xlTop Then
            rn = "top"
        Else
            rn = "bottom"
        End If
        MsgBox "PivotTable report is showing " & rn & " " & _
            .AutoShowCount & " items in " & .Name & _
            " field by " & .AutoShowField
    Else
        MsgBox "PivotTable report is not using AutoShow for this fie
    End If
End With
AutoShowRange Property

Returns xlTop if the top items are shown automatically in the specified PivotTable field; returns xlBottom if the bottom items are shown. Read-only Long.
Example

This example displays a message box showing the AutoShow parameters for the Salesman field.

With Worksheets(1).PivotTables(1).PivotFields("salesman")
  If .AutoShowType = xlAutomatic Then
    r = .AutoShowRange
    If r = xlTop Then
      rn = "top"
    Else
      rn = "bottom"
    End If
    MsgBox "PivotTable report is showing " & rn & " " & _
      .AutoShowCount & " items in " & .Name & _
      " field by " & .AutoShowField
  Else
    MsgBox "PivotTable report is not using AutoShow for this fie
  End If
End With
AutoShowType Property

Returns xlAutomatic if AutoShow is enabled for the specified PivotTable field; returns xlManual if AutoShow is disabled. Read-only Long.
Example

This example displays a message box showing the AutoShow parameters for the Salesman field.

With Worksheets(1).PivotTables(1).PivotFields("salesman")
    If .AutoShowType = x1Automatic Then
        r = .AutoShowRange
        If r = x1Top Then
            rn = "top"
        Else
            rn = "bottom"
        End If
        MsgBox "PivotTable report is showing " & rn & " " & _
            .AutoShowCount & " items in " & .Name & _
            " field by " & .AutoShowField
    Else
        MsgBox "PivotTable report is not using AutoShow for this fie"
    End If
End With
AutoSize Property

True if the size of the specified object is changed automatically to fit text within its boundaries. Read/write Boolean.
Example

This example adjusts the size of the text frame on shape one to fit its text.

*Worksheets(1).Shapes(1).TextFrame.Autosize = True*
AutoSortField Property

Returns the name of the data field used to sort the specified PivotTable field automatically. Read-only **String**.
Example

This example displays a message box showing the AutoSort parameters for the Product field.

```vba
With Worksheets(1).PivotTables(1).PivotFields("product")
    Select Case .AutoSortOrder
        Case xlManual
            aso = "manual"
        Case xlAscending
            aso = "ascending"
        Case xlDescending
            aso = "descending"
    End Select
    MsgBox "sorted in " & aso & ", order by " & .AutoSortField
End With
```
AutoSortOrder Property

Returns the order used to sort the specified PivotTable field automatically. Can be one of the following XLSortOrder constants. Read-only Long.

XLSortOrder can be one of these XLSortOrder constants.

XLAncending
XLDescending
XLMManual. If automatic sorting is disabled.

expression.AutoSortOrder

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays a message box showing the AutoSort parameters for the Product field.

With Worksheets(1).PivotTables(1).PivotFields("product")
    Select Case .AutoSortOrder
        Case xlManual
            aso = "manual"
        Case xlAscending
            aso = "ascending"
        Case xlDescending
            aso = "descending"
    End Select
    MsgBox "sorted in " & aso & " order by " & .AutoSortField
End With
AutoText Property

True if the object automatically generates appropriate text based on context. Read/write Boolean.
Example

This example sets the data labels for series one in Chart1 to automatically generate appropriate text.

Charts("Chart1").SeriesCollection(1).DataLabels.AutoText = True
AutoUpdate Property

*True* if the OLE object is updated automatically when the source changes. Valid only if the object is linked (its **OLEType** property must be **xlOLELink**). Read-only **Boolean**.
Example

This example displays the status of automatic updating for all OLE objects on Sheet1.

Worksheets("Sheet1").Activate
Range("A1").Value = "Name"
Range("B1").Value = "Link Status"
Range("C1").Value = "AutoUpdate Status"
i = 2
For Each obj In ActiveSheet.OLEObjects
  Cells(i, 1) = obj.Name
  If obj.OLEType = xlOLELink Then
    Cells(i, 2) = "Linked"
    Cells(i, 3) = obj.AutoUpdate
  Else
    Cells(i, 2) = "Embedded"
  End If
  i = i + 1
Next
AutoUpdateFrequency Property

Returns or sets the number of minutes between automatic updates to the shared workbook. If this property is set to zero (0), updates occur only when the workbook is saved. Read/write Long.
Example

This example causes the shared workbook to be automatically updated every three minutes.

ActiveWorkbook.AutoUpdateFrequency = 3
**AutoUpdateSaveChanges Property**

*True* if current changes to the shared workbook are posted to other users whenever the workbook is automatically updated. *False* if changes aren’t posted (this workbook is still synchronized with changes made by other users). The default value is *True*. Read/write *Boolean*. 
Remarks

The **AutoUpdateFrequency** property must be set to a value from 5 to 1440 for this property to take effect.
Example

This example causes changes to the shared workbook to be posted to other users whenever the workbook is automatically updated.

```
ActiveWorkbook.AutoUpdateSaveChanges = True
```
**AxisBetweenCategories Property**

- True if the value axis crosses the category axis between categories. Read/write Boolean.
Remarks

This property applies only to category axes, and it doesn't apply to 3-D charts.
Example

This example causes the value axis in Chart1 to cross the category axis between categories.

Charts("Chart1").Axes(xlCategory).AxisBetweenCategories = True
AxisGroup Property

- AxisGroup property as it applies to the ChartGroup and Series objects.

Returns the group for the specified chart group or series. Read/write XlAxisGroup.

XlAxisGroup can be one of these XlAxisGroup constants.
xlPrimary
xlSecondary

expression.AxisGroup

expression Required. An expression that returns one of the above objects.

- AxisGroup property as it applies to the Axis object.

Returns the group for the specified axis. Read-only XlAxisGroup.

XlAxisGroup can be one of these XlAxisGroup constants.
xlPrimary
xlSecondary

expression.AxisGroup

expression Required. An expression that returns one of the above objects.
Remarks

For 3-D charts, only xlPrimary is valid.
**Example**

This example deletes the value axis in Chart1 if the axis is in the secondary group.

```vba
With Charts("Chart1").Axes(xlValue)
    If .AxisGroup = xlSecondary Then .Delete
End With
```
AxisTitle Property

Returns an AxisTitle object that represents the title of the specified axis. Read-only.
Example

This example adds an axis label to the category axis in Chart1.

With Charts("Chart1").Axes(xlCategory)  
   .HasTitle = True  
   .AxisTitle.Text = "July Sales"
End With
Show All
**BackColor Property**

- **BackColor property as it applies to the ChartFillFormat object.**

Returns a [ChartColorFormat](#) object that represents the specified fill background color. Read-only [ChartColorFormat](#) object.

```plaintext
expression.BackColor
```

*expression*  Required. An expression that returns one of the above objects.

- **BackColor property as it applies to the FillFormat and LineFormat objects.**

Returns a [ColorFormat](#) object that represents the specified fill background color. Read/write [ColorFormat](#) object.

```plaintext
expression.BackColor
```

*expression*  Required. An expression that returns one of the above objects.
Example

This example sets the foreground color, background color, and gradient for the chart area fill on chart one.

With Charts(1).ChartArea.Fill
    .Visible = True
    .ForeColor.SchemeColor = 15
    .BackColor.SchemeColor = 17
    .TwoColorGradient msoGradientHorizontal, 1
End With
Background Property

- Background property as it applies to the CanvasShapes object.

Returns a Shape object that represents the background image for the specified document. Read-only.

expression.Background

expression  Required. An expression that returns a CanvasShapes object.

- Background property as it applies to the Font object.

Returns or sets the text background type. This property is used for text on charts. Read/write Variant.

expression.Background

expression  Required. An expression that returns a Font object.
Remarks

The following constants can be used with the **Background** property as it applies to the **Font** object: `xlBackgroundAutomatic`, `xlBackgroundOpaque`, `xlBackgroundTransparent`. 
Example

This example adds a chart title to embedded chart one on the first worksheet and then sets the font size and background type for the title. This example assumes a chart exists on the first worksheet.

Sub UseBackground()

    With Worksheets(1).ChartObjects(1).Chart
        .HasTitle = True
        .ChartTitle.Text = "Rainfall Totals by Month"
    With .ChartTitle.Font
        .Size = 10
        .Background = xlBackgroundTransparent
    End With
End With

End Sub
BackgroundChecking Property

Alerts the user for all cells that violate enabled error checking rules. When this property is set to True (default), the AutoCorrect Options button appears next to all cells that violate enabled errors. False disables background checking for errors. Read/write Boolean.

expression. BackgroundChecking

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Refer to the ErrorCheckingOptions object to view a list of its members that can be enabled.
Example

In the following example, when the user selects cell A1 (which contains a formula referring to empty cells), the **AutoCorrect Options** button appears.

Sub CheckBackground()

    ' Simulate an error by referring to empty cells.
    Application.ErrorCheckingOptions.BackgroundChecking = True
    Range("A1").Select
    ActiveCell.Formula = "=A2+A3"

End Sub
**BackgroundQuery Property**

**True** if queries for the PivotTable report or query table are performed asynchronously (in the background). Read/write **Boolean**.
Remarks

For OLAP data sources, this property is read-only and always returns False.
**Example**

This example causes queries for the first PivotTable report on worksheet one to be performed in the background.

```vba
Worksheets(1).PivotTables("Pivot1")._
 .PivotCache.**BackgroundQuery** = True
```
Backward Property

Returns or sets the number of periods (or units on a scatter chart) that the trendline extends backward. Read/write Long
**Example**

This example sets the number of units that the trendline on Chart1 extends forward and backward. The example should be run on a 2-D column chart that contains a single series with a trendline.

```vba
With Charts("Chart1").SeriesCollection(1).Trendlines(1)
    .Forward = 5
    .Backward = .5
End With
```
Bar3DGroup Property

Returns a ChartGroup object that represents the bar chart group on a 3-D chart. Read-only.
Example

This example sets the space between bar clusters in the 3-D bar chart group to be 50 percent of the bar width.

Charts(1).BarGroup3DGroup.GapWidth = 50
**BarShape Property**

Returns or sets the shape used with the 3-D bar or column chart. Read/write [XlBarShape](#).

XlBarShape can be one of these XlBarShape constants:
- xlBox
- xlConeToPoint
- xlPyramidToMax
- xlConeToMax
- xlCylinder
- xlPyramidToPoint

`expression.BarShape`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the shape used with series one on chart one.

Charts(1).SeriesCollection(1).BarShape = xlConeToPoint
BaseField Property

Returns or sets the base field for a custom calculation. This property is valid only for data fields. Read/write Variant.
Remarks

This property is not available for OLAP data sources.
Example

This example sets the data field in the PivotTable report on Sheet1 to calculate the difference from the base field, sets the base field to the field named "ORDER_DATE," and then sets the base item to the item named "5/16/89."

With Worksheets("Sheet1").Range("A3").PivotField
    .Calculation = xlDifferenceFrom
    .BaseField = "ORDER_DATE"
    .BaseItem = "5/16/89"
End With
Show All
BaseItem Property

Returns or sets the item in the base field for a custom calculation. Valid only for data fields. Read/write Variant.
Remarks

This property is not available for OLAP data sources.
Example

This example sets the data field in the PivotTable report on Sheet1 to calculate the difference from the base field, sets the base field to the field named "ORDER_DATE," and then sets the base item to the item named "5/16/89."

```vba
With Worksheets("Sheet1").Range("A3").PivotField
    .Calculation = xlDifferenceFrom
    .BaseField = "ORDER_DATE"
    .BaseItem = "5/16/89"
End With
```
BaseUnit Property

Returns or sets the base unit for the specified category axis. Read/write XlTimeUnit.

XlTimeUnit can be one of these XlTimeUnit constants.

xlMonths
xlDays
xlYears

expression.BaseUnit

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting this property has no visible effect if the **CategoryType** property for the specified axis is set to **xlCategoryScale**. The set value is retained, however, and takes effect when the **CategoryType** property is set to **xlTimeScale**.

You cannot set this property for a value axis.
**Example**

This example sets the category axis in embedded chart one on worksheet one to use a time scale, with months as the base unit.

```vba
With Worksheets(1).ChartObjects(1).Chart
    With .Axes(xlCategory)
        .CategoryType = xlTimeScale
        .BaseUnit = xlMonths
    End With
End With
```
BaseUnitIsAuto Property

True if Microsoft Excel chooses appropriate base units for the specified category axis. The default value is True. Read/write Boolean.
Remarks

You cannot set this property for a value axis.
Example

This example sets the category axis in embedded chart one on worksheet one to use a time scale with automatic base units.

With Worksheets(1).ChartObjects(1).Chart
    With .Axes(xlCategory)
        .CategoryType = xlTimeScale
        .BaseUnitIsAuto = True
    End With
End With
BeginArrowheadLength Property

Returns or sets the length of the arrowhead at the beginning of the specified line. Read/write MsoArrowheadLength.

MsoArrowheadLength can be one of these MsoArrowheadLength constants.

msoArrowheadLengthMixed
msoArrowheadShort
msoArrowheadLengthMedium
msoArrowheadLong

expression.BeginArrowheadLength

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
    .BeginArrowheadLength = msoArrowheadShort
    .BeginArrowheadStyle = msoArrowheadOval
    .BeginArrowheadWidth = msoArrowheadNarrow
    .EndArrowheadLength = msoArrowheadLong
    .EndArrowheadStyle = msoArrowheadTriangle
    .EndArrowheadWidth = msoArrowheadWide
End With
BeginArrowheadStyle Property

Returns or sets the style of the arrowhead at the beginning of the specified line. Read/write MsoArrowheadStyle.

MsoArrowheadStyle can be one of these MsoArrowheadStyle constants.
- msoArrowheadNone
- msoArrowheadOval
- msoArrowheadStyleMixed
- msoArrowheadDiamond
- msoArrowheadOpen
- msoArrowheadStealth
- msoArrowheadTriangle

expression.BeginArrowheadStyle

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
  .BeginArrowheadLength = msoArrowheadShort
  .BeginArrowheadStyle = msoArrowheadOval
  .BeginArrowheadWidth = msoArrowheadNarrow
  .EndArrowheadLength = msoArrowheadLong
  .EndArrowheadStyle = msoArrowheadTriangle
  .EndArrowheadWidth = msoArrowheadWide
End With
BeginArrowheadWidth Property

Returns or sets the width of the arrowhead at the beginning of the specified line. Read/write **MsoArrowheadWidth**.

MsoArrowheadWidth can be one of these MsoArrowheadWidth constants.

`msoArrowheadNarrow`
`msoArrowheadWidthMedium`
`msoArrowheadWide`
`msoArrowheadWidthMixed`

`expression.BeginArrowheadWidth`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
    .BeginArrowheadLength = msoArrowheadShort
    .BeginArrowheadStyle = msoArrowheadOval
    .BeginArrowheadWidth = msoArrowheadNarrow
    .EndArrowheadLength = msoArrowheadLong
    .EndArrowheadStyle = msoArrowheadTriangle
    .EndArrowheadWidth = msoArrowheadWide
End With
**BeginConnected Property**

*True* if the beginning of the specified connector is connected to a shape. Read-only **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**
- **msoFalse**
- **msoTriStateMixed**
- **msoTriStateToggle**
- **msoTrue** The beginning of the specified connector is connected to a shape.

`expression.BeginConnected`

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

If shape three on myDocument is a connector whose beginning is connected to a shape, this example stores the connection site number in the variable oldBeginConnSite, stores a reference to the connected shape in the object variable oldBeginConnShape, and then disconnects the beginning of the connector from the shape.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
   If .Connector Then
      With .ConnectorFormat
         If .BeginConnected Then
            oldBeginConnSite = .BeginConnectionSite
            Set oldBeginConnShape = .BeginConnectedShape
            .BeginDisconnect
         End If
      End With
   End If
End With
BeginConnectedShape Property

Returns a Shape object that represents the shape that the beginning of the specified connector is attached to. Read-only.

Note  If the beginning of the specified connector isn’t attached to a shape, this property generates an error.
Example

This example assumes that myDocument already contains two shapes attached by a connector named "Conn1To2." The code adds a rectangle and a connector to myDocument. The beginning of the new connector will be attached to the same connection site as the beginning of the connector named "Conn1To2," and the end of the new connector will be attached to connection site one on the new rectangle.

```
Set myDocument = Worksheets(1)
With myDocument.Shapes
    Set r3 = .AddShape(msoShapeRectangle, 450, 190, 200, 100)
        .AddConnector(msoConnectorCurve, 0, 0, 10, 10).Name = _
            "Conn1To3"
    With .Item("Conn1To2").ConnectorFormat
        beginConnSite1 = .BeginConnectionSite
    Set beginConnShape1 = .BeginConnectedShape
    End With
    With .Item("Conn1To3").ConnectorFormat
        BeginConnect beginConnShape1, beginConnSite1
    End Connect r3, 1
End With
End With
```
BeginConnectionSite Property

Returns an integer that specifies the connection site that the beginning of a connector is connected to. Read-only Long.

Note  If the beginning of the specified connector isn’t attached to a shape, this property generates an error.
Example

This example assumes that `myDocument` already contains two shapes attached by a connector named "Conn1To2." The code adds a rectangle and a connector to `myDocument`. The beginning of the new connector will be attached to the same connection site as the beginning of the connector named "Conn1To2," and the end of the new connector will be attached to connection site one on the new rectangle.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes
    Set r3 = .AddShape(msoShapeRectangle, 450, 190, 200, 100)
    .AddConnector(msoConnectorCurve, 0, 0, 10, 10).Name = _
        "Conn1To3"
    With .Item("Conn1To2").ConnectorFormat
        beginConnSite1 = .BeginConnectionSite
        Set beginConnShape1 = .BeginConnectedShape
    End With
    With .Item("Conn1To3").ConnectorFormat
        .BeginConnect beginConnShape1, beginConnSite1
        .EndConnect r3, 1
    End With
End With
```

This keyword is not implemented. It is reserved for future use.
BlackAndWhite Property

*True* if elements of the document will be printed in black and white. Read/write Boolean.
Remarks

This property applies only to worksheet pages.
Example

This example causes Sheet1 to be printed in black and white.

Worksheets("Sheet1").PageSetup.BlackAndWhite = True
Returns or sets a value that indicates how the specified shape appears when the presentation is viewed in black-and-white mode. Read/write MsoBlackWhiteMode.

MsoBlackWhiteMode can be one of these MsoBlackWhiteMode constants.
- msoBlackWhiteAutomatic
- msoBlackWhiteBlack
- msoBlackWhiteBlackTextAndLine
- msoBlackWhiteDontShow
- msoBlackWhiteGrayOutline
- msoBlackWhiteGrayScale
- msoBlackWhiteHighContrast
- msoBlackWhiteInverseGrayScale
- msoBlackWhiteLightGrayScale
- msoBlackWhiteMixed
- msoBlackWhiteWhite

expression.BlackWhiteMode

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets shape one on wksOne to appear in black-and-white mode. When you view the presentation in black-and-white mode, shape one will appear black regardless of what color it is in color mode.

Sub UseBlackWhiteMode()
    Dim wksOne As Worksheet
    Set wksOne = Application.Worksheets(1)
    wksOne.Shapes(1).BlackWhiteMode = msoBlackWhiteGrayOutline
End Sub
Bold Property

**True** if the font is bold. Read/write **Variant**.
Example

This example sets the font to bold for the range A1:A5 on Sheet1.

`Worksheets("Sheet1").Range("A1:A5").Font.Bold = True`
Border Property

- **Border property as it applies to the CalloutFormat object.**

Represents the visibility options for the border of the object. Read/write **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue** Does not apply to this object.
- **msoFalse** Sets the border invisible.
- **msoTriStateMixed** Does not apply to this object.
- **msoTriStateToggle** Allows the user to switch the border from visible to invisible and vice versa.
- **msoTrue default.** Sets the border visible.

**expression.Border**

**expression** Required. An expression that returns a **CallFormat** object.

- **Border property as it applies to all other objects in the Applies To list.**

Returns a **Border** object that represents the border of the object.

**expression.Border**

**expression** Required. An expression that returns all other objects in the Applies To list.
Example

This example sets the color of the chart area border of Chart1 to red.

`Charts("Chart1").ChartArea.Border.ColorIndex = 3`
Borders Property

- Borders property as it applies to the CellFormat object.

Allows the user to set or return the search criteria based on the cell's border format.

expression.Borders

expression  Required. An expression that returns a CellFormat object.

- Borders property as it applies to the FormatCondition, Range, and Style objects.

Returns a Borders collection that represents the borders of a style or a range of cells (including a range defined as part of a conditional format).

expression.Borders

expression  Required. An expression that returns one of the above objects.
Remarks

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

As it applies to the CellFormat object.

This example sets the search criteria to identify the borders of cells that have a continuous and thick style bottom-edge, creates a cell with this condition, finds this cell, and notifies the user. **Note:** The default color of the border is used in this example, therefore the color index is not changed.

Sub SearchCellFormat()

    ' Set the search criteria for the border of the cell format.
    With Application.FindFormat.Borders(xlEdgeBottom)
        .LineStyle = xlContinuous
        .Weight = xlThick
    End With

    ' Create a continuous thick bottom-edge border for cell A5.
    Range("A5").Select
    With Selection.Borders(xlEdgeBottom)
        .LineStyle = xlContinuous
        .Weight = xlThick
    End With
    Range("A1").Select
    MsgBox "Cell A5 has a continuous thick bottom-edge border"

    ' Find the cells based on the search criteria.
    Cells.Find(What:="", After:=ActiveCell, LookIn:=xlFormulas, Look
    xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, Matc
    , SearchFormat:=True).Activate
    MsgBox "Microsoft Excel has found this cell matching the search" 
End Sub

As it applies to the FormatCondition, Range, and Style objects.

This example sets the color of the bottom border of cell B2 on Sheet1 to a thin red border.

Sub SetRangeBorder()

    With Worksheets("Sheet1").Range("B2").Borders(xlEdgeBottom)
        .LineStyle = xlContinuous
    End With
.Weight = xlThin
.ColorIndex = 3

End With

End Sub
Returns or sets the size of the bottom margin, in points. Read/write Double.
Remarks

Margins are set or returned in points. Use either the \texttt{InchesToPoints} method or the \texttt{CentimetersToPoints} method to do the conversion.
Example

These two examples set the bottom margin of Sheet1 to 0.5 inch (36 points).

```
Worksheets("Sheet1").PageSetup.BottomMargin = _
Application.InchesToPoints(0.5)
```

```
Worksheets("Sheet1").PageSetup.BottomMargin = 36
```

This example displays the current setting for the bottom margin on Sheet1.

```
marginInches = Worksheets("Sheet1").PageSetup.BottomMargin / _
Application.InchesToPoints(1)
MsgBox "The current bottom margin is " & marginInches & " inches"
```
BottomRightCell Property

Returns a Range object that represents the cell that lies under the lower-right corner of the object. Read-only.
Example

This example displays the address of the cell beneath the lower-right corner of embedded chart one on Sheet1.

MsgBox "The bottom right corner is over cell " & _
Worksheets("Sheet1").ChartObjects(1).BottomRightCell.Address
Brightness Property

Returns or sets the brightness of the specified picture or OLE object. The value for this property must be a number from 0.0 (dimmest) to 1.0 (brightest). Read/write Single.

expression.Brightness

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the brightness for shape one on myDocument. Shape one must be either a picture or an OLE object.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).PictureFormat.Brightness = 0.3
BubbleScale Property

Returns or sets the scale factor for bubbles in the specified chart group. Can be an integer value from 0 (zero) to 300, corresponding to a percentage of the default size. Applies only to bubble charts. Read/write Long.
Example

This example sets the bubble size in chart group one to 200% of the default size.

With Worksheets(1).ChartObjects(1).Chart.ChartGroups(1).BubbleScale = 200
End With
BubbleSizes Property

Returns or sets a string in A1-style notation that refers to the worksheet cells containing the size data for the bubble chart. Applies only to bubble charts. Read/write Variant.
Example

This example displays the cell reference for the cells that contain the bubble chart size data.

MsgBox Worksheets(1).ChartObjects(1).Chart .SeriesCollection(1).BubbleSizes
Build Property

Returns the Microsoft Excel build number. Read-only Long.
Remarks

It’s usually safer to test the Version property, unless you’re sure you need to know the build number.
Example

This example tests the **Build** property.

```vbnet
If Application.Build > 2500 Then 
    ' build-dependent code here
End If
```
**BuiltIn Property**

*True* if the style is a built-in style. Read-only **Boolean**.
Example

This example creates a list on worksheet one that contains the names and built-in status of all the styles in the active workbook.

```vba
r = 0
Worksheets(1).Activate
For Each s In ActiveWorkbook/styles
    r = r + 1
    Cells(r, 1).Value = s.Name
    Cells(r, 2).Value = s.BuiltIn
Next
```
BuiltInDocumentProperties Property

Returns a DocumentProperties collection that represents all the built-in document properties for the specified workbook. Read-only.
Remarks

This property returns the entire collection of built-in document properties. Use the Item method to return a single member of the collection (a DocumentProperty object) by specifying either the name of the property or the collection index (as a number).

You can refer to document properties either by index value or by name. The following list shows the available built-in document property names:

<table>
<thead>
<tr>
<th>Property</th>
<th>Item Property</th>
<th>Collection Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Creation Date</td>
<td>Company</td>
</tr>
<tr>
<td>Subject</td>
<td>Last Save Time</td>
<td>Number of Bytes</td>
</tr>
<tr>
<td>Author</td>
<td>Total Editing Time</td>
<td>Number of Lines</td>
</tr>
<tr>
<td>Keywords</td>
<td>Number of Pages</td>
<td>Number of Paragraphs</td>
</tr>
<tr>
<td>Comments</td>
<td>Number of Words</td>
<td>Number of Slides</td>
</tr>
<tr>
<td>Template</td>
<td>Number of Characters</td>
<td>Number of Notes</td>
</tr>
<tr>
<td>Last Author</td>
<td>Security</td>
<td>Number of Hidden Slides</td>
</tr>
<tr>
<td>Revision Number</td>
<td>Category</td>
<td>Number of Multimedia Clips</td>
</tr>
<tr>
<td>Application Name</td>
<td>Format</td>
<td>Hyperlink Base</td>
</tr>
<tr>
<td>Last Print Date</td>
<td>Manager</td>
<td>Number of Characters (with spaces)</td>
</tr>
</tbody>
</table>

Container applications aren’t required to define values for every built-in document property. If Microsoft Excel doesn’t define a value for one of the built-in document properties, reading the Value property for that document property causes an error.

Because the Item method is the default method for the DocumentProperties collection, the following statements are identical:
Use the `CustomDocumentProperties` property to return the collection of custom document properties.
Example

This example displays the names of the built-in document properties as a list on worksheet one.

```vba
rw = 1
Worksheets(1).Activate
For Each p In ActiveWorkbook.BuiltinDocumentProperties
    Cells(rw, 1).Value = p.Name
    rw = rw + 1
Next
```
CacheIndex Property

Returns or sets the index number of the PivotTable cache. Read/write Long.
Remarks

If you set the CacheIndex property so that one PivotTable report uses the cache for a second PivotTable report, the first report’s fields must be a valid subset of the fields in the second report.
Example

This example sets the cache for the PivotTable report named "Pivot1" to the cache of the PivotTable report named "Pivot2."

```vba
Worksheets(1).PivotTables("Pivot1").CacheIndex = _
Worksheets(1).PivotTables("Pivot2").CacheIndex
```
**CalculateBeforeSave Property**

*True* if workbooks are calculated before they're saved to disk (if the *Calculation* property is set to *xlManual*). This property is preserved even if you change the *Calculation* property. Read/write *Boolean*. 
Example

This example sets Microsoft Excel to calculate workbooks before they're saved to disk.

Application.Calculation = xlManual
Application.CalculateBeforeSave = True
CalculatedMembers Property

Returns a **CalculatedMembers** collection representing all the calculated fields and calculated items for an OLAP PivotTable.

*expression*.CalculatedMembers

*expression*  Required. An expression that returns a [PivotTable] object.
Remarks

This property is used for Online Analytical Processing (OLAP) sources; a non-OLAP source will return a run-time error.
Example

This example adds a set to the PivotTable. It assumes a PivotTable exists on the active worksheet that is connected to an OLAP data source which contains a field titled "[Product].[All Products]".

Sub UseCalculatedMember()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Add the calculated member.
    pvtTable.CalculatedMembers.Add Name:="[Beef]", _
    Formula:="'[Product].[All Products].Children'" , _
    Type:=xlCalculatedSet
End Sub
Calculation Property

- Calculation property as it applies to the Application object.

Returns or sets the calculation mode. Read/write XlCalculation.

XlCalculation can be one of these XlCalculation constants.
  - xlCalculationAutomatic
  - xlCalculationManual
  - xlCalculationSemiautomatic

expression.Calculation

expression  Required. An expression that returns one of the above objects.

- Calculation property as it applies to the PivotField object.

Returns or sets the type of calculation performed by the specified field. This property is valid only for data fields. Read/write XlPivotFieldCalculation.

XlPivotFieldCalculation can be one of these XlPivotFieldCalculation constants.
  - xlDifferenceFrom
  - xlIndex
  - xlNoAdditionalCalculation
  - xlPercentDifferenceFrom
  - xlPercentOf
  - xlPercentOfColumn
  - xlPercentOfRow
  - xlPercentOfTotal
  - xlRunningTotal
Expression. **Calculation**

**expression** Required. An expression that returns one of the above objects.
Remarks

For OLAP data sources, this property can only return or be set to `xlNormal`. 
**Example**

This example causes Microsoft Excel to calculate workbooks before they are saved to disk.

```vba
Application.Calculation = xlCalculateManual
Application.CalculateBeforeSave = True
```

This example sets the data field in the PivotTable report on Sheet1 to calculate the difference from the base field, sets the base field to the field named "ORDER_DATE," and then sets the base item to the item named "5/16/89."

```vba
With Worksheets("Sheet1").Range("A3").PivotField
    .Calculation = xlDifferenceFrom
    .BaseField = "ORDER_DATE"
    .BaseItem = "5/16/89"
End With
```
Show All
CalculationInterruptKey Property

Sets or returns an **XlCalculationInterruptKey** constant that specifies the key that can interrupt Microsoft Excel when performing calculations. Read/write.

**XlCalculationInterruptKey** can be one of these **XlCalculationInterruptKey** constants.
- **xlAnyKey**
- **xlEscKey**
- **xlNoKey**

**expression.CalculationInterruptKey**

**expression** Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the setting for the calculation interrupt key and notifies the user.

Sub CheckInterruptKey()
    ' Determine the calculation interrupt key and notify the user.
    Select Case Application.CalculationInterruptKey
        Case xlAnyKey
            MsgBox "The calculation interrupt key is set to any key."
        Case xlEscKey
            MsgBox "The calculation interrupt key is set to 'Escape'."
        Case xlNoKey
            MsgBox "The calculation interrupt key is set to no key."
    End Select
End Sub
CalculationState Property

Returns an ExcelCalculationState constant that indicates the calculation state of the application, for any calculations that are being performed in Microsoft Excel. Read-only.

ExcelCalculationState can be one of these ExcelCalculationState constants.

- xlCalculating
- xlDone
- xlPending

expression.CalculationState

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks to see if any calculations are being performed. If no calculations are being performed, a message displays the calculation state as "Done". Otherwise, a message displays the calculation state as "Not Done".

Sub StillCalculating()
    If Application.CalculationState = xlDone Then
        MsgBox "Done"
    Else
        MsgBox "Not Done"
    End If
End Sub
CalculationVersion Property

Returns a number whose rightmost four digits are the minor calculation engine version number, and whose other digits (on the left) are the major version of Microsoft Excel. For a Workbook object, this property returns the information about the version of Excel that the workbook was last fully recalculated by. Read-only Long.

expression.CalculationVersion

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

If the workbook was saved in an earlier version of Excel and if the workbook hasn't been fully recalculated, then this property returns 0.
**Example**

This example compares the version of Microsoft Excel with the version of Excel that the workbook was last calculated in. If the two version numbers are different, the example sets the blnFullCalc variable to **True**.

```vba
If Application.CalculationVersion <> Workbooks(1).CalculationVersion Then
    blnFullCalc = True
Else
    blnFullCalc = False
End If
```
## Caller Property

Returns information about how Visual Basic was called (for more information, see the Remarks section).

`expression.Caller(Index)`

- `expression` Required. An expression that returns an `Application` object.
- `Index` Optional `Variant`. An index to the array. This argument is used only when the property returns an array (for more information, see the Remarks section).
Remarks

This property returns information about how Visual Basic was called, as shown in the following table.

<table>
<thead>
<tr>
<th>Caller</th>
<th>Return value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A custom function entered in a single cell</td>
<td>A Range object specifying that cell</td>
</tr>
<tr>
<td>A custom function that is part of an array formula in a range of cells</td>
<td>A Range object specifying that range of cells</td>
</tr>
<tr>
<td>An Auto_Open, Auto_Close, Auto_Activate, or Auto_Deactivate macro</td>
<td>The name of the document as text</td>
</tr>
<tr>
<td>A macro set by either the OnDoubleClick or OnEntry property</td>
<td>The name of the chart object identifier or cell reference (if applicable) to which the macro applies</td>
</tr>
<tr>
<td>The Macro dialog box (Tools menu), or any caller not described above</td>
<td>The #REF! error value</td>
</tr>
</tbody>
</table>
Example

This example displays information about how Visual Basic was called.

```vbnet
Select Case TypeName(Application.Caller)
    Case "Range"
        v = Application.Caller.Address
    Case "String"
        v = Application.Caller
    Case "Error"
        v = "Error"
    Case Else
        v = "unknown"
End Select
MsgBox "caller = " & v
```
Callout Property

Returns a CalloutFormat object that contains callout formatting properties for the specified shape. Applies to Shape or ShapeRange objects that represent line callouts. Read-only.
Example

This example adds to myDocument an oval and a callout that points to the oval. The callout text won’t have a border, but it will have a vertical accent bar that separates the text from the callout line.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    .AddShape msoShapeOval, 180, 200, 280, 130
    With .AddCallout(msoCalloutTwo, 420, 170, 170, 40)
        .TextFrame.Characters.Text = "My oval"
        With .Callout
            .Accent = True
            .Border = False
        End With
    End With
End With
CanPlaySounds Property

This property should not be used. Sound notes have been removed from Microsoft Excel.
CanRecordSounds Property

This property should not be used. Sound notes have been removed from Microsoft Excel.
CapitalizeNamesOfDay Property

*True* if the first letter of day names is capitalized automatically. Read/write Boolean.
Example

This example sets Microsoft Excel to capitalize the first letter of the names of days.

With Application.AutoCorrect
    .CapitalizeNamesOfDay = True
    .ReplaceText = True
End With
Caption Property

- Caption property as it applies to the Application objects.

The name that appears in the title bar of the main Microsoft Excel window. If you don't set a name, or if you set the name to Empty, this property returns "Microsoft Excel". Read/write String.

equation. Caption

expression Required. An expression that returns one of the above objects.

- Caption property as it applies to the AxisTitle objects.

The axis title text. Read/write String.

equation. Caption

expression Required. An expression that returns one of the above objects.

- Caption property as it applies to the Characters object.

The text of this range of characters. Read-only String.

equation. Caption

expression Required. An expression that returns one of the above objects.

- Caption property as it applies to the ChartTitle object.


The chart title text. Read-only **String**.

expression.**Caption**

expression  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the DataLabel object.**

The data label text. Read-only **String**.

expression.**Caption**

expression  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the DisplayUnitLabel object.**

The display unit label text. Read-only **String**.

expression.**Caption**

expression  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the PivotField object.**

The label text for the pivot field. Read-only **String**.

expression.**Caption**

expression  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the PivotItem object.**

The label text for the pivot item. Read-only **String**.
`expression.Caption`

`expression`  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the **CubeField** object.**

  The label text for the cube field. Read-only **String**.

  `expression.Caption`

  `expression`  Required. An expression that returns one of the above objects.

- **Caption property as it applies to the **Window** object.**

  The name that appears in the title bar of the document window. When you set the name, you can use that name as the index to the **Windows** property (see the second example). Read/write **Variant**.

  `expression.Caption`

  `expression`  Required. An expression that returns one of the above objects.
Remarks

The following table shows example values of the **Caption** property and related properties, given an **OLAP** data source with the unique name "[Europe].[France].[Paris]" and a non-OLAP data source with the item name "Paris".

<table>
<thead>
<tr>
<th>Property</th>
<th>Value (OLAP data source)</th>
<th>Value (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption</td>
<td>Paris</td>
<td>Paris</td>
</tr>
<tr>
<td>Name</td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
<tr>
<td>SourceName</td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>(Same as the SQL property value; read-only)</td>
</tr>
<tr>
<td>Value</td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
</tbody>
</table>

When specifying an index into the **PivotItems** collection, you can use the syntax shown in the following table.

<table>
<thead>
<tr>
<th>Syntax (OLAP data source)</th>
<th>Syntax (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression.PivotItems(&quot;[Europe].[France].[Paris]&quot;)</td>
<td>expression.PivotItems(&quot;Paris&quot;)</td>
</tr>
</tbody>
</table>

When using the **Item** property to reference a specific member of a collection, you can use the text index names shown in the following table.

<table>
<thead>
<tr>
<th>Name (OLAP data source)</th>
<th>Name (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Europe].[France].[Paris]</td>
<td>Paris</td>
</tr>
</tbody>
</table>
Example

This example sets the name that appears in the title bar of the main Microsoft Excel window to be a custom name.

Application.Caption = "Blue Sky Airlines Reservation System"

This example sets the name of the first window in the active workbook to be "Consolidated Balance Sheet." This name is then used as the index to the Windows property.

ActiveWorkbook.Windows(1).Caption = "Consolidated Balance Sheet"
ActiveWorkbook.Windows("Consolidated Balance Sheet").ActiveSheet.Calculate
Category Property

Returns or sets the category for the specified name in the language of the macro. The name must refer to a custom function or command. Read/write **String**.
**Example**

This example assumes that you created a custom function or command on a Microsoft Excel 4.0 macro sheet. The example displays the function category in the language of the macro. It assumes that the name of the custom function or command is the only name in the workbook.

```vba
With ActiveWorkbook.Names(1)
    If .MacroType <> xlNone Then
        MsgBox "The category for this name is " & .Category
    Else
        MsgBox "This name does not refer to a custom function or command."
    End If
End With
```
CategoryLocal Property

Returns or sets the category for the specified name, in the language of the user, if the name refers to a custom function or command. Read/write String.
**Example**

This example displays, in the language of the user, the function category of either a custom function or a command created on a Microsoft Excel 4.0 macro sheet. The example assumes that the custom function name or command name is the only name in the workbook.

```
With ActiveWorkbook.Names(1)
    If .MacroType <> xlNone Then
        MsgBox "The category for this name is " & .CategoryLocal
    Else
        MsgBox "This name does not refer to" & _
        " a custom function or command."
    End If
End With
```
CategoryNames Property

Returns or sets all the category names for the specified axis, as a text array. When you set this property, you can set it to either an array or a Range object that contains the category names. Read/write Variant.
Remarks

Category names are really a property of the "special" series in an axis grouping. Deleting or modifying that special series will change the category names for all series using the axis.
Example

This example sets the category names for Chart1 to the values in cells B1:B5 on Sheet1.

Set Charts("Chart1").Axes(xlCategory).
CategoryNames = _
Worksheets("Sheet1").Range("B1:B5")

This example uses an array to set individual category names for Chart1.

Charts("Chart1").Axes(xlCategory).
CategoryNames = _
**CategoryType Property**

Returns or sets the category axis type. Read/write [XlCategoryType](#).

XlCategoryType can be one of these XlCategoryType constants.

- [xlCategoryScale](#)
- [xlAutomaticScale](#)
- [xlTimeScale](#)

`expression.CategoryType`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

You cannot set this property for a value axis.
Example

This example sets the category axis in embedded chart one on worksheet one to use a time scale, with months as the base unit.

WithWorksheets(1).ChartObjects(1).Chart
    WithAxes(xlCategory)
        .CategoryType = xlTimeScale
        .BaseUnit = xlMonths
    End With
End With
CellDragAndDrop Property

True if dragging and dropping cells is enabled. Read/write Boolean.
Example

This example enables dragging and dropping cells.

Application.

```
CellDragAndDrop = True
```

```
Cells Property

- **Cells Property as it applies to the Application object.**

Returns a **Range** object that represents all the cells on the active worksheet. If the active document isn’t a worksheet, this property fails. Read-only.

(expression.Cells)

- **Cells Property as it applies to the Range object.**

Returns a **Range** object that represents the cells in the specified range. Read-only.

(expression.Cells)

- **Cells Property as it applies to the Worksheet object.**

Returns a **Range** object that represents all the cells on the worksheet (not just the cells that are currently in use). Read-only.

(expression.Cells)
Remarks

Because the Item property is the default property for the Range object, you can specify the row and column index immediately after the Cells keyword. For more information, see the Item property and the examples for this topic.

Using this property without an object qualifier returns a Range object that represents all the cells on the active worksheet.
Example

This example sets the font size for cell C5 on Sheet1 to 14 points.

`Worksheets("Sheet1").Cells(5, 3).Font.Size = 14`

This example clears the formula in cell one on Sheet1.

`Worksheets("Sheet1").Cells(1).ClearContents`

This example sets the font and font size for every cell on Sheet1 to 8-point Arial.

```vba
With Worksheets("Sheet1").Cells
    .Font.Name = "Arial"
    .Size = 8
End With
```

This example loops through cells A1:J4 on Sheet1. If a cell contains a value less than 0.001, the example replaces that value with 0 (zero).

```vba
For rwIndex = 1 To 4
    For colIndex = 1 To 10
        With Worksheets("Sheet1").Cells(rwIndex, colIndex)
            If .Value < 0.001 Then .Value = 0
        End With
    Next colIndex
Next rwIndex
```

This example sets the font style for cells A1:C5 on Sheet1 to italic.

```vba
Worksheets("Sheet1").Activate
Range(Cells(1, 1), Cells(5, 3)).Font.Italic = True
```

This example scans a column of data named "myRange." If a cell has the same value as the cell immediately above it, the example displays the address of the cell that contains the duplicate data.

```vba
Set r = Range("myRange")
For n = 1 To r.Rows.Count
    If r.Cells(n, 1) = r.Cells(n + 1, 1) Then
        MsgBox "Duplicate data in " & r.Cells(n + 1, 1).Address
    End If
```
CenterFooter Property

Returns or sets the center part of the footer. Read/write String.
Remarks

Special format codes can be used in the footer text.
Example

This example prints the workbook name and page number at the bottom of each page.

`Worksheets("Sheet1").PageSetup.CenterFooter = "&F page &P"`
CenterFooterPicture Property

Returns a **Graphic** object that represents the picture for the center section of the footer. Used to set attributes about the picture.

`expression.CenterFooterPicture`

*expression*  Required. An expression that returns a **PageSetup** object.
Remarks

The CenterFooterPicture property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the center section of the footer. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.CentertFooterPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the center footer.
    ActiveSheet.PageSetup.CenterFooter = "&G"

End Sub

Note   It is required that "&G" is a part of the CenterFooter property string in order for the image to show up in the center footer.
CenterHeader Property

Returns or sets the center part of the header. Read/write String.
Remarks

Special format codes can be used in the header text.
Example

This example prints the date and page number at the top of each page.

`Worksheets("Sheet1").PageSetup.CenterHeader = "&D page &P of &N"`
CenterHeaderPicture Property

- 

Returns a Graphic object that represents the picture for the center section of the header. Used to set attributes about the picture.

expression.CenterHeaderPicture

expression Required. An expression that returns a PageSetup object.
Remarks

The `CenterHeaderPicture` property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the center section of the header. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.CentertHeaderPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the center header.
    ActiveSheet.PageSetup.CenterHeader = "&G"

End Sub

Note  It is required that "&G" is a part of the CenterHeader property string in order for the image to show up in the center header.
CenterHorizontally Property

True if the sheet is centered horizontally on the page when it's printed. Read/write Boolean.
**Example**

This example centers Sheet1 horizontally when it's printed.

```vba
Worksheets("Sheet1").PageSetup.CenterHorizontally = True
```
CenterVertically Property

True if the sheet is centered vertically on the page when it's printed. Read/write Boolean.
Example

This example centers Sheet1 vertically when it's printed.

Worksheets("Sheet1").PageSetup.CenterVertically = True
ChangeHistoryDuration Property

Returns or sets the number of days shown in the shared workbook's change history. Read/write Long.
Remarks

Any changes in the change history older than the setting for this property are removed when the workbook is closed.
**Example**

This example sets the number of days shown in the change history for the active workbook if change tracking is enabled. Any changes in the change history older than the setting for this property are removed when the workbook is closed.

```vbnet
With ActiveWorkbook
    If .KeepChangeHistory Then
        .ChangeHistoryDuration = 7
    End If
End With
```
ChangingCells Property

Returns a Range object that represents the changing cells for a scenario. Read-only.
Example

This example selects the changing cells for scenario one on Sheet1.

Worksheets("Sheet1").Activate
ActiveSheet.Scenarios(1).ChangingCells.Select
**Characters Property**

Returns a `Characters` object that represents a range of characters within the object text. You can use the `Characters` object to format characters within a text string.

`expression.Characters(Start, Length)`

`expression` Required. An expression that returns an object in the Applies To list.

**Start** Optional `Variant`. The first character to be returned. If this argument is either 1 or omitted, this property returns a range of characters starting with the first character.

**Length** Optional `Variant`. The number of characters to be returned. If this argument is omitted, this property returns the remainder of the string (everything after the `Start` character).
Remarks

The `Characters` object isn't a collection.

For the `TextFrame` object, `Characters` is a method.
**Example**

This example formats the third character in cell A1 on Sheet1 as bold.

```vba
With Worksheets("Sheet1").Range("A1")
    .Value = "abcdefg"
    .Characters(3, 1).Font.Bold = True
End With
```
**CharacterType Property**

Returns or sets the type of phonetic text in the specified cell. Read/write **XlPhoneticCharacterType**.

XlPhoneticCharacterType can be one of these XlPhoneticCharacterType constants.
- xlHiragana
- xlKatakana
- xlKatakanaHalf
- xlNoConversion

`expression.CharacterSet`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example changes the first phonetic text string in the active cell from Furigana to Hiragana.

ActiveCell.Phonetics(1).CharacterType = xlHiragana
Chart Property

Returns a Chart object that represents the chart contained in the object. Read-only.
Example

This example adds a title to the first embedded chart on Sheet1.

With Worksheets("Sheet1").ChartObjects(1).Chart
  .HasTitle = True
  .ChartTitle.Text = "1995 Rainfall Totals by Month"
End With
ChartArea Property

Returns a ChartArea object that represents the complete chart area for the chart. Read-only.
Example

This example sets the chart area interior color of Chart1 to red and sets the border color to blue.

With Charts("Chart1").ChartArea
    .Interior.ColorIndex = 3
    .Border.ColorIndex = 5
End With
Show All
Charts Property

- **Charts Property as it applies to the Application object.**

Returns a Sheets collection that represents all the chart sheets in the active workbook. Read-only.

*expression*.Charts

*expression* Required. An expression that returns an object in the Applies To List.

Using this property without an object qualifier returns all chart sheets in the active workbook.

For information about returning a single member of a collection, see Returning an Object from a Collection.

- **Charts Property as it applies to the Workbook object.**

Returns a Sheets collection that represents all the chart sheets in the specified workbook. Read-only.

*expression*.Charts

*expression* Required. An expression that returns an object in the Applies To List.

Using this property without an object qualifier returns all chart sheets in the active workbook.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example sets the text for the title of Chart1.

```vba
With Charts("Chart1")
    .HasTitle = True
    .ChartTitle.Text = "First Quarter Sales"
End With
```

This example deletes every chart sheet in the active workbook.

```vba
ActiveWorkbook.Charts.Delete
```

This example hides Chart1, Chart3, and Chart5.

```vba
Charts(Array("Chart1", "Chart3", "Chart5")).Visible = False
```
ChartSize Property

Returns or sets the way a chart is scaled to fit on a page. Read/write XlObjectSize.

XlObjectSize can be one of these XlObjectSize constants.

xlFitToPage. Print the chart as large as possible, while retaining the chart's height-to-width ratio as shown on the screen

xlFullPage. Print the chart to fit the page, adjusting the height-to-width ratio as necessary.

xlScreenSize. Print the chart the same size as it appears on the screen.

expression.ChartSize

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property applies only to chart sheets (it cannot be used with embedded charts).
Example

This example scales the first chart in the active workbook to fit a full page.

ActiveWorkbook.Charts(1).PageSetup.ChartSize = xlFullPage
ChartTitle Property

Returns a ChartTitle object that represents the title of the specified chart. Read-only.
Example

This example sets the text for the title of Chart1.

```vba
With Charts("Chart1")
    .HasTitle = True
    .ChartTitle.Text = "First Quarter Sales"
End With
```
ChartType Property

Returns or sets the chart type. Read/write XlChartType.

XlChartType can be one of these XlChartType constants.

- xlLine. Line
- xlLineMarkersStacked. Stacked Line with Markers
- xlLineStacked. Stacked Line
- xlPie. Pie
- xlPieOfPie. Pie of Pie
- xlPyramidBarStacked. Stacked Pyramid Bar
- xlPyramidCol. 3D Pyramid Column
- xlPyramidColClustered. Clustered Pyramid Column
- xlPyramidColStacked. Stacked Pyramid Column
- xlPyramidColStacked100. 100% Stacked Pyramid Column
- xlRadar. Radar
- xlRadarFilled. Filled Radar
- xlRadarmarkers. Radar with Data Markers
- xlStockHLC. High-Low-Close
- xlStockOHLC. Open-High-Low-Close
- xlStockVHLC. Volume-High-Low-Close
- xlStockVOHLC. Volume-Open-High-Low-Close
- xlSurface. 3D Surface
- xlSurfaceTopView. Surface (Top View)
- xlSurfaceTopViewWireframe. Surface (Top View wireframe)
- xlSurfaceWireframe. 3D Surface (wireframe)
- xlXYScatter. Scatter
- xlXYScatterLines. Scatter with Lines
- xlXYScatterLinesNoMarkers. Scatter with Lines and No Data Markers
- xlXYScatterSmooth. Scatter with Smoothed Lines
**xlXYScatterSmoothNoMarkers.** Scatter with Smoothed Lines and No Data Markers

**xl3DArea.** 3D Area

**xl3DAreaStacked.** 3D Stacked Area

**xl3DAreaStacked100.** 100% Stacked Area

**xl3DBarClustered.** 3D Clustered Bar

**xl3DBarStacked.** 3D Stacked Bar

**xl3DBarStacked100.** 3D 100% Stacked Bar

**xl3DColumn.** 3D Column

**xl3DColumnClustered.** 3D Clustered Column

**xl3DColumnStacked.** 3D Stacked Column

**xl3DColumnStacked100.** 3D 100% Stacked Column

**xl3DLine.** 3D Line

**xl3DPie.** 3D Pie

**xl3DPieExploded.** Exploded 3D Pie

**xlArea.** Area

**xlAreaStacked.** Stacked Area

**xlAreaStacked100.** 100% Stacked Area

**xlBarClustered.** Clustered Bar

**xlBarOfPie.** Bar of Pie

**xlBarStacked.** Stacked Bar

**xlBarStacked100.** 100% Stacked Bar

**xlBubble.** Bubble

**xlBubble3DEffect.** Bubble with 3D effects

**xlColumnClustered.** Clustered Column

**xlColumnStacked.** Stacked Column

**xlColumnStacked100.** 100% Stacked Column

**xlConeBarClustered.** Clustered Cone Bar

**xlConeBarStacked.** Stacked Cone Bar

**xlConeBarStacked100.** 100% Stacked Cone Bar

**xlConeCol.** 3D Cone Column

**xlConeColClustered.** Clustered Cone Column

**xlConeColStacked.** Stacked Cone Column
xlConeColStacked100. 100% Stacked Cone Column
xlCylinderBarClustered. Clustered Cylinder Bar
xlCylinderBarStacked. Stacked Cylinder Bar
xlCylinderBarStacked100. 100% Stacked Cylinder Bar
xlCylinderCol. 3D Cylinder Column
xlCylinderColClustered. Clustered Cone Column
xlCylinderColStacked. Stacked Cone Column
xlCylinderColStacked100. 100% Stacked Cylinder Column
xlDoughnut. Doughnut
xlDoughnutExploded. Exploded Doughnut
xlLineMarkers. Line with Markers
xlLineMarkersStacked100. 100% Stacked Line with Markers
xlLineStacked100. 100% Stacked Line
xlPieExploded. Exploded Pie
xlPyramidBarClustered. Clustered Pyramid Bar
xlPyramidBarStacked100. 100% Stacked Pyramid Bar

expression.ChartType

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Some chart types aren’t available for PivotChart reports.
Example

This example sets the bubble size in chart group one to 200% of the default size if the chart is a 2D bubble chart.

With Worksheets(1).ChartObjects(1).Chart
    If .ChartType = xlBubble Then
        .ChartGroups(1).BubbleScale = 200
    End If
End With
CheckIfOfficeIsHTMLEditor Property

True if Microsoft Excel checks to see whether an Office application is the default HTML editor when you start Excel. False if Excel does not perform this check. The default value is True. Read/write Boolean.
Remarks

This property is used only if the Web browser you are using supports HTML editing and HTML editors.

To use a different HTML editor, you must set this property to False and then register the editor as the default system HTML editor.
Example

This example causes Microsoft Excel not to check to see whether it is the default HTML editor.

Application.DefaultWebOptions.CheckIfOfficeIsHTMLEditor = False
Child Property

Returns msoTrue if the specified shape is a child shape or if all shapes in a shape range are child shapes of the same parent. Read-only MsoTriState.

MsoTriState can be one of these MsoTriState constants.
-msoCTrue Does not apply to this property.
-msoFalse If the selected shape is not a child shape.
-msoTriStateMixed If only some of the selected shapes are child shapes.
-msoTriStateToggle Does not apply to this property.
-msoTrue If the selected shape is a child shape.

expression.Child

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example selects the first shape in the canvas, and if the selected shape is a child shape, fills the shape with the specified color. This example assumes that a drawing canvas contains multiple shapes on the active worksheet.

Sub FillChildShape()
    'Select the first shape in the drawing canvas
    ActiveSheet.Shapes(1).CanvasItems(1).Select

    'Fill selected shape if it is a child shape
    If Selection.ShapeRange.Child = msoTrue Then
        Selection.ShapeRange.Fill.ForeColor.RGB = RGB(100, 0, 200)
    Else
        MsgBox "This shape is not a child shape."
    End If
End Sub
ChildField Property

Returns a PivotField object that represents the child field for the specified field (if the field is grouped and has a child field). Read-only.
Remarks

If the specified field has no child field, this property causes an error.

This property is not available for OLAP data sources.
Example

This example displays the name of the child field for the field named "REGION2."

```vba
Set pvtTable =Worksheets("Sheet1").Range("A3").PivotTable
MsgBox "The name of the child field is " & _
   pvtTable.PivotFields("REGION2").ChildField.Name
```
ChildItems Property

Returns an object that represents either a single PivotTable item (a PivotItem object) or a collection of all the items (a PivotItems object) that are group children in the specified field, or children of the specified item. Read-only.

expression.ChildItems(Index)

expression Required. An expression that returns a PivotField or PivotItem object.

Index Optional Variant. The item name or number (can be an array to specify more than one item).
Remarks

This property is not available for OLAP data sources.
Example

This example adds the names of all the child items of the item named "vegetables" to a list on a new worksheet.

```vba
Set nwSheet = Worksheets.Add
nwSheet.Aactivate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtItem In _
  pvtTable.PivotFields("product").PivotItems("vegetables").ChildItems
  rw = rw + 1
  nwSheet.Cells(rw, 1).Value = pvtItem.Name
Next pvtItem
```
Children Property

Returns a DiagramNodeChildren object, representing the collection of child nodes of a particular node.

expression.Children

expression Required. An expression that returns one of the objects in the Applies To list.
Example

The following example creates a diagram and adds child nodes to it.

Sub CreatePyramidDiagram()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add pyramid diagram to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramPyramid, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    'Add first child diagram node

    'Add three more nodes
    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount
End Sub
CircularReference Property

Returns a **Range** object that represents the range containing the first circular reference on the sheet, or returns **Nothing** if there's no circular reference on the sheet. The circular reference must be removed before calculation can proceed. Read-only.
**Example**

This example selects the first cell in the first circular reference on Sheet1.

`Worksheets("Sheet1").CircularReference.Select`
ClipboardFormats Property

- Returns the formats that are currently on the Clipboard, as an array of numeric values. To determine whether a particular format is on the Clipboard, compare each element in the array with the appropriate constant listed in the Remarks section. Read-only **Variant**.

expression.ClipboardFormats(Index)

*expression*  Required. An expression that returns one of the objects in the Applies To list.

*Index*  Optional **Variant**. The array element to be returned. If this argument is omitted, the property returns the entire array of formats that are currently on the Clipboard. For more information, see the Remarks section.
Remarks

This property returns an array of numeric values. To determine whether a particular format is on the Clipboard compare each element of the array with one of the following `XLClipboardFormat` constants:

```
xlClipboardFormatBIFF          xlClipboardFormatObjectDesc
xlClipboardFormatBIFF2         xlClipboardFormatObjectLink
xlClipboardFormatBIFF3         xlClipboardFormatOwnerLink
xlClipboardFormatBIFF4         xlClipboardFormatPICT
xlClipboardFormatBinary        xlClipboardFormatPrintPICT
xlClipboardFormatBitmap        xlClipboardFormatRTF
xlClipboardFormatCGM           xlClipboardFormatScreenPICT
xlClipboardFormatCSV           xlClipboardFormatStandardFont
xlClipboardFormatDIF           xlClipboardFormatStandardScale
xlClipboardFormatDspText       xlClipboardFormatSYLK
xlClipboardFormatEmbeddedObject xlClipboardFormatTable
xlClipboardFormatEmbedSource   xlClipboardFormatText
xlClipboardFormatLink          xlClipboardFormatToolFace
xlClipboardFormatLinkSource    xlClipboardFormatToolFacePICT
xlClipboardFormatLinkSourceDesc xlClipboardFormatVALU
xlClipboardFormatMovie         xlClipboardFormatWK1
xlClipboardFormatNative        xlClipboardFormatNative
```
Example

This example displays a message box if the Clipboard contains a rich-text format (RTF) object. You can create an RTF object by copying text from a Word document.

```vba
aFmts = Application.ClipboardFormats
For Each fmt In aFmts
    If fmt = xlClipboardFormatRTF Then
        MsgBox "Clipboard contains rich text"
    End If
Next
```
CLSID Property

Returns a read-only unique identifier, or CLSID identifying an object, as a String.

expression.CLSID

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example returns the CLSID of an add-in titled "Analysis ToolPak". This example assumes the "Analysis ToolPak" has been installed.

Sub FindCLSID()
    MsgBox Application.AddIns("Analysis ToolPak").CLSID
End Sub
CodeName Property

- Returns the code name for the object. Read-only **String**.

**Note**  The value that you see in the cell to the right of (Name) in the **Properties** window is the code name of the selected object. At design time, you can change the code name of an object by changing this value. You cannot programmatically change this property at run time.
**Remarks**

The code name for an object can be used in place of an expression that returns the object. For example, if the code name for worksheet one is "Sheet1", the following expressions are identical:

```
Worksheets(1).Range("a1")
Sheet1.Range("a1")
```

It’s possible for the sheet name to be different from the code name. When you create a sheet, the sheet name and code name are the same, but changing the sheet name doesn’t change the code name, and changing the code name (using the **Properties** window in the Visual Basic Editor) doesn’t change the sheet name.
Example

This example displays the code name for worksheet one.

MsgBox Worksheets(1).CodeName
Color Property

Returns or sets the primary color of the object, as shown in the following table. Use the RGB function to create a color value. Read/write Variant.

<table>
<thead>
<tr>
<th>Object</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border</td>
<td>The color of the border.</td>
</tr>
<tr>
<td>Borders</td>
<td>The color of all four borders of a range. If they're not all the same color, <strong>Color</strong> returns 0 (zero).</td>
</tr>
<tr>
<td>Font</td>
<td>The color of the font.</td>
</tr>
<tr>
<td>Interior</td>
<td>The cell shading color or the drawing object fill color.</td>
</tr>
</tbody>
</table>

*expression*.**Color**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the color of the tick-mark labels on the value axis in Chart1.

   RGB(0, 255, 0)
Show All
ColorIndex Property

- ColorIndex Property as it applies to the Border object.

Returns or sets the color of the border. The color is specified as an index value into the current color palette, or as one of the following XlColorIndex constants. Read/write Variant.

XlColorIndex can be one of these XlColorIndex constants.

- xlColorIndexAutomatic
- xlColorIndexNone

expression.ColorIndex

expression Required. An expression that returns an object in the Applies To List.

- ColorIndex Property as it applies to the Borders object.

Returns or sets the color of all four borders. Returns Null if all four borders aren't the same color. The color is specified as an index value into the current color palette, or as one of the following XlColorIndex constants. Read/write Variant.

XlColorIndex can be one of these XlColorIndex constants.

- xlColorIndexAutomatic
- xlColorIndexNone

expression.ColorIndex

expression Required. An expression that returns an object in the Applies To List.
ColorIndex Property as it applies to the Font object.

Returns or sets the color of the font. The color is specified as an index value into the current color palette, or as one of the following XlColorIndex constants. Read/write Variant.

XlColorIndex can be one of these XlColorIndex constants.

xlColorIndexAutomatic. Use to specify automatic color.

xlColorIndexNone.

expression.ColorIndex

e expression Required. An expression that returns an object in the Applies To List.

ColorIndex Property as it applies to the Interior object.

Returns or sets the color of the interior. The color is specified as an index value into the current color palette, or as one of the following XlColorIndex constants. Read/write Variant.

XlColorIndex can be one of these XlColorIndex constants.

xlColorIndexAutomatic. Use to specify the automatic fill, for drawing objects.

xlColorIndexNone. Use to specify no interior fill.

expression.ColorIndex

e expression Required. An expression that returns an object in the Applies To List.
Example

The following examples assume that you're using the default color palette.

- **Example as it applies to the **Border** object.**

  This example sets the color of the major gridlines for the value axis in Chart1.

  ```vba
  With Charts("Chart1").Axes(xlValue)
      If .HasMajorGridlines Then
          .MajorGridlines.Border.ColorIndex = 5       'set color to blue
      End If
  End With
  ```

- **Example as it applies to the **Font** object.**

  This example changes the font color in cell A1 on Sheet1 to red.

  ```vba
  Worksheets("Sheet1").Range("A1").Font.ColorIndex = 3
  ```

- **Example as it applies to the **Interior** and **Border** objects.**

  This example sets the color of the chart area interior of Chart1 to red and sets the border color to blue.

  ```vba
  With Charts("Chart1").ChartArea
      .Interior.ColorIndex = 3
      .Border.ColorIndex = 5
  End With
  ```
Colors Property

Returns or sets colors in the palette for the workbook. The palette has 56 entries, each represented by an RGB value. Read/write Variant.

expression.Colors(Index)

expression Required. An expression that returns a Workbook object.

Index Optional Variant. The color number (from 1 to 56). If this argument isn’t specified, this method returns an array that contains all 56 of the colors in the palette.
Example

This example sets the color palette for the active workbook to be the same as the palette for Book2.xls.

```vba
ActiveWorkbook.Colors = Workbooks("BOOK2.XLS").Colors
```

This example sets color five in the color palette for the active workbook.

```vba
ActiveWorkbook.Colors(5) = RGB(255, 0, 0)
```
ColorType Property

Returns or sets the type of color transformation applied to the specified picture or OLE object. Read/write **MsoPictureColorType**.

MsoPictureColorType can be one of these MsoPictureColorType constants.  
- `msoPictureAutomatic`
- `msoPictureBlackAndWhite`
- `msoPictureGrayscale`
- `msoPictureMixed`
- `msoPictureWatermark`

'expression'.ColorType

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the color transformation to grayscale for shape one on myDocument. Shape one must be either a picture or an OLE object.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).PictureFormat.ColorType = msoPictureGrayScale
Column Property

Returns the number of the first column in the first area in the specified range. Read-only Long.
Remarks

Column A returns 1, column B returns 2, and so on.

To return the number of the last column in the range, use the following expression.

Example

This example sets the column width of every other column on Sheet1 to 4 points.

For Each col In Worksheets("Sheet1").Columns
    If col.Column Mod 2 = 0 Then
        col.ColumnWidth = 4
    End If
Next col
Column3DGroup Property

- Returns a ChartGroup object that represents the column chart group on a 3-D chart. Read-only.
Example

This example sets the space between column clusters in the 3-D column chart group to be 50 percent of the column width.

Charts(1).Column3DGroup.GapWidth = 50
**ColumnFields Property**

Returns an object that represents either a single PivotTable field (a `PivotField` object) or a collection of all the fields (a `PivotFields` object) that are currently shown as column fields. Read-only.

`expression.ColumnFields(Index)`

*expression* Required. An expression that returns a `PivotTable` object.

*Index* Optional `Variant`. The field name or number (can be an array to specify more than one field).
**Example**

This example adds the field names of the PivotTable report columns to a list on a new worksheet.

```vba
Set nwSheet =Worksheets.Add
nwSheet.Activate
Set pvtTable =Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.ColumnFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
```
ColumnGrand Property

True if the PivotTable report shows grand totals for columns. Read/write Boolean.
Example

This example sets the PivotTable report to show grand totals for columns.

Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.ColumnGrand = True
ColumnItems Property

- Returns a PivotItemList collection that corresponds to the items on the column axis that represent the selected range.

expression.ColumnItems

expression  Required. An expression that returns a PivotCell object.
Example

This example determines if the data item in cell B5 is under the Inventory item in the first column field and notifies the user. The example assumes that a PivotTable exists on the active worksheet and that column B contains a column field of the PivotTable.

Sub CheckColumnItems()
    ' Determine if there is a match between the item and column field
    If Application.Range("B5").PivotCell.ColumnItems.Item(1) = "Inventory" Then
        MsgBox "Item in B5 is a member of the 'Inventory' column field."
    Else
        MsgBox "Item in B5 is not a member of the 'Inventory' column field."
    End If
End Sub
ColumnRange Property

Returns a **Range** object that represents the range that contains the column area in the PivotTable report. Read-only.
Example

This example selects the column headers for the PivotTable report.

`Worksheets("Sheet1").Activate`
`Range("A3").Select`
`ActiveCell.PivotTable.ColumnRange.Select`
Columns Property

- Columns property as it applies to the Application object.

Returns a Range object that represents all the columns on the active worksheet. If the active document isn't a worksheet, the Columns property fails. Read-only.

expression.Columns

- Columns property as it applies to the Range object.

Returns a Range object that represents the columns in the specified range. Read-only.

expression.Columns

- Columns property as it applies to the WorkSheet object.

Returns a Range object that represents all the columns on the specified worksheet. Read-only.

expression.Columns
For information about returning a single member of a collection, see Returning an Object from a Collection.
**Remarks**

Using this property without an object qualifier is equivalent to using `ActiveSheet.Columns`.

When applied to a **Range** object that's a multiple-area selection, this property returns columns from only the first area of the range. For example, if the **Range** object has two areas — A1:B2 and C3:D4 — `Selection.Columns.Count` returns 2, not 4. To use this property on a range that may contain a multiple-area selection, test `Areas.Count` to determine whether the range contains more than one area. If it does, loop over each area in the range.
Example

This example formats the font of column one (column A) on Sheet1 as bold.

`Worksheets("Sheet1").Columns(1).Font.Bold = True`

This example sets the value of every cell in column one in the range named "myRange" to 0 (zero).

`Range("myRange").Columns(1).Value = 0`

This example displays the number of columns in the selection on Sheet1. If more than one area is selected, the example loops through each area.

`Worksheets("Sheet1").Activate`
`areaCount = Selection.Areas.Count`
`If areaCount <= 1 Then`
  `MsgBox "The selection contains " & _`
  `Selection.Columns.Count & " columns."
`Else`
  `For i = 1 To areaCount`
  `  MsgBox "Area " & i & " of the selection contains " & _`
  `Next i`
`End If`
ColumnWidth Property

Returns or sets the width of all columns in the specified range. Read/write Variant.
Remarks

One unit of column width is equal to the width of one character in the Normal style. For proportional fonts, the width of the character 0 (zero) is used.

Use the **Width** property to return the width of a column in points.

If all columns in the range have the same width, the **ColumnWidth** property returns the width. If columns in the range have different widths, this property returns **Null**.
Example

This example doubles the width of column A on Sheet1.

```
With Worksheets("Sheet1").Columns("A")
    .ColumnWidth = .ColumnWidth * 2
End With
```
COMAddIns Property

Returns the COMAddIns collection for Microsoft Excel, which represents the currently installed COM add-ins. Read-only.
Example

This example displays the number of COM add-ins that are currently installed.

Set objAI = Application.COMAddIns
MsgBox "Number of COM add-ins available:" & _
    objAI.Count
CommandBars Property

Returns a CommandBars object that represents the Microsoft Excel command bars. Read-only.
Remarks

Used with the Application object, this property returns the set of built-in and custom command bars available to the application.

When a workbook is embedded in another application and activated by the user by double-clicking the workbook, using this property with a Workbook object returns the set of Microsoft Excel command bars available within the other application. At all other times, using this property with a Workbook object returns Nothing.

There is no programmatic way to return the set of command bars attached to a workbook.
Example

This example deletes all custom command bars that aren’t visible.

For Each bar In Application.CommandBars
    If Not bar.BuiltIn And Not bar.Visible Then bar.Delete
Next
CommandText Property

Returns or sets the command string for the specified data source. Read/write Variant.
Remarks

You should use the CommandText property instead of the SQL property, which now exists primarily for compatibility with earlier versions of Microsoft Excel. If you use both properties, the CommandText property’s value takes precedence.

For OLE DB sources, the CommandType property describes the value of the CommandText property.

For ODBC sources, the CommandText property functions exactly like the SQL property, and setting the property causes the data to be refreshed.
Example

This example sets the command string for the first query table’s ODBC data source. Note that the command string is an SQL statement.

Set qtQtrResults = _
    Workbooks(1).Worksheets(1).QueryTables(1)
With qtQtrResults
    .CommandType = xlCmdSQL
    .CommandText = _
        "Select ProductID From Products Where ProductID < 10"
    .Refresh
End With
Returns or sets one of the **XICmdType** constants listed in the following table. The constant that is returned or set describes the value of the **CommandText** property. The default value is **xCmdSQL**. Read/write **XICmdType**.

XICmdType can be one of these XICmdType constants.
- **xCmdCube**: Contains a **cube** name for an **OLAP** data source.
- **xCmdDefault**: Contains command text that the OLE DB provider understands.
- **xCmdSql**: Contains an SQL statement.
- **xCmdTable**: Contains a table name for accessing OLE DB data sources.

*expression.CommandType*
Remarks

You can set the `CommandType` property only if the value of the `QueryType` property for the query table or PivotTable cache is `xlOLEDBQuery`.

If the value of the `CommandType` property is `xlCmdCube`, you cannot change this value if there is a PivotTable report associated with the query table.
Example

This example sets the command string for the first query table’s ODBC data source. The command string is an SQL statement.

```
Set qtQtrResults = _
    Workbooks(1).Worksheets(1).QueryTables(1)
With qtQtrResults
    .CommandType = xlCmdSQL
    .CommandText = _
        "Select ProductID From Products Where ProductID < 10"
    .Refresh
End With
```
CommandUnderlines Property

Returns or sets the state of the command underlines in Microsoft Excel for the Macintosh. Can be one of the following **XlCommandUnderlines** constants. Read/write **Long**.

**XlCommandUnderlines** can be one of these **XlCommandUnderlines** constants.

**xlCommandUnderlinesOn**
**xlCommandUnderlinesOff**

**xlCommandUnderlinesAutomatic**

```
expression.CommandUnderlines
```

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

In Microsoft Excel for Windows, reading this property always returns `xlCommandUnderlinesOn`, and setting this property to anything other than `xlCommandUnderlinesOn` is an error.
Example

This example turns off command underlines in Microsoft Excel for the Macintosh.

Application.CommandUnderlines = xlCommandUnderlinesOff
Show All
Comment Property

- Comment property as it applies to the Range object.

Returns a Comment object that represents the comment associated with the cell in the upper-left corner of the range. Read-only Comment object.

expression.Comment

expression  Required. An expression that returns a Range object.

- Comment property as it applies to the Scenario object.

Returns or sets the comment associated with the scenario. The comment text cannot exceed 255 characters. Read/write String.

expression.Comment

expression  Required. An expression that returns a Scenario object.
Example

This example sets the comment for scenario one on Sheet1.

= Worksheets("Sheet1").Scenarios(1).Comment = _
  "Worst case July 1993 sales"
Comments Property

- Returns a Comments collection that represents all the comments for the specified worksheet. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example deletes all comments added by Jean Selva on the active sheet.

For Each c in ActiveSheet.Comments
    If c.Author = "Jean Selva" Then c.Delete
Next
ConflictResolution Property

Returns or sets the way conflicts are to be resolved whenever a shared workbook is updated. Read/write XLSaveConflictResolution.

expression.ConflictResolution  

expression  Required. An expression that returns one of the objects in the Applies To list.
Example
This example causes the local user's changes to be accepted whenever there's a conflict in the shared workbook.

ActiveWorkbook.ConflictResolution = xlLocalSessionChanges
Connection Property

Returns or sets a string that contains one of the following: OLE DB settings that enable Microsoft Excel to connect to an OLE DB data source; ODBC settings that enable Microsoft Excel to connect to an ODBC data source; a URL that enables Microsoft Excel to connect to a Web data source; the path to and file name of a text file, or the path to and file name of a file that specifies a database or Web query. Read/write **Variant**.
Remarks

Setting the **Connection** property doesn’t immediately initiate the connection to the data source. You must use the **Refresh** method to make the connection and retrieve the data.

When using an **offline cube file**, set the **UseLocalConnection** property to **True** and use the **LocalConnection** property instead of the **Connection** property.

For more information about the connection string syntax, see the **Add** method of the **QueryTables** collection and the **Add** method of the **PivotCaches** collection.

Alternatively, you may choose to access a data source directly by using the Microsoft ActiveX Data Objects (ADO) library instead.
Example

This example creates a new PivotTable cache based on an OLAP provider, and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet.

With ActiveWorkbook.PivotCaches.Add(SourceType:=xlExternal)
  .Connection = _
    "OLEDB;Provider=MSOLAP;Location=srvdata;Initial Catalog=National"
  .MaintainConnection = True
  .CreatePivotTable TableDestination:=Range("A3"), _
    TableName:= "PivotTable1"
End With
With ActiveSheet.PivotTables("PivotTable1")
  .SmallGrid = False
  .PivotCache.RefreshPeriod = 0
With .CubeFields("[state]")
  .Orientation = xlColumnField
  .Position = 0
End With
With .CubeFields("[Measures].[Count Of au_id]")
  .Orientation = xlDataField
  .Position = 0
End With
End With

This example supplies new ODBC connection information for the first query table on the first worksheet.

Worksheets(1).QueryTables(1)
  .Connection:="ODBC;DSN=96SalesData;UID=Rep21;PWD=NUyHwYQI;"

This example specifies a text file.

Worksheets(1).QueryTables(1)
  Connection := "TEXT;C:\My Documents\19980331.txt"
ConnectionSiteCount Property

Returns the number of connection sites on the specified shape. Read-only Long.
Example

This example adds two rectangles to myDocument and joins them with two connectors. The beginnings of both connectors attach to connection site one on the first rectangle; the ends of the connectors attach to the first and last connection sites of the second rectangle.

```vba
Set myDocument = Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, _
    100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, _
    300, 300, 200, 100)
lastsite = secondRect.ConnectionSiteCount
With s.AddConnector(msoConnectorCurve, _
    0, 0, 100, 100).ConnectorFormat
    .BeginConnect ConnectedShape:=firstRect, _
        ConnectionSite:=1
    .EndConnect ConnectedShape:=secondRect, _
        ConnectionSite:=1
End With
With s.AddConnector(msoConnectorCurve, _
    0, 0, 100, 100).ConnectorFormat
    .BeginConnect ConnectedShape:=firstRect, _
        ConnectionSite:=1
    .EndConnect ConnectedShape:=secondRect, _
        ConnectionSite:=lastsite
End With
```
Connector Property

True if the specified shape is a connector. Read-only MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue
- msoFalse
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The specified shape is a connector.
Example

This example deletes all connectors on myDocument.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    For i = .Count To 1 Step -1
        With .Item(i)
            If .Connector Then .Delete
        End With
    Next
End With
ConnectorFormat Property

Returns a ConnectorFormat object that contains connector formatting properties. Applies to Shape or ShapeRange objects that represent connectors. Read-only.
Example

This example adds two rectangles to myDocument, attaches them with a connector, automatically reroutes the connector along the shortest path, and then detaches the connector from the rectangles.

Set myDocument =Worksheets(1)
Set s = myDocument.Shapes
Set firstRect = s.AddShape(msoShapeRectangle, 100, 50, 200, 100)
Set secondRect = s.AddShape(msoShapeRectangle, 300, 300, 200, 100)
Set c = s.AddConnector(msoConnectorCurve, 0, 0, 0, 0)
with c.ConnectorFormat
  .BeginConnect firstRect, 1
  .EndConnect secondRect, 1
  c.RerouteConnections
  .BeginDisconnect
  .EndDisconnect
End With
ConsolidationFunction Property

Returns the function code used for the current consolidation. Can be one of the following \texttt{XLConsolidationFunction}. Read-only \texttt{Long}.

\texttt{XLConsolidationFunction} can be one of these \texttt{XLConsolidationFunction} constants.
\begin{itemize}
  \item \texttt{xlAverage}
  \item \texttt{xlCount}
  \item \texttt{xlCountNums}
  \item \texttt{xlMax}
  \item \texttt{xlMin}
  \item \texttt{xlProduct}
  \item \texttt{xlStDev}
  \item \texttt{xlStDevP}
  \item \texttt{xlSum}
  \item \texttt{xlUnknown}
  \item \texttt{xlVar}
  \item \texttt{xlVarP}
\end{itemize}
Example

This example displays a message box if the current consolidation is using the SUM function.

If Worksheets("Sheet1").ConsolidationFunction = xlSum Then
    MsgBox "Sheet1 uses the SUM function for consolidation."
End If
ConsolidationOptions Property

Returns a three-element array of consolidation options, as shown in the following table. If the element is **True**, that option is set. Read-only **Variant**.

<table>
<thead>
<tr>
<th>Element</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use labels in top row</td>
</tr>
<tr>
<td>2</td>
<td>Use labels in left column</td>
</tr>
<tr>
<td>3</td>
<td>Create links to source data</td>
</tr>
</tbody>
</table>
Example

This example displays the consolidation options for Sheet1. The list appears on a new worksheet created by the example.

Set newSheet =Worksheets.Add
aOptions =Worksheets("Sheet1").ConsolidationOptions
newSheet.Range("A1").Value = "Use labels in top row"
newSheet.Range("A2").Value = "Use labels in left column"
newSheet.Range("A3").Value = "Create links to source data"
For i = 1 To 3
  If aOptions(i) = True Then
    newSheet.Cells(i, 2).Value = "True"
  Else
    newSheet.Cells(i, 2).Value = "False"
  End If
Next i
newSheet.Columns("A:B").AutoFit
ConsolidationSources Property

Returns an array of string values that name the source sheets for the worksheet's current consolidation. Returns Empty if there's no consolidation on the sheet. Read-only Variant.
Example

This example displays the names of the source ranges for the consolidation on Sheet1. The list appears on a new worksheet created by the example.

```vba
Set newSheet =Worksheets.Add
newSheet.Range("A1").Value = "Consolidation Sources"
aSources =Worksheets("Sheet1").ConsolidationSources
If IsEmpty(aSources) Then
    newSheet.Range("A2").Value = "none"
Else
    For i = 1 To UBound(aSources)
        newSheet.Cells(i + 1, 1).Value = aSources(i)
    Next i
End If
newSheet.Columns("A:B").AutoFit
```
ConstrainNumeric Property

True if handwriting recognition is limited to numbers and punctuation only. Read/write Boolean.

Note  This property is available only if you're using Microsoft Windows for Pen Computing. If you try to set this property under any other operating system, an error occurs.
Example

This example limits handwriting recognition to numbers and punctuation only if Microsoft Windows for Pen Computing is running.

If Application.WindowsForPens Then
    Application.ConstrainNumeric = True
End If
Container Property

Returns the object that contains the specified embedded workbook. Read-only Object.
Remarks

Use this property with a contained workbook to return the container object. If the container doesn’t support OLE Automation or the workbook isn’t embedded, this property fails.
Example

This example hides the second section in the binder that contains the active Microsoft Excel workbook and then sets the value of cell A1 to 345.67. In this example, the binder is Binder1.obd.

Set myBinder = GetObject("Binder1.obd", "Office.Binder")
Set myWorkbook = myBinder.Sections(1).Object
With myWorkbook
    .Container.Sections(2).Visible = False
    .Sheets(1).Cells(1, 1).Value = 345.67
End With
Contrast Property

Returns or sets the contrast for the specified picture or OLE object. The value for this property must be a number from 0.0 (the least contrast) to 1.0 (the greatest contrast). Read/write Single.

expression.Contrast

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the contrast for shape one on myDocument. Shape one must be either a picture or an OLE object.

Set myDocument = Worksheets(1)
myDocument.Shapes(1).PictureFormat.Contrast = 0.8
ControlCharacters Property

True if Microsoft Excel displays control characters for right-to-left languages. Read/write Boolean.
Remarks

This property can be set only when right to left language support has been installed and selected.
Example

This example sets Microsoft Excel to interpret control characters.

Application.ControlCharacters = True
ControlFormat Property

Returns a ControlFormat object that contains Microsoft Excel control properties. Read-only.
Example

This example removes the selected item from a list box. If Shapes(2) doesn’t represent a list box, this example fails.

Set lbcf = Worksheets(1).Shapes(2).ControlFormat
lbcf.RemoveItem lbcf.ListIndex
CopyObjectsWithCells Property

True if objects are cut, copied, extracted, and sorted with cells. Read/write Boolean.
Example

This example sets Microsoft Excel to cut, copy, extract, and sort objects with cells.

Application.**CopyObjectsWithCells** = True
Corners Property

Returns a Corners object that represents the corners of a 3-D chart. Read-only.
Example

This example selects the corners of Chart1. The example should be run on a 3-D chart (the Select method fails on any other chart type).

With Charts("Chart1")
  .Activate
    .Corners.Select
End With
CorrectCapsLock Property

True if Microsoft Excel automatically corrects accidental use of the CAPS LOCK key. Read/write Boolean.
Example

This example enables Microsoft Excel to automatically correct accidental use of the CAPS LOCK key.

Application.AutoCorrect.CorrectCapsLock = True
CorrectSentenceCap Property

True if Microsoft Excel automatically corrects sentence (first word) capitalization. Read/write Boolean.
Example

This example enables Microsoft Excel to automatically correct sentence capitalization.

Application.AutoCorrect.CorrectSentenceCap = True
| Show All |
Count Property

- Count property as it applies to the Adjustments, CanvasShapes, DiagramNodeChildren, DiagramNodes, and ShapeNodes objects.

Returns the number of objects in the collection. Read-only Integer.

expression.Count

evaluation  Required. An expression that returns one of the above objects.

- Count property as it applies to all other objects in the Applies To list.

Returns the number of objects in the collection. Read-only Long.

expression.Count

evaluation  Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the number of columns in the selection on Sheet1. The code also tests for a multiple-area selection; if one exists, the code loops on the areas of the multiple-area selection.

Worksheets("Sheet1").Activate
areaCount = Selection.Areas.Count
If areaCount <= 1 Then
    MsgBox "The selection contains " & _
        Selection.Columns.Count & " columns."
Else
    For i = 1 To areaCount
        MsgBox "Area " & i & " of the selection contains " & _
    Next i
End If

This example makes the last character in cell A1 a superscript character.

n = Worksheets("Sheet1").Range("A1").Characters.Count
Worksheets("Sheet1").Range("A1").Characters(n, 1) _
    .Font.Superscript = True
CreateBackup Property

True if a backup file is created when this file is saved. Read-only Boolean.
Example

This example displays a message if a backup file is created when the active workbook is saved.

If ActiveWorkbook.CreateBackup = True Then
    MsgBox "Remember, there is a backup copy of this workbook"
End If
Creator Property

- Creator property as it applies to the Adjustments, CalloutFormat, ColorFormat, DiagramNode, DiagramNodeChildren, DiagramNodes, FillFormat, LineFormat, PictureFormat, ShadowFormat, ShapeNode, ShapeNodes, TextEffectFormat, and ThreeDFormat objects.

Returns a 32-bit integer that indicates the application in which this object was created. If the object was created in Microsoft Excel, this property returns the string XCEL, which is equivalent to the hexadecimal number 5843454C. Read-only Long.

expression.Creator

expression Required. An expression that returns one of the above objects.

- Creator property as it applies to all other objects in the Applies To list.

Returns a 32-bit integer that indicates the application in which this object was created. If the object was created in Microsoft Excel, this property returns the string XCEL, which is equivalent to the hexadecimal number 5843454C. Read-only xlCreatorCode.

expression.Creator

expression Required. An expression that returns all other objects in the Applies To list.
Remarks

The **Creator** property is designed to be used in Microsoft Excel for the Macintosh, where each application has a four-character creator code. For example, Microsoft Excel has the creator code XCEL.
Example

This example displays a message about the creator of myObject.

Set myObject = ActiveWorkbook
If myObject.Creator = &h5843454c Then
    MsgBox "This is a Microsoft Excel object"
Else
    MsgBox "This is not a Microsoft Excel object"
End If
Criteria1 Property

Returns the first filtered value for the specified column in a filtered range. Read-only Variant.
Example

The following example sets a variable to the value of the **Criteria1** property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
With Worksheets("Crew")
    If .AutoFilterMode Then
        With .AutoFilter.Filters(1)
            If .On Then c1 = .Criteria1
        End With
    End If
End With
```
Criteria2 Property

Returns the second filtered value for the specified column in a filtered range. Read-only Variant.
Remarks

If you try to access the Criteria2 property for a filter that does not use two criteria, an error will occur. Check that the Operator property of a Filter object doesn’t equal zero (0) before trying to access the Criteria2 property.
Example

The following example sets a variable to the value of the **Criteria2** property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
With Worksheets("Crew")
    If .AutoFilterMode Then
        With .AutoFilter.Filters(1)
            If .On And .Operator Then
                c2 = .Criteria2
            Else
                c2 = "Not set"
            End If
        End With
    End If
End With
```
CropBottom Property

Returns or sets the number of points that are cropped off the bottom of the specified picture or OLE object. Read/write Single.

`expression.CropBottom`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

Cropping is calculated relative to the original size of the picture. For example, if you insert a picture that is originally 100 points high, rescale it so that it’s 200 points high, and then set the CropBottom property to 50, 100 points (not 50) will be cropped off the bottom of your picture.
Example

This example crops 20 points off the bottom of shape three on myDocument. For the example to work, shape three must be either a picture or an OLE object.

Set myDocument = Worksheets(1)

Using this example, you can specify the percentage you want to crop off the bottom of the selected shape, regardless of whether the shape has been scaled. For the example to work, the selected shape must be either a picture or an OLE object.

percentToCrop = InputBox(_
   "What percentage do you want to crop off" & _
   " the bottom of this picture?"
Set shapeToCrop = ActiveWindow.Selection.ShapeRange(1)
With shapeToCrop.Duplicate
   .ScaleHeight 1, True
   origHeight = .Height
   .Delete
End With
cropPoints = origHeight * percentToCrop / 100
shapeToCrop.PictureFormat.CropBottom = cropPoints
CropLeft Property

Returns or sets the number of points that are cropped off the left side of the specified picture or OLE object. Read/write Single.

expression.CropLeft

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Cropping is calculated relative to the original size of the picture. For example, if you insert a picture that is originally 100 points wide, rescale it so that it’s 200 points wide, and then set the `CropLeft` property to 50, 100 points (not 50) will be cropped off the left side of your picture.
**Example**

This example crops 20 points off the left side of shape three on `myDocument`. For the example to work, shape three must be either a picture or an OLE object.

```vba
Set myDocument = Worksheets(1)
```

Using this example, you can specify the percentage you want to crop off the left side of the selected shape, regardless of whether the shape has been scaled. For the example to work, the selected shape must be either a picture or an OLE object.

```vba
percentToCrop = InputBox('What percentage do you want to crop" & _
"off the left of this picture?"
Set shapeToCrop = ActiveWindow.Selection.ShapeRange(1)
With shapeToCrop.Duplicate
  .ScaleWidth 1, True
  origWidth = .Width
  .Delete
End With
cropPoints = origWidth * percentToCrop / 100
shapeToCrop.PictureFormat.CropLeft = cropPoints
```
CropRight Property

- Returns or sets the number of points that are cropped off the right side of the specified picture or OLE object. Read/write Single.

expression.CropRight

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Cropping is calculated relative to the original size of the picture. For example, if you insert a picture that is originally 100 points wide, rescale it so that it’s 200 points wide, and then set the CropRight property to 50, 100 points (not 50) will be cropped off the right side of your picture.
Example

This example crops 20 points off the right side of shape three on myDocument. For this example to work, shape three must be either a picture or an OLE object.

```
Set myDocument = Worksheets(1)
```

Using this example, you can specify the percentage you want to crop off the right side of the selected shape, regardless of whether the shape has been scaled. For the example to work, the selected shape must be either a picture or an OLE object.

```
percentToCrop = InputBox( _
   "What percentage do you want to crop" & _
   " off the right of this picture?"
) Set shapeToCrop = ActiveWindow.Selection.ShapeRange(1)
With shapeToCrop.Duplicate
   .ScaleWidth 1, True
   origWidth = .Width
   .Delete
End With
cropPoints = origWidth * percentToCrop / 100
shapeToCrop.PictureFormat.CropRight = cropPoints
```
CropTop Property

Returns or sets the number of points that are cropped off the top of the specified picture or OLE object. Read/write Single.

expression.CropTop

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Cropping is calculated relative to the original size of the picture. For example, if you insert a picture that is originally 100 points high, rescale it so that it’s 200 points high, and then set the CropTop property to 50, 100 points (not 50) will be cropped off the top of your picture.
Example

This example crops 20 points off the top of shape three on myDocument. For the example to work, shape three must be either a picture or an OLE object.

Set myDocument = Worksheets(1)

This example allows you to specify the percentage you want to crop off the top of the selected shape, regardless of whether the shape has been scaled. For the example to work, the selected shape must be either a picture or an OLE object.

percentToCrop = InputBox( _
"What percentage do you want to crop" & _
" off the top of this picture?"
) Set shapeToCrop = ActiveWindow.Selection.ShapeRange(1) With shapeToCrop.Duplicate .ScaleHeight 1, True origHeight = .Height .Delete End With cropPoints = origHeight * percentToCrop / 100 shapeToCrop.PictureFormat.CropTop = cropPoints
Crosses Property

Returns or sets the point on the specified axis where the other axis crosses. Read/write Long.

Can be one of the XlAxisCrosses constants listed in the following table.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlAxisCrossesAutomatic</td>
<td>Microsoft Excel sets the axis crossing point.</td>
</tr>
<tr>
<td>xlMinimum</td>
<td>The axis crosses at the minimum value.</td>
</tr>
<tr>
<td>xlMaximum</td>
<td>The axis crosses at the maximum value.</td>
</tr>
<tr>
<td>xlAxisCrossesCustom</td>
<td>The CrossesAt property specifies the axis crossing point.</td>
</tr>
</tbody>
</table>
Remarks

This property isn't available for radar charts. For 3-D charts, this property indicates where the plane defined by the category axes crosses the value axis.

This property can be used for both category and value axes. On the category axis, `xlMinimum` sets the value axis to cross at the first category, and `xlMaximum` sets the value axis to cross at the last category.

Note that `xlMinimum` and `xlMaximum` can have different meanings, depending on the axis.
Example

This example sets the value axis in Chart1 to cross the category axis at the maximum x value.

Charts("Chart1").Axes(xlCategory).Crosses = xlMaximum
CrossesAt Property

Returns or sets the point on the value axis where the category axis crosses it. Applies only to the value axis. Read/write **Double**.

expression.CrossesAt

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting this property causes the `Crossoes` property to change to `xlAxisCrossesCustom`.

This property cannot be used on radar charts. For 3-D charts, this property indicates where the plane defined by the category axes crosses the value axis.
Example

This example sets the category axis in the active chart to cross the value axis at value 3.

Sub Chart()

    ' Create a sample source of data.
    Range("A1") = "2"
    Range("A2") = "4"
    Range("A3") = "6"
    Range("A4") = "3"

    ' Create a chart based on the sample source of data.
    Charts.Add

    With ActiveChart
        .ChartType = xlLineMarkersStacked
        .SetSourceData Source:=Sheets("Sheet1").Range("A1:A4"), Plot
        .Location Where:=xlLocationAsObject, Name:="Sheet1"
    End With

    ' Set the category axis to cross the value axis at value 3.
    ActiveChart.Axes(xlValue).Select
    Selection.CrossesAt = 3

End Sub
CubeField Property

Returns the **CubeField** object from which the specified PivotTable field is descended. Read-only.

*expression*.**CubeField**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example creates a list of the cube field names for all the hierarchy fields in the first Online Analytical Processing (OLAP)-based PivotTable report on the first worksheet. This example assumes a PivotTable report exists in the first worksheet.

Sub UseCubeField()
    Dim objNewSheet As Worksheet
    Set objNewSheet = Worksheets.Add
    objNewSheet.Activate
    intRow = 1

    For Each objPF in _
        Worksheets(1).PivotTables(1).PivotFields
        If objPF.CubeField.CubeFieldType = xlHierarchy Then
            objNewSheet.Cells(intRow, 1).Value = objPF.Name
            intRow = intRow + 1
        End If
    Next objPF

End Sub
CubeFields Property

Returns the CubeFields collection. Each CubeField object contains the properties of the cube field element. Read-only.
Example

This example creates a list of **cube** field names for the data fields in the first **OLAP**-based PivotTable report on Sheet1.

Set objNewSheet = Worksheets.Add
objNewSheet.Activate
intRow = 1
For Each objCubeFld In Worksheets("Sheet1").PivotTables(1).CubeField
    If objCubeFld.Orientation = xlDataField Then
        objNewSheet.Cells(intRow, 1).Value = objCubeFld.Name
        intRow = intRow + 1
    End If
Next objCubeFld
Show All
CubeFieldType Property

Indicates whether the OLAP cube field is a hierarchy field or a measure field. Can be one of the following XICubeFieldType constants: xlHierarchy or xlMeasure. Read-only XICubeFieldType.
**Example**

This example creates a list of cube field names for the measure fields in the first OLAP-based PivotTable report on Sheet1.

Set objNewSheet = WorkSheets.Add
objNewSheet.Activate
intRow = 1
For Each objCubeFld in WorkSheets("Sheet1").PivotTables(1).CubeFields
    If objCubeFld.[CubeFieldType] = xlMeasure Then
        objNewSheet.Cells(intRow, 1).Value = objCubeFld.Name
        intRow = intRow + 1
    End If
Next objCubeFld
CurrentArray Property

If the specified cell is part of an array, returns a Range object that represents the entire array. Read-only.
Example

This example assumes that cell A1 on Sheet1 is the active cell and that the active cell is part of an array that includes cells A1:A10. The example selects cells A1:A10 on Sheet1.

ActiveCell.CurrentArray.Select
CurrentPage Property

Returns or sets the current page showing for the page field (valid only for page fields). Read/write PivotItem.

expression.CurrentPage

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example returns the current page name for the PivotTable report on Sheet1 in the string variable strPgName.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
strPgName = pvtTable.PivotFields("Country").CurrentPage.Name
```
CurrentPageList Property

Returns or sets an array of strings corresponding to the list of items included in a multiple-item page field of a PivotTable report. Read/write Variant.

expression.CurrentPageList

expression  Required. An expression that returns a PivotField object.
Remarks

To avoid run-time errors, the data source must be an OLAP source, the field chosen must currently be in the Page position, and the `EnableMultiplePageItems` property must be set to True.
Example

This example sets the page field to list the "Food" items of the PivotTable report. It assumes a PivotTable exists on the active worksheet.

Sub UseCurrentPageList()
    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields("[Product]")

    ' To avoid run-time errors set the following property to True.
    pvtTable.CubeFields("[Product]").EnableMultiplePageItems = True

    ' Set the page list to "Food".
    pvtField.CurrentPageList = "[Product].[All Products].[Food]"
End Sub
CurrentPageName Property

Returns or sets the currently displayed page of the specified PivotTable report. The name of the page appears in the page field. Note that this property works only if the currently displayed page already exists. Read/write String.
Remarks

This property applies to PivotTables that are connected to an OLAP data source. Attempting to return or set this property with a PivotTable that is not connected to an OLAP data source will result in a run-time error.
Example

This example sets the name of the currently displayed page of the first PivotTable report on the active worksheet to "USA."

```
ActiveSheet.PivotTables("PivotTable1")
 .PivotFields("[Customers]").CurrentPageName = ",
  "[Customers].[All Customers].[USA]"
```
CurrentRegion Property

Returns a Range object that represents the current region. The current region is a range bounded by any combination of blank rows and blank columns. Read-only.
Remarks

This property is useful for many operations that automatically expand the selection to include the entire current region, such as the `AutoFormat` method.

This property cannot be used on a protected worksheet.
Example

This example selects the current region on Sheet1.

`Worksheets("Sheet1").Activate
ActiveCell.CurrentRegion.Select`

This example assumes that you have a table on Sheet1 that has a header row. The example selects the table, without selecting the header row. The active cell must be somewhere in the table before you run the example.

`Set tbl = ActiveCell.CurrentRegion
tbl.Offset(1, 0).Resize(tbl.Rows.Count - 1, _
Cursor Property

Returns or sets the appearance of the mouse pointer in Microsoft Excel. Read/write \texttt{XIMousePointer}.

XIMousePointer can be one of these XIMousePointer constants.
\begin{itemize}
  \item \texttt{xlDefault} The default pointer.
  \item \texttt{xlIBeam} The I-beam pointer.
  \item \texttt{xlNorthwestArrow} The northwest-arrow pointer.
  \item \texttt{xlWait} The hourglass pointer.
\end{itemize}

\textit{expression}.\texttt{Cursor}

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.
Remarks

The **Cursor** property isn't reset automatically when the macro stops running. You should reset the pointer to **xlDefault** before your macro stops running.
Example

This example changes the mouse pointer to an I-beam, pauses, and then changes it to the default pointer.

Sub ChangeCursor()
    Application.Cursor = xlIBeam
    For x = 1 To 1000
        For y = 1 To 1000
            Next y
        Next x
    Application.Cursor = xlDefault
End Sub
CursorMovement Property

Returns or sets a value that indicates whether a visual cursor or a logical cursor is used. Can be one of the following constants: `xlVisualCursor` or `xlLogicalCursor`. Read/write `Long`. 
Remarks

These constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.
Example

This example sets Microsoft Excel to use the visual cursor.

Application.CursorMovement = xlVisualCursor
CustomDocumentProperties Property

Returns or sets a DocumentProperties collection that represents all the custom document properties for the specified workbook.

expression.CustomDocumentProperties

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property returns the entire collection of custom document properties. Use the Item method to return a single member of the collection (a DocumentProperty object) by specifying either the name of the property or the collection index (as a number).

Because the Item method is the default method for the DocumentProperties collection, the following statements are identical:

CustomDocumentProperties.Item("Complete")
CustomDocumentProperties("Complete")

Use the BuiltinDocumentProperties property to return the collection of built-in document properties.
Example

This example displays the names and values of the custom document properties as a list on worksheet one.

```vba
rw = 1
Worksheets(1).Activate
For Each p In ActiveWorkbook.CustomDocumentProperties
    Cells(rw, 1).Value = p.Name
    Cells(rw, 2).Value = p.Value
    rw = rw + 1
Next
```
CustomListCount Property

Returns the number of defined custom lists (including built-in lists). Read-only Long.
Example

This example displays the number of custom lists that are currently defined.

MsgBox "There are currently " & Application.CustomListCount & " defined custom lists."
CustomProperties Property

Returns a CustomProperties object representing the identifier information associated with a worksheet.

expression.CustomProperties

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

For the CustomProperties property, identifier information for a worksheet can represent metadata for XML.
Example

In this example, Microsoft Excel adds identifier information to the active worksheet and returns the name and value to the user.

Sub CheckCustomProperties()
    Dim wksSheet1 As Worksheet
    Set wksSheet1 = Application.ActiveSheet

    ' Add metadata to worksheet.
    wksSheet1.CustomProperties.Add _
        Name:="Market", Value:="Nasdaq"

    ' Display metadata.
    With wksSheet1.CustomProperties.Item(1)
        MsgBox .Name & vbTab & .Value
    End With
End Sub
CustomSubtotalFunction Property

Returns the custom subtotal function field setting of a PivotCell object. Read-only XlConsolidationFunction.

XlConsolidationFunction can be one of these XlConsolidationFunction constants:

- xlAverage
- xlCount
- xlCountNums
- xlMax
- xlMin
- xlProduct
- xlStDev
- xlStDevP
- xlSum
- xlUnknown
- xlVar
- xlVarP

expression. CustomSubtotalFunction

expression  Required. An expression that returns a PivotCell object.
Remarks

The CustomSubtotalFunction property will return an error if the PivotCell object type is not a custom subtotal. This property applies only to non-OLAP source data.
Example

This example determines if cell C20 contains a custom subtotal function that uses a consolidation function of count and then it notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub UseCustomSubtotalFunction()
    On Error GoTo Not_A_Function

    ' Determine if custom subtotal function is a count function.
    If Application.Range("C20").PivotCell.**CustomSubtotalFunction** = xlCount Then
        MsgBox "The custom subtotal function is a Count"
    Else
        MsgBox "The custom subtotal function is not a Count"
    End If
    Exit Sub

Not_A_Function:
    MsgBox "The selected cell is not a custom subtotal function."

End Sub
CustomViews Property

Returns a CustomViews collection that represents all the custom views for the workbook.

For more information about returning a single object from a collection, see Returning an Object from a Collection.
Example

This example creates a new custom view named "Summary" in the active workbook.

```vba
ActiveWorkbook.CustomViews.Add "Summary", True, True
```
### CutCopyMode Property

Returns or sets the status of Cut or Copy mode. Can be **True, False**, or an **XLCutCopyMode** constant, as shown in the following tables. Read/write **Long**.

<table>
<thead>
<tr>
<th>Return value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>False</td>
<td>Not in Cut or Copy mode</td>
</tr>
<tr>
<td>xlCopy</td>
<td>In Copy mode</td>
</tr>
<tr>
<td>xlCut</td>
<td>In Cut mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>False</td>
<td>Cancels Cut or Copy mode and removes the moving border.</td>
</tr>
<tr>
<td>True</td>
<td>Cancels Cut or Copy mode and removes the moving border.</td>
</tr>
</tbody>
</table>
Example

This example uses a message box to display the status of Cut or Copy mode.

```
Select Case Application.CutCopyMode
    Case Is = False
        MsgBox "Not in Cut or Copy mode"
    Case Is = xlCopy
        MsgBox "In Copy mode"
    Case Is = xlCut
        MsgBox "In Cut mode"
End Select
```
This keyword is not implemented. It is reserved for future use.
DashStyle Property

Returns or sets the dash style for the specified line. Can be one of the MsoLineDashStyle constants. Read/write Long.

MsoLineDashStyle can be one of these MsoLineDashStyle constants.
- msoLineDash
- msoLineDashDot
- msoLineDashDotDot
- msoLineDashStyleMixed
- msoLineDashLongDash
- msoLineDashLongDashDot
- msoLineRoundDot
- msoLineSolid
- msoLineSquareDot

expression.DashStyle

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a blue dashed line to myDocument.

Set myDocument = Worksheets(1)
    .DashStyle = msoLineDashDotDot
    .ForeColor.RGB = RGB(50, 0, 128)
End With
DatabaseSort Property

When set to **True**, manual repositioning of items in a PivotTable field is allowed. Returns **True**, if the field has no manually positioned items. Read/write **Boolean**.

*expression*.**DatabaseSort**

*expression*  Required. An expression that returns a **PivotField** object.
**Remarks**

The **DatabaseSort** property returns **False** if the data source is not an **Online Analytical Processing (OLAP)** data source.

This property returns **True** if the data source is OLAP and neither custom ordering nor automatic sorting has been applied to the field.

Setting the **DatabaseSort** property to **True**, for an OLAP PivotTable, will remove any custom ordering or automatic sort applied to the field (in other words, the PivotTable reverts to the default behavior when the connection was made).

Setting the **DatabaseSort** property to **False** will cause the sort order to be the current order of the items, if no automatic sort is applied.

Setting the **DatabaseSort** property to either **True** or **False** causes an Update.

Setting the **DatabaseSort** property to **True** for a non-OLAP source or an OLAP data field causes a run-time error.
Example

The following example determines if the data source is an OLAP data source and notifies the user. This example assumes an OLAP PivotTable exists on the active worksheet.

Sub UseDatabaseSort()
    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields("[Product].[Product Family]"

    ' Determine source type for the PivotTable report.
    If pvtField.DatabaseSort = True Then
        MsgBox "The source is OLAP; you can manually reorder items."
    Else
        MsgBox "The data source might not be OLAP."
    End If
End Sub
DataBodyRange Property

Returns a Range object that represents the range that contains the data area in the PivotTable report. Read-only.
Example

This example selects the active data range in the PivotTable report.

Worksheets("Sheet1").Activate
Range("A3").Select
ActiveCell.PivotTable.**DataBodyRange**.Select
DataEntryMode Property

Returns or sets Data Entry mode, as shown in the following table. When in Data Entry mode, you can enter data only in the unlocked cells in the currently selected range. Read/write Long.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlOn</td>
<td>Data Entry mode is turned on.</td>
</tr>
<tr>
<td>xlOff</td>
<td>Data Entry mode is turned off.</td>
</tr>
<tr>
<td>xlStrict</td>
<td>Data Entry mode is turned on, and pressing ESC won't turn it off.</td>
</tr>
</tbody>
</table>
Example

This example turns off Data Entry mode if it's on.

If (Application.DataEntryMode = xlOn) Or _
   (Application.DataEntryMode = xlStrict) Then
   Application.DataEntryMode = xlOff
End If
**DataField Property**

Returns a **PivotField** object that corresponds to the selected data field.

*expression*.**DataField**

*expression*  Required. An expression that returns a **PivotCell** object.
Remarks

This property will return an error if the **PivotCell** object is not one of the allowed types: **XIPivotCellTypeValue**, **XIPivotCellTypeDataField**, **XIPivotCellTypeSubtotal**, **XIPivotCellTypeGrandTotal**.
**Example**

This example determines if cell L10 is in the data field of the PivotTable and either returns the PivotTable field that corresponds to the cell by notifying the user, or handles the run-time error. The example assumes a PivotTable exists in the active worksheet.

Sub CheckDataField()

    On Error GoTo Not_In_DataField

    MsgBox Application.Range("L10").PivotCell.**DataField**
    Exit Sub

Not_In_DataField:
    MsgBox "The selected range is not in the data field of the Pivot"
DataFields Property

Returns an object that represents either a single PivotTable field (a PivotField object) or a collection of all the fields (a PivotFields object) that are currently shown as data fields. Read-only.

expression.DataFields(Index)

expression  Required. An expression that returns a PivotTable object.

Index  Optional Variant. The field name or number (can be an array to specify more than one field).
Example

This example adds the names for the PivotTable data fields to a list on a new worksheet.

Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.DataFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
DataLabel Property

Returns a DataLabel object that represents the data label associated with the point or trendline. Read-only.
Example

This example turns on the data label for point seven in series three in Chart1, and then it sets the data label color to blue.

```vba
With Charts("Chart1").SeriesCollection(3).Points(7)
    .HasDataLabel = True
    .ApplyDataLabels type:=xlValue
    .DataLabel.Font.ColorIndex = 5
End With
```
DataLabelRange Property

Returns a Range object that represents the range that contains the labels for the data fields in the PivotTable report. Read-only.
Example

This example selects the data field labels in the PivotTable report.

Worksheets("Sheet1").Activate
Range("A3").Select
ActiveCell.PivotTable.DataLabelRange.Select
DataPivotField Property

Returns a PivotField object that represents all the data fields in a PivotTable. Read-only.

expression.DataPivotField

expression  Required. An expression that returns a PivotTable object.
Example

This example moves the second **PivotItem** object to the first position. It assumes a PivotTable exists on the active worksheet and that the PivotTable contains data fields.

```vba
Sub UseDataPivotField()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    pvtTable.DataPivotField.PivotItems(2).Position = 1
End Sub
```
DataRange Property

Returns a **Range** object as shown in the following table. Read-only.

<table>
<thead>
<tr>
<th>Object</th>
<th>Data range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data field</td>
<td>Data contained in the field</td>
</tr>
<tr>
<td>Row, column, or page field</td>
<td>Items in the field</td>
</tr>
<tr>
<td>Item</td>
<td>Data qualified by the item</td>
</tr>
</tbody>
</table>
Example

This example selects the PivotTable items in the field named "REGION."

```vba
Set pvtTable =Worksheets("Sheet1").Range("A3").PivotTable
Worksheets("Sheet1").Activate
pvtTable.PivotFields("REGION").DataRange.Select
```
DataTable Property

Returns a **DataTable** object that represents the chart data table. Read-only.
Example

This example adds a data table with an outline border to the embedded chart.

```vba
With Worksheets(1).ChartObjects(1).Chart
    .HasDataTable = True
    .DataTable.HasBorderOutline = True
End With
```
Show All
**DataType Property**

- **DataType property as it applies to the** Parameter object.

Returns or sets the data type of the specified query parameter. Read/write XlParameterDataType.

XlParameterDataType can be one of these XlParameterDataType constants.  
xlParamTypeBinary  
xlParamTypeChar  
xlParamTypeDecimal  
xlParamTypeFloat  
xlParamTypeLongVarBinary  
xlParamTypeNumeric  
xlParamTypeSmallInt  
xlParamTypeTimestamp  
xlParamTypeUnknown  
xlParamTypeVarChar  
xlParamTypeBigInt  
xlParamTypeBit  
xlParamTypeDate  
xlParamTypeDouble  
xlParamTypeInteger  
xlParamTypeLongVarChar  
xlParamTypeReal  
xlParamTypeTime  
xlParamTypeTinyInt  
xlParamTypeVarBinary  
xlParamTypeWChar

expression.DataType
expression Required. An expression that returns one of the above objects.

- **DataType property as it applies to the PivotField object.**

Returns a constant describing the type of data in the PivotTable field. Read-only **XlPivotFieldDataType**.

XlPivotFieldDataType can be one of these XlPivotFieldDataType constants.

- **xlDate**
- **xlNumber**
- **xlText**

**expression.DataType**

**expression Required. An expression that returns one of the above objects.**
Example

This example displays the data type of the field named "ORDER_DATE."

Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
Select Case pvtTable.PivotFields("ORDER_DATE").DataType
    Case Is = xlText
        MsgBox "The field contains text data"
    Case Is = xlNumber
        MsgBox "The field contains numeric data"
    Case Is = xlDate
        MsgBox "The field contains date data"
End Select
Date1904 Property

True if the workbook uses the 1904 date system. Read/write Boolean.
Example

This example causes Microsoft Excel to use the 1904 date system for the active workbook.

ActiveWorkbook.Date1904 = True
DDEAppReturnCode Property

Returns the application-specific DDE return code that was contained in the last DDE acknowledge message received by Microsoft Excel. Read-only Long.
Example

This example sets the variable appErrorCode to the DDE return code.

appErrorCode = Application.DDEAppReturnCode
DecimalSeparator Property

Sets or returns the character used for the decimal separator as a String. Read/write.

expression.DecimalSeparator

expression Required. An expression that returns an Application object.
Example

This example places "1,234,567.89" in cell A1 then changes the system separators to dashes for the decimals and thousands separators.

Sub ChangeSystemSeparators()
    Range("A1").Formula = "1,234,567.89"
    MsgBox "The system separators will now change."
    ' Define separators and apply.
    Application.DecimalSeparator = "-"
    Application.ThousandsSeparator = "-"
    Application.UseSystemSeparators = False
End Sub
DefaultFilePath Property

Returns or sets the default path that Microsoft Excel uses when it opens files. Read/write String.
Example

This example displays the current default file path.

MsgBox "The current default file path is " & _
    Application.DefaultFilePath
DefaultSaveFormat Property

Returns or sets the default format for saving files. For a list of valid constants, see the FileFormat property. Read/write Long.
Example

This example sets the default format for saving files.

Application.DefaultSaveFormat = xlExcel4Workbook
DefaultSheetDirection Property

Returns or sets the default direction in which Microsoft Excel displays new windows and worksheets. Can be one of the following constants: xlRTL (right to left) or xlLTR (left to right). Read/write Long.
Remarks

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.
Example

This example sets right to left as the default direction.

Application.\texttt{DefaultSheetDirection} = \texttt{xlRTL}
DefaultWebOptions Property

Returns the DefaultWebOptions object that contains global application-level attributes used by Microsoft Excel whenever you save a document as a Web page or open a Web page. Read-only.
Example

This example checks to see whether the default setting for document encoding is Western, and then it sets the string `strDocEncoding` accordingly.

If Application.DefaultWebOptions.Encoding = msoEncodingWestern Then
    strDocEncoding = "Western"
Else
    strDocEncoding = "Other"
End If
Delivery Property

Returns or sets the routing delivery method. Can be one of the following XlRoutingSlipDelivery constants: xlOneAfterAnother or xlAllAtOnce. Read/write Long.
Remarks

You cannot set this property if routing is in progress
**Example**

This example sends Book1.xls to three recipients, one after another.

```vba
Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", _
                       "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
End With
Workbooks("BOOK1.XLS").Route
```
Dependents Property

Returns a Range object that represents the range containing all the dependents of a cell. This can be a multiple selection (a union of Range objects) if there’s more than one dependent. Read-only Range object.

expression.Dependents

expression Required. An expression that returns one of the objects in the Applies To list.
Remark

Note  The **Dependents** property only works on the active sheet and can not trace remote references.
Example

This example selects the dependents of cell A1 on Sheet1.

Worksheets("Sheet1").Activate
Range("A1").Dependents.Select
Depth Property

- Depth property as it applies to the ThreeDFormat object.

For the ThreeDFormat object, returns or sets the depth of the shape's extrusion. Can be a value from –600 through 9600 (positive values produce an extrusion whose front face is the original shape; negative values produce an extrusion whose back face is the original shape). Read/write Single.

```
expression.Depth
```

expression Required. An expression that returns a ThreeDFormat object.

- Depth property as it applies to the TickLabels object.

For the TickLabels object, returns the number of levels of category tick labels. Read-only Long.

```
expression.Depth
```

expression Required. An expression that returns a TickLabels object.
Example

This example adds an oval to myDocument and then specifies that the oval be extruded to a depth of 50 points and that the extrusion be purple.

Set myDocument = Worksheets(1)
Set myShape = myDocument.Shapes.AddShape(msoShapeOval, _, 90, 90, 90, 40)
With myShape.ThreeD
  .Visible = True
  .Depth = 50
  ' RGB value for purple
  .ExtrusionColor.RGB = RGB(255, 100, 255)
End With
DepthPercent Property

Returns or sets the depth of a 3-D chart as a percentage of the chart width (between 20 and 2000 percent). Read/write Long.
Example

This example sets the depth of Chart1 to be 50 percent of its width. The example should be run on a 3-D chart (the DepthPercent property fails on 2-D charts).

Charts("Chart1").DepthPercent = 50
**Destination Property**

Returns the cell in the upper-left corner of the query table destination range (the range where the resulting query table will be placed). The destination range must be on the worksheet that contains the *QueryTable* object. Read-only *Range*. 
Example

This example scrolls through the active window until the upper-left corner of query table one is in the upper-left corner of the window.

```vba
Set d = Worksheets(1).QueryTables(1).Destination
With ActiveWindow
    .ScrollColumn = d.Column
    .ScrollRow = d.Row
End With
```
Diagram Property

- `Diagram` returns a `Diagram` object representing a diagram.

`expression.Diagram`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, an Organization chart diagram is added to the active worksheet. Microsoft Excel then displays a message with the number of nodes added to the diagram.

Sub UseDiagram()
    Dim wksOne As Worksheet
    Set wksOne = ActiveSheet

    ActiveSheet.Shapes.AddDiagram(_
        Type:=msoDiagramOrgChart, Top:=10, _
        Left:=15, Width:=400, Height:=475)

    'Notify user the number of nodes added to the diagram.
    MsgBox wksOne.Shapes(1).Diagram.Nodes.Count
End Sub
DiagramNode Property

Returns a DiagramNode object that represents a node in a diagram.

expression.DiagramNode

expression  Required. An expression that returns one of the objects in the Applies To list.
**Example**

This example adds a pyramid chart to the active worksheet and then adds four diagram nodes.

```vba
Sub CreatePyramidDiagram()
    Dim dgnNode As DiagramNode
    Dim shpDiagram As Shape
    Dim intCount As Integer

    'Add pyramid diagram to current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram(
        Type:=msoDiagramPyramid,
        Left:=10,
        Top:=15,
        Width:=400,
        Height:=475)

    'Add first diagram node child

    'Add three more diagram child nodes.
    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount
End Sub
```
Dialogs Property

Returns a Dialogs collection that represents all built-in dialog boxes. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example displays the **Open** dialog box (**File** menu).

```vbnet
Application.Dialogs(xlDialogOpen).Show
```
DictLang Property

Selects the dictionary language used, when Microsoft Excel performs spelling checks. Read/write Long.

expression.DictLang

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the Excel dictionary to use the English (United States) language.

Sub LanguageSpellCheck()
    With Application.SpellingOptions
        .DictLang = 1033  ' United States English language number
        .UserDict = "CUSTOM.DIC"
    End With
End Sub
**DirectDependents Property**

Returns a `Range` object that represents the range containing all the direct dependents of a cell. This can be a multiple selection (a union of `Range` objects) if there’s more than one dependent. Read-only `Range` object.

`expression.DDirectDependents`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Remark

Note  The Direct Dependents property only works on the active sheet and cannot trace remote references.
Example

This example selects the direct dependents of cell A1 on Sheet1.

Worksheets("Sheet1").Activate
Range("A1").DirectDependents.Select
Show All
Direction Property

Returns or sets the order in which the cells will be spoken. The value of the **Direction** property is an **XlSpeakDirection** constant. Read/write.

XlSpeakDirection can be one of these XlSpeakDirection constants.
- **xlSpeakByColumns**
- **xlSpeakByRows**

*expression*.Direction

*expression* Required. An expression that returns a **Speech** object.
Example

In this example, Microsoft Excel determines the speech direction and notifies the user.

Sub CheckSpeechDirection()
    ' Notify user of speech direction.
    If Application.Speech.Direction = xlSpeakByColumns Then
        MsgBox "The speech direction is set to speak by columns."
    Else
        MsgBox "The speech direction is set to speak by rows."
    End If
End Sub
DirectPrecedents Property

Returns a Range object that represents the range containing all the direct precedents of a cell. This can be a multiple selection (a union of Range objects) if there’s more than one precedent. Read-only Range object.

expression.DirectPrecedents

expression Required. An expression that returns one of the objects in the Applies To list.
Remark

Note  The DirectPrecedents property only works on the active sheet and can not trace remote references.
Example

This example selects the direct precedents of cell A1 on Sheet1.

Worksheets("Sheet1").Activate
Range("A1").DirectPrecedents.Select
DisplayAlerts Property

True if Microsoft Excel displays certain alerts and messages while a macro is running. Read/write Boolean.
Remarks

The default value is **True**. Set this property to **False** if you don’t want to be disturbed by prompts and alert messages while a macro is running; any time a message requires a response, Microsoft Excel chooses the default response.

If you set this property to **False**, Microsoft Excel sets this property to **True** when the code is finished, unless you are running cross process code.

When using the **SaveAs** method for workbooks to overwrite an existing file, the 'Overwrite' alert has a default of 'No', while the 'Yes' response is selected by Excel when the **DisplayAlerts** property is set equal to **True**.
Example

This example closes the workbook Book1.xls and doesn’t prompt the user to save changes. Any changes to Book1.xls aren’t saved.

```vba
Application.DisplayAlerts = False
Workbooks("BOOK1.XLS").Close
Application.DisplayAlerts = True
```

This example suppresses the message that otherwise appears when you initiate a DDE channel to an application that’s not running.

```vba
Application.DisplayAlerts = False
channelNumber = Application.DDEInitiate( _
    app:="WinWord", _
    topic:="C:\WINWORD\FORMLETR.DOC")
Application.DisplayAlerts = True
Application.DDEExecute channelNumber, "[FILEPRINT]"
Application.DDETerminate channelNumber
Application.DisplayAlerts = True
```
DisplayAutoCorrectOptions Property

Allows the user to display or hide the **AutoCorrect Options** button. The default value is **True**. Read/write **Boolean**.

`expression.DisplayAutoCorrectOptions`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

The **DisplayAutoCorrectOptions** property is a Microsoft Office-wide setting. Changing this property in Microsoft Excel will affect the other Office applications also.

In Excel the **AutoCorrect Options** button only appears when a hyperlink is automatically created.
Example

This example determines if the AutoCorrect Options button can be displayed and notifies the user.

Sub CheckDisplaySetting()
    'Determine setting and notify user.
    If Application.AutoCorrect.DisplayAutoCorrectOptions = True Then
        MsgBox "The AutoCorrect Options button can be displayed."
    Else
        MsgBox "The AutoCorrect Options button cannot be displayed."
    End If
End Sub
DisplayBlanksAs Property

Returns or sets the way that blank cells are plotted on a chart. Can be one of the following XlDisplayBlanksAs constants: xlNotPlotted, xlInterpolated, or xlZero. Read/write Long.
**Example**

This example sets Microsoft Excel to not plot blank cells in Chart1.

```vba
Charts("Chart1").DisplayBlanksAs = xlNotPlotted
```
DisplayClipboardWindow Property

Returns **True** if the Microsoft Office Clipboard can be displayed. Read/write **Boolean**.

`expression.DisplayClipboardWindow`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the Office Clipboard can be displayed and notifies the user.

Sub SeeClipboard()
    ' Determine if Office Clipboard can be displayed.
    If Application.DisplayClipboardWindow = True Then
        MsgBox "Office Clipboard can be displayed."
    Else
        MsgBox "Office Clipboard cannot be displayed."
    End If
End Sub
DisplayCommentIndicator Property

Returns or sets the way cells display comments and indicators. Can be one of the following XlCommentDisplayMode constants: xlNoIndicator, xlCommentIndicatorOnly, or xlCommentAndIndicator. Read/write Long.
Example

This example hides cell tips but retains comment indicators.

Application.\texttt{DisplayCommentIndicator} = \texttt{xlCommentIndicatorOnly}
DisplayDrawingObjects Property

Returns or sets how shapes are displayed. Read/write Long.

Can be one of the following XlDisplayDrawingObjects constants.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlDisplayShapes</td>
<td>Show all shapes.</td>
</tr>
<tr>
<td>xlPlaceholders</td>
<td>Show only placeholders.</td>
</tr>
<tr>
<td>xlHide</td>
<td>Hide all shapes.</td>
</tr>
</tbody>
</table>
Example

This example hides all the shapes in the active workbook.

ActiveWorkbook.DisplayDrawingObjects = xlHide
Show All
DisplayEmptyColumn Property

Returns **True** when the non-empty MDX keyword is included in the query to the OLAP provider for the value axis. The OLAP provider will not return empty columns in the result set. Returns **False** when the non-empty keyword is omitted. Read/write **Boolean**.

*expression*.DisplayEmptyColumn

*expression*   Required. An expression that returns a **PivotTable** object.
Remarks

The PivotTable must be connected to an Online Analytical Processing (OLAP) data source to avoid a run-time error.
Example

This example determines the display settings for empty columns in a PivotTable. It assumes a PivotTable connected to an OLAP data source exists on the active worksheet.

Sub CheckSetting()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine display setting for empty columns.
    If pvtTable.DisplayEmptyColumn = False Then
        MsgBox "Empty columns will not be displayed."
    Else
        MsgBox "Empty columns will be displayed."
    End If
End Sub
DisplayEmptyRow Property

Returns **True** when the non-empty MDX keyword is included in the query to the OLAP provider for the category axis. The OLAP provider will not return empty rows in the result set. Returns **False** when the non-empty keyword is omitted. Read/write **Boolean**.

`expression.DisplayEmptyRow`

`expression` Required. An expression that returns a **PivotTable** object.
Remarks

The PivotTable must be connected to an Online Analytical Processing (OLAP) data source to avoid a run-time error.
**Example**

This example determines the display settings for empty rows in a PivotTable. It assumes a PivotTable connected to an OLAP data source exists on the active worksheet.

Sub CheckSetting()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine display setting for empty rows.
    If pvtTable.DisplayEmptyRow = False Then
        MsgBox "Empty rows will not be displayed."
    Else
        MsgBox "Empty rows will be displayed."
    End If
End Sub
DisplayEquation Property

True if the equation for the trendline is displayed on the chart (in the same data label as the R-squared value). Setting this property to True automatically turns on data labels. Read/write Boolean.
Example

This example displays the R-squared value and equation for trendline one in Chart1. The example should be run on a 2-D column chart that has a trendline for the first series.

With Charts("Chart1").SeriesCollection(1).Trendlines(1)
    .DisplayRSquared = True
    .DisplayEquation = True
End With
DisplayErrorString Property

True if the PivotTable report displays a custom error string in cells that contain errors. The default value is False. Read/write Boolean.
Remarks

Use the `ErrorString` property to set the custom error string.

This property is particularly useful for suppressing divide-by-zero errors when calculated fields are pivoted.
**Example**

This example causes the PivotTable report to display a hyphen in cells that contain errors.

```vba
With Worksheets(1).PivotTables("Pivot1")
    .ErrorString = "-"
    .DisplayErrorString = True
End With
```
DisplayExcel4Menus Property

True if Microsoft Excel displays version 4.0 menu bars. Read/write Boolean.
Example

This example switches the display to Microsoft Excel version 4.0 menus.

Application.DisplayExcel4Menus = True
DisplayFormulaBar Property

True if the formula bar is displayed. Read/write Boolean.
Example

This example hides the formula bar.

Application.DisplayFormulaBar = False
DisplayFormulas Property

True if the window is displaying formulas, False if the window is displaying values. Read/write Boolean.
Remarks

This property applies only to worksheets and macro sheets.
Example

This example changes the active window in Book1.xls to display formulas.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate`  
`ActiveWindow.DisplayFormulas = True`
DisplayFullScreen Property

**True** if Microsoft Excel is in full-screen mode. Read/write **Boolean**.
Remarks

Full-screen mode maximizes the application window so that it fills the entire screen and hides the application title bar. Toolbars, the status bar, and the formula bar maintain separate display settings for full-screen mode and normal mode.
Example

This example sets Microsoft Excel to be displayed in full-screen mode.

`Application.DisplayFullScreen = True`
DisplayFunctionToolTips Property

**True** if function ToolTips can be displayed. Read/write **Boolean**.

*expression*.DisplayFunctionToolTips

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel notifies the user the status of displaying function Tool Tips.

Sub CheckToolTip()
    ' Notify the user of the ability to display function ToolTips.
    If Application.DisplayFunctionToolTips = True Then
        MsgBox "The ability to display function ToolTips is on."
    Else
        MsgBox "The ability to display function ToolTips is off."
    End If
End Sub
DisplayGridlines Property

*True* if gridlines are displayed. Read/write *Boolean*. 
Remarks

This property applies only to worksheets and macro sheets.

This property affects only displayed gridlines. Use the `PrintGridlines` property to control the printing of gridlines.
Example

This example toggles the display of gridlines in the active window in Book1.xls.

Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.DisplayGridlines = Not(ActiveWindow.DisplayGridlines)
DisplayHeadings Property

True if both row and column headings are displayed, False if there are no headings displayed. Read/write Boolean.
Remarks

This property applies only to worksheets and macro sheets.

This property affects only displayed headings. Use the `PrintHeadings` property to control the printing of headings.
Example

This example turns off the display of row and column headings in the active window in Book1.xls.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate`  
`ActiveWindow.DisplayHeadings = False`
DisplayHorizontalScrollBar Property

True if the horizontal scroll bar is displayed. Read/write Boolean.
Example

This example turns on the horizontal scroll bar for the active window.

ActiveWindow.DisplayHorizontalScrollBar = True
DisplayImmediateItems Property

Returns or sets a Boolean that indicates whether items in the row and column areas are visible when the data area of the PivotTable is empty. Set this property to False to hide the items in the row and column areas when the data area of the PivotTable is empty. The default value is True.

expression.DisplayImmediateItems

type expression  Required. An expression that returns a PivotTable object.
Example

This example determines how the PivotTable was created and notifies the user. It assumes a PivotTable exists on the active worksheet.

Sub CheckItemsDisplayed()
    Dim pvtTable As PivotTable

    Set pvtTable = ActiveSheet.PivotTables(1)

    ' Determine how the PivotTable was created.
    If pvtTable.DisplayImmediateItems = True Then
        MsgBox "Fields have been added to the row or column areas for"
    Else
        MsgBox "The PivotTable was created by using object-model cal"
    End If

End Sub
DisplayInsertOptions Property

True if the Insert Options button should be displayed. Read/write Boolean.

expression.DisplayInsertOptions

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel notifies the user the status of displaying the Insert Options button.

Sub SettingToolTip()
    ' Notify the user of the ToolTip status.
    If Application.DisplayInsertOptions = True Then
        MsgBox "The ability to display the Insert Options button is on."
    Else
        MsgBox "The ability to display the Insert Options button is off."
    End If
End Sub
DisplayNoteIndicator Property

True if cells containing notes display cell tips and contain note indicators (small dots in their upper-right corners). Read/write Boolean.
Example

This example hides note indicators.

Application.DisplayNoteIndicator = False
DisplayNullString Property

True if the PivotTable report displays a custom string in cells that contain null values. The default value is True. Read/write Boolean.
Remarks

Use the NullString property to set the custom null string.
**Example**

This example causes the PivotTable report to display "NA" in cells that contain null values.

```vba
With Worksheets(1).PivotTables("Pivot1")
    .NullString = "NA"
    .DisplayNullString = True
End With
```

This example causes the PivotTable report to display 0 (zero) in cells that contain null values.

```vba
Worksheets(1).PivotTables("Pivot1").DisplayNullString = False
```
DisplayOutline Property

True if outline symbols are displayed. Read/write Boolean.
Remarks

This property applies only to worksheets and macro sheets.
Example

This example displays outline symbols for the active window in Book1.xls.

Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.DisplayOutline = True
DisplayPageBreaks Property

**True** if page breaks (both automatic and manual) on the specified worksheet are displayed. Read/write **Boolean**.
Remarks

You can't set this property if you don't have a printer installed.
Example

This example causes Sheet1 to display page breaks.

`Worksheets("Sheet1").DisplayPageBreaks = True`
DisplayPasteOptions Property

True if the Paste Options button can be displayed. Read/write Boolean.

expression.DisplayPasteOptions

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

This is a Microsoft Office-wide setting. This setting affects all other Microsoft Office applications. Setting the **DisplayPasteOptions** property to **True** turns off the **Auto Fill Options** button in Microsoft Excel. The **Auto Fill Options** button is only in Excel, but the **Paste Options** button is in all the other Microsoft Office applications.
**Example**

In this example, Microsoft Excel notifies the user the status of displaying the **Paste Options** button.

```plaintext
Sub CheckDisplayFeature()
    ' Check if the options button can be displayed.
    If Application.DisplayPasteOptions = True Then
        MsgBox "The ability to display the Paste Options button is on."
    Else
        MsgBox "The ability to display the Paste Options button is off."
    End If
End Sub
```
DisplayRecentFiles Property

True if the list of recently used files is displayed on the File menu. Read/write Boolean.
Example

This example turns off the list of recently used files.

Application.DisplayRecentFiles = False
DisplayRightToLeft Property

True if the specified window or worksheet is displayed from right to left instead of from left to right. False if the object is displayed from left to right. Read/write Boolean.
Remarks

This property can be set only when right to left language support has been installed and selected.
Example

This example sets window one in the active workbook to be displayed from right to left.

ActiveWorkbook.Windows(1).DisplayRightToLeft = True
DisplayRSquared Property

True if the R-squared value of the trendline is displayed on the chart (in the same data label as the equation). Setting this property to True automatically turns on data labels. Read/write Boolean.
Example

This example displays the R-squared value and equation for trendline one in Chart1. The example should be run on a 2-D column chart that has a trendline for the first series.

```vba
With Charts("Chart1").SeriesCollection(1).Trendlines(1)
    .DisplayRSquared = True
    .DisplayEquation = True
End With
```
DisplayScrollBars Property

True if scroll bars are visible for all workbooks. Read/write Boolean.
Example

This example turns off scroll bars for all workbooks.

Application.DisplayScrollBars = False
DisplaySmartTags Property

Returns or sets an `XlSmartTagDisplayMode` constant indicating the display features for smart tags. Read/write.

XlSmartTagDisplayMode can be one of these `XlSmartTagDisplayMode` constants:
- **xlButtonOnly** Displays only the button for smart tags.
- **xlDisplayNone** Nothing is displayed for smart tags.
- **xlIndicatorAndButton** Display the indicator and button for smart tags.

`expression.DisplaySmartTags`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the setting for displaying smart tags and notifies the user.

Sub CheckDisplayOptions()

    ' Check the display options for smart tags.
    Select Case ActiveWorkbook.SmartTagOptions.DisplaySmartTags
        Case xlButtonOnly
            MsgBox "The button for smart tags will only be displayed"
        Case xlDisplayNone
            MsgBox "Nothing will be displayed for smart tags."
        Case xlIndicatorAndButton
            MsgBox "The button and indicator will be displayed for s"
    End Select

End Sub
DisplayStatusBar Property

True if the status bar is displayed. Read/write Boolean.
Example

This example saves the current state of the DisplayStatusBar property and then sets the property to True so that the status bar is visible.

```plaintext
saveStatusBar = Application.DisplayStatusBar
Application.DisplayStatusBar = True
```
**DisplayUnit Property**

Returns or sets the unit label for the specified axis. Read/write **XIDisplayUnit**.

XIDisplayUnit can be one of these XIDisplayUnit constants.

- **xlHundredMillions**
- **xlHundredThousands**
- **xlMillions**
- **xlTen Thousands**
- **xlThousands**
- **xlHundreds**
- **xlMillionMillions**
- **xlTenMillions**
- **xlThousands**
- **xlMillionMillions**

*expression*.DisplayUnit

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

Using unit labels when charting large values makes your tick mark labels easier to read. For example, if you label your value axis in units of hundreds, thousands, or millions, you can use smaller numeric values at the tick marks on the axis.
Example

This example sets the units displayed on the value axis in Chart1 to hundreds.

With Charts("Chart1").Axes(xlValue)
  .DisplayUnit = xlHundreds
  .HasTitle = True
  .AxisTitle.Caption = "Rebate Amounts"
End With
DisplayUnitCustom Property

If the value of the DisplayUnit property is xlCustom, the DisplayUnitCustom property returns or sets the value of the displayed units. The value must be from 0 through 10E307. Read/write Double.
Remarks

Using unit labels when charting large values makes your tick mark labels easier to read. For example, if you label your value axis in units of hundreds, thousands, or millions, you can use smaller numeric values at the tick marks on the axis.
Example

This example sets the units displayed on the value axis in Chart1 to increments of 500.

With Charts("Chart1").Axes(xlValue)
    .DisplayUnit = xlCustom
    .DisplayUnitCustom = 500
    .HasTitle = True
    .AxisTitle.Caption = "Rebate Amounts"
End With
DisplayUnitLabel Property

Returns the DisplayUnitLabel object for the specified axis. Returns Null if the HasDisplayUnitLabel property is set to False. Read-only.
Example

This example sets the label caption to "Millions" for the value axis in Chart1, and then it turns off automatic font scaling.

With Charts("Chart1").Axes(xlValue).DisplayUnitLabel
    .Caption = "Millions"
    .AutoScaleFont = False
End With
DisplayVerticalScrollBar Property

*True* if the vertical scroll bar is displayed. Read/write *Boolean*.
Example

This example turns on the vertical scroll bar for the active window.

ActiveWindow.DisplayVerticalScrollBar = True
DisplayWorkbookTabs Property

True if the workbook tabs are displayed. Read/write Boolean.
**Example**

This example turns on the workbook tabs.

```vba
ActiveWindow.DisplayWorkbookTabs = True
```
**DisplayZeros Property**

*True* if zero values are displayed. Read/write **Boolean**.
Remarks

This property applies only to worksheets and macro sheets.
Example

This example sets the active window in Book1.xls to display zero values.

```
Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.DisplayZeros = True
```
DivID Property

Returns the unique identifier used for identifying an HTML <DIV> tag on a Web page. The tag is associated with an item in a document that you have saved to a Web page. An item can be an entire workbook, a worksheet, a selected print range, an AutoFilter range, a range of cells, a chart, a PivotTable report, or a query table. Read-only String.
Example

This example saves a range of cells to a Web page, and then it obtains the identifier from the <DIV> tag of this item and finds the line on the saved Web page (q198.htm). The example also creates a copy of the Web page (newq1.htm) and inserts a comment line before the <DIV> tag in the copy of the file.

```vba
Set objPO = ActiveWorkbook.PublishObjects.Add(_
    SourceType:=xlSourceRange, _
    Filename:="\\Server1\Reports\q198.htm", _
    Sheet:="Sheet1", _
    Source:="C2:D6", _
    HtmlType:=xlHtmlCalc)

strTargetDivID = objPO.DivID

Open "\\Server1\Reports\q198.htm" For Input As #1
Open "\\Server1\Reports\newq1.htm" For Output As #2

While Not EOF(1)
    Line Input #1, strFileLine
    If InStr(strFileLine, strTargetDivID) > 0 And _
        InStr(strFileLine, "<div") > 0 Then
        Print #2, "<!--Saved item-->
    End If
    Print #2, strFileLine
Wend
Close #2
Close #1
```
DoughnutHoleSize Property

Returns or sets the size of the hole in a doughnut chart group. The hole size is expressed as a percentage of the chart size, between 10 and 90 percent. Read/write Long.
Example

This example sets the hole size for doughnut group one in Chart1. The example should be run on a 2-D doughnut chart.

Charts("Chart1").DoughnutGroups(1).DoughnutHoleSize = 10
DownBars Property

Returns a DownBars object that represents the down bars on a line chart. Applies only to line charts. Read-only.
Example

This example turns on up bars and down bars for chart group one in Chart1 and then sets their colors. The example should be run on a 2-D line chart that has two series that cross each other at one or more data points.

```vba
With Charts("Chart1").ChartGroups(1)
    .HasUpDownBars = True
    .DownBars.Interior.ColorIndex = 3
End With
```
DownloadComponents Property

True if the necessary Microsoft Office Web components are downloaded when you view the saved document in a Web browser, but only if the components are not already installed. False if the components are not downloaded. The default value is False. Read/write Boolean.
Remarks

You can set the `LocationOfComponents` property to a central URL (on the intranet or Web) or path (local or network) to a location from which authorized users can download components when viewing your saved document. The path must be valid and must point to a location that contains the necessary components, and the user must have a valid Microsoft Office 2000 license.

Office Web components add interactivity to documents that you save as Web pages. If you view a Web page in a browser on a computer that does not have the components installed, the interactive portions of the page will be static.
Example

This example allows the Office Web components to be downloaded with the specified Web page, if they are not already installed.

Application.DefaultWebOptions.DownloadComponents = True
Application.DefaultWebOptions.LocationOfComponents = _
    Application.Path & Application.PathSeparator & "foo"
DownloadURL Property

Returns a **String** representing a [Uniform Resource Locator (URL)](https://en.wikipedia.org/wiki/Uniform_Resource_Locator) to save along with the corresponding smart tag. Read-only.

*expression*.**DownloadURL**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds "MSFT" to cell A1 and then displays the URL for the smart tag. This example assumes the host system is connected to the Internet.

Sub UseDownloadURL()
    Dim strLink As String
    Dim strType As String

    ' Define smart tag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    Range("A1").Formula = "MSFT"

    ' Display URL for the smart tag.
    MsgBox Range("A1").SmartTags.Add(strLink).DownloadURL
End Sub
Draft Property

**True** if the sheet will be printed without graphics. Read/write **Boolean**.
Remarks

Setting this property to True makes printing faster (at the expense of not printing graphics).
Example

This example turns off graphics printing for Sheet1.

Worksheets("Sheet1").PageSetup.Draft = True
DragToColumn Property

`True` if the specified field can be dragged to the column position. The default value is `True`. Read/write `Boolean`. 
Remarks

For OLAP data sources, the value is False for measure fields.
Example

This example prevents the Year field in the first PivotTable report on worksheet one from being dragged to the column position.

`Worksheets(1).PivotTables("Pivot1") .PivotFields("Year").DragToColumn = False`
Show All
DragToData Property

True if the specified field can be dragged to the data position. The default value is True. Read/write Boolean.
Remarks

For OLAP data sources, the value is False for measure fields.
Example

This example prevents the Year field from being dragged to the data position in the first PivotTable report on the first worksheet.

```vba
Worksheets(1).PivotTables("Pivot1") _.PivotFields("Year").DragToData = False
```
DragToHide Property

True if the field can be hidden by being dragged off the PivotTable report. The default value is True. Read/write Boolean.
Example

This example prevents the Year field in the first PivotTable report on worksheet one from being dragged off the report.

`Worksheets(1).PivotTables("Pivot1") .PivotFields("Year").DragToHide = False`
DragToPage Property

True if the field can be dragged to the page position. The default value is True. Read/write Boolean.
Remarks

For OLAP data sources, the value is False for measure fields.
**Example**

This example prevents the Year field in the PivotTable report on worksheet one from being dragged to the page position.

```vba
Worksheets(1).PivotTables("Pivot1")
    .PivotFields("Year").DragToPage = False
```
DragToRow Property

True if the field can be dragged to the row position. The default value is True. Read/write Boolean.
Remarks

For OLAP data sources, the value is False for measure fields.
Example

This example prevents the Year field in the first PivotTable report on worksheet one from being dragged to the row position.

Worksheets(1).PivotTables("Pivot1") _.PivotFields("Year").DragToRow = False
Show All
Drilled Property

Returns or sets the "drilled" (expanded, or visible) status of the cube field members in the hierarchical member-selection control of a cube field. This property is used primarily for macro recording and isn’t intended for any other use. Read/write.
Remarks

The Drilled property returns or sets an array. Each element of the array corresponds to a level of the cube field that has been expanded. The maximum number of elements is the number of levels in the cube field. Each element of the array is an array of type String, containing unique member names that are visible (expanded) at the corresponding level of the control. See the TreeviewControl object’s Hidden property to determine when members are explicitly hidden in an expanded view.
**Example**

This example expands the second-level members of the first cube field in the first PivotTable report on the active worksheet.

```vba
ActiveSheet.PivotTables("PivotTable1").CubeFields(1).TreeViewControl.Drilled = _
    Array(Array("", "", "", "", "", "", "", _
    "", "", "", ""), _
    Array("[state].[states].[AB]", _
    "[state].[states].[CA]", _
    "[state].[states].[IN]", _
    "[state].[states].[KS]", _
    "[state].[states].[KY]", _
    "[state].[states].[MD]", _
    "[state].[states].[MI]", _
    "[state].[states].[OH]", _
    "[state].[states].[OR]", _
    "[state].[states].[TN]", _
    "[state].[states].[UT]", _
    "[state].[states].[WA]"))
```
DrilledDown Property

True if the flag for the specified PivotTable field or PivotTable item is set to "drilled" (expanded, or visible). Read/write Boolean.
Remarks

You can use this property only for OLAP data sources.

You cannot set this property if the field or item is hidden.
Example

This example sets the flags to “not drilled” for all items in the state field in the third PivotTable report on the active worksheet.

ActiveSheet.PivotTables("PivotTable3")
    .PivotFields("state").DrilledDown = False
Drop Property

For callouts with an explicitly set drop value, this property returns the vertical distance (in points) from the edge of the text bounding box to the place where the callout line attaches to the text box. This distance is measured from the top of the text box unless the AutoAttach property is set to True and the text box is to the left of the origin of the callout line (the place that the callout points to), in which case the drop distance is measured from the bottom of the text box. Read-only Single.
Remarks

Use the CustomDrop method to set the value of this property.

The value of this property accurately reflects the position of the callout line attachment to the text box only if the callout has an explicitly set drop value — that is, if the value of the DropType property is msoCalloutDropCustom.
Example

This example replaces the custom drop for shape one on myDocument with one of two preset drops, depending on whether the custom drop value is greater than or less than half the height of the callout text box. For the example to work, shape one must be a callout.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Callout
    If .DropType = msoCalloutDropCustom Then
        If .Drop < .Parent.Height / 2 Then
            .PresetDrop msoCalloutDropTop
        Else
            .PresetDrop msoCalloutDropBottom
        End If
    End If
End With
**DropDownLines Property**

Returns or sets the number of list lines displayed in the drop-down portion of a combo box. Read/write `Long`. 
**Example**

This example creates a combo box with 10 list lines.

```vba
With Worksheets(1).Shapes.AddFormControl(xlDropDown, _
    Left:=10, Top:=10, Width:=100, Height:=10)
    .ControlFormat.DropDownLines = 10
End With
```
DropLines Property

Returns a DropLines object that represents the drop lines for a series on a line chart or area chart. Applies only to line charts or area charts. Read-only.
Example

This example turns on drop lines for chart group one in Chart1 and then sets their line style, weight, and color. The example should be run on a 2-D line chart that has one series.

With Charts("Chart1").ChartGroups(1)
    .HasDropLines = True
    With .DropLines.Border
        .LineStyle = xlThin
        .Weight = xlMedium
        .ColorIndex = 3
    End With
End With
DropType Property

Returns a value that indicates where the callout line attaches to the callout text box. Read-only **MsoCalloutDropType**.

MsoCalloutDropType can be one of these MsoCalloutDropType constants.

- msoCalloutDropCenter
- msoCalloutDropMixed
- msoCalloutDropBottom
- msoCalloutDropCustom
- msoCalloutDropTop

expression.DropType

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

If the callout drop type is msoCalloutDropCustom, the values of the Drop and AutoAttach properties and the relative positions of the callout text box and callout line origin (the place that the callout points to) are used to determine where the callout line attaches to the text box.

This property is read-only. Use the PresetDrop method to set the value of this property.
Example

This example replaces the custom drop for shape one on myDocument with one of two preset drops, depending on whether the custom drop value is greater than or less than half the height of the callout text box. For the example to work, shape one must be a callout.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1).Callout
    If .DropType = msoCalloutDropCustom Then
        If .Drop < .Parent.Height / 2 Then
            .PresetDrop msoCalloutDropTop
        Else
            .PresetDrop msoCalloutDropBottom
        End If
    End If
End With
```
EditDirectlyInCell Property

True if Microsoft Excel allows editing in cells. Read/write Boolean.
Example

This example enables editing in cells.

Application>EditDirectlyInCell = True
EditingType Property

If the specified node is a vertex, this property returns a value that indicates how changes made to the node affect the two segments connected to the node. Read-only `MsoEditingType`.

MsoEditingType can be one of these MsoEditingType constants.
- `msoEditingAuto`
- `msoEditingCorner`
- `msoEditingSmooth`
- `msoEditingSymmetric`

`expression.EditingType`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property is read-only. Use the SetEditingType method to set the value of this property.
Example

This example changes all corner nodes to smooth nodes in shape three on myDocument. Shape three must be a freeform drawing.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    For n = 1 to .Count
        If .Item(n).EditingType = msoEditingCorner Then
            .SetEditingType n, msoEditingSmooth
        End If
    Next
End With
**EditWebPage Property**

Returns or sets the web page Uniform Resource Locator (URL) for a web query. Read/write *Variant*.

`expression.EditWebPage`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

The `EditWebPage` property returns `Null` if not set. The `EditWebPage` property is only meaningful if the query type is Web or OLE.

If the `EditWebPage` is not null then ignore the `WebTables` property for refreshing. As a result an XML query and the `WebTable` property refers to the table in the original Web page and should only be used in the edit case to pre-populate the `Web Query` dialog box.
Example

In this example, Microsoft Excel notifies the user a web page URL. This example assumes a **QueryTable** object in cell A1 exists in the active worksheet and that file called "MyHomepage.htm" exists on the C:\ drive.

Sub ReturnURL()
    ' Set the EditWebPage property to a source.
    Range("A1").QueryTable.EditWebPage = "C:\MyHomepage.htm"

    ' Display the source to the user.
    MsgBox Range("A1").QueryTable.EditWebPage
End Sub
Elevation Property

Returns or sets the elevation of the 3-D chart view, in degrees. Read/write Long.
Remarks

The chart elevation is the height at which you view the chart, in degrees. The default is 15 for most chart types. The value of this property must be between -90 and 90, except for 3-D bar charts, where it must be between 0 and 44.
Example

This example sets the chart elevation of Chart1 to 34 degrees. The example should be run on a 3-D chart (the Elevation property fails on 2-D charts).

Charts("Chart1").Elevation = 34
EmailSubject Property

Returns or sets the text string of the specified hyperlink’s e-mail subject line. The subject line is appended to the hyperlink’s address. Read/write String.
Remarks

This property is usually used with e-mail hyperlinks.

The value of this property takes precedence over any e-mail subject line you have specified by using the Address property of the same Hyperlink object.
Example

This example sets the e-mail subject line for the first hyperlink in the first worksheet.

 Worksheets(1).Hyperlinks(1).EmailSubject = "Quote Request"
EmbedSmartTags Property

True to embed smart tags on the specified workbook. Read/write Boolean.

expression.EmbedSmartTags

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if smart tags are enabled for the active workbook and notifies the user.

Sub UseSmartTags()
    ' Determine if smart tags are enabled for this workbook.
    If ActiveWorkbook.SmartTagOptions.**EmbedSmartTags** = True Then
        MsgBox "Smart tags can be embedded in this workbook."
    Else
        MsgBox "Smart tags can not be embedded in this workbook."
    End If
End Sub
EmptyCellReferences Property

When set to **True** (default), Microsoft Excel identifies, with an **AutoCorrect Options** button, selected cells containing formulas that refer to empty cells. **False** disables empty cell reference checking. Read/write **Boolean**.

`expression.EmptyCellReferences`

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, the **AutoCorrect Options** button appears for cell A1 which contains a formula that references empty cells.

Sub CheckEmptyCells()

    Application.ErrorCheckingOptions.**EmptyCellReferences** = True
    Range("A1").Formula = "=A2+A3"

End Sub
EnableAnimations Property

True if animated insertion and deletion is enabled. Read/write Boolean.
Remarks

When animation is enabled, inserted worksheet rows and columns appear slowly, and deleted worksheet rows and columns disappear slowly.
Example

This example turns off animated insertion and deletion.

Application.**EnableAnimations** = False
EnableAutoComplete Property

True if the AutoComplete feature is enabled. Read/write Boolean.
Example

This example enables the AutoComplete feature.

Application.EnableAutoComplete = True
EnableAutoFilter Property

True if AutoFilter arrows are enabled when user-interface-only protection is turned on. Read/write Boolean.
Remarks

This property applies to each worksheet and isn't saved with the worksheet or session.
Example

This example enables the AutoFilter arrows on a protected worksheet.

ActiveSheet.**EnableAutoFilter** = True
ActiveSheet.Protect contents:=True, userInterfaceOnly:=True
EnableAutoRecover Property

Saves changed files, of all formats, on a timed interval. If Microsoft Excel fails, the system fails, or if the system is improperly shut down (not allowing Excel to save the changed files), the backed up files are opened and the user has an opportunity to save changes that otherwise would have been lost. When the user restarts Excel, a document recovery window opens, giving the user an option to recover the files they were working on. Setting this property to **True** (default) enables this feature. Read/write **Boolean**.

*expression*.EnableAutoRecover

*expression*  Required. An expression that returns a **Workbook** object.
Example

The following example checks the setting of the AutoRecover feature and if not enabled, Excel enables it and then notifies the user.

Sub UseAutoRecover()

    ' Check to see if the feature is enabled, if not, enable it.
    If ActiveWorkbook.EnableAutoRecover = False Then
        ActiveWorkbook.EnableAutoRecover = True
        MsgBox "The AutoRecover feature has been enabled."
    Else
        MsgBox "The AutoRecover feature is already enabled."
    End If

End Sub
EnableCalculation Property

True if Microsoft Excel automatically recalculates the worksheet when necessary. False if Excel doesn't recalculate the sheet. Read/write Boolean.
Remarks

When the value of this property is False, you cannot request a recalculation. When you change the value from False to True, Excel recalculates the worksheet.
Example

This example sets Microsoft Excel to not recalculate worksheet one automatically.

`Worksheets(1).EnableCalculation = False`
EnableCancelKey Property

Controls how Microsoft Excel handles CTRL+BREAK (or ESC or COMMAND+PERIOD) user interruptions to the running procedure. Read/write XLEnableCancelKey.

XLEnableCancelKey can be one of these XLEnableCancelKey constants.

XLDisabled. Cancel key trapping is completely disabled.

XLErrorHandler. The interrupt is sent to the running procedure as an error, trappable by an error handler set up with an On Error GoTo statement. The trappable error code is 18.

XLInterrupt. The current procedure is interrupted, and the user can debug or end the procedure.

expression.EnableCancelKey

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property very carefully. If you use `xlDisabled`, there's no way to interrupt a runaway loop or other non–self-terminating code. Likewise, if you use `xlErrorHandler` but your error handler always returns using the `Resume` statement, there's no way to stop runaway code.

The `EnableCancelKey` property is always reset to `xlInterrupt` whenever Microsoft Excel returns to the idle state and there's no code running. To trap or disable cancellation in your procedure, you must explicitly change the `EnableCancelKey` property every time the procedure is called.
Example

This example shows how you can use the **EnableCancelKey** property to set up a custom cancellation handler.

```vba
On Error GoTo handleCancel
Application.EnableCancelKey = xlErrorHandler
MsgBox "This may take a long time: press ESC to cancel"
For x = 1 To 1000000    ' Do something 1,000,000 times (long!)
    ' do something here
Next x

handleCancel:
If Err = 18 Then
    MsgBox "You cancelled"
End If
```
Enabled Property

True if the object is enabled. Read/write Boolean.
Example

This example disables embedded chart one on worksheet one.

`Worksheets(1).ChartObjects(1).Enabled = False`
EnableDataValueEditing Property

**True** to disable the alert for when the user overwrites values in the data area of the PivotTable. **True** also allows the user to change data values that previously could not be changed. The default value is **False**. Read/write **Boolean**.

expression.**EnableDataValueEditing**

*expression* Required. An expression that returns a **PivotTable** object.
Remarks

Any editing performed on data values is lost upon refresh.
**Example**

This example determines the alert setting for overwriting values in the data area and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub CheckAlertSetting()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine alert setting.
    If pvtTable.EnableDataValueEditing = False Then
        MsgBox "Alert is enabled."
    Else
        MsgBox "Alert is disabled."
    End If
End Sub
EnableDrilldown Property

True if drilldown is enabled. The default value is True. Read/write Boolean.
Remarks

Setting this property for a PivotTable report sets it for all fields in that report.

For OLAP data sources, the value is always True.
Example

This example disables drilldown for all fields in the first PivotTable report on worksheet one.

`Worksheets(1).PivotTables("Pivot1").EnableDrilldown = False`
EnableEditing Property

True if the user can edit the specified query table. False if the user can only refresh the query table. Read/write Boolean.
Example

This example sets query table one so that the user cannot edit it.

`Worksheets(1).QueryTables(1).EnableEditing = False`
EnableEvents Property

True if events are enabled for the specified object. Read/write Boolean.
Example

This example disables events before a file is saved so that the **BeforeSave** event doesn’t occur.

```vba
Application.EnableEvents = False
ActiveWorkbook.Save
Application.EnableEvents = True
```
EnableFieldDialog Property

True if the PivotTable Field dialog box is available when the user double-clicks the PivotTable field. The default value is True. Read/write Boolean.
Remarks

Setting this property for a PivotTable report sets it for all fields in that report.
Example

This example disables the **PivotTable Field** dialog box for the Year field.

```vba
Worksheets(1).PivotTables("Pivot1") .PivotFields("Year").EnableFieldDialog = False
```
EnableFieldList Property

- False to disable the ability to display the field well for the PivotTable. If the field list was already being displayed it disappears. The default value is True.
Read/write Boolean.

expression.EnableFieldList

expression  Required. An expression that returns a PivotTable object.
Example

This example determines the viewing status of the field well for the PivotTable and notifies the user. The example assumes that a PivotTable exists on the active worksheet.

Sub CheckFieldWell()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine if field well can be seen.
    If pvtTable.EnableFieldList = True Then
        MsgBox "The field well for the PivotTable can be displayed."
    Else
        MsgBox "The field well for the PivotTable cannot be displayed."
    End If
End Sub
EnableItemSelection Property

When set to **False**, disables the ability to use the field dropdown in the user interface. The default value is **True**. Read/write **Boolean**.

*expression*.EnableItemSelection

*expression*  Required. An expression that returns a [PivotField](#) object.
Remarks

A run-time error will occur if the OLAP PivotTable field is not the highest level for the hierarchy.
Example

This example determines the setting for selecting items using the field dropdown and enables the feature, if necessary. The example assumes a PivotTable exists on the active worksheet.

Sub UseEnableItemSelection()
    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.RowFields(1)

    ' Determine setting for property and enable if necessary.
    If pvtField.EnableItemSelection = False Then
        pvtField.EnableItemSelection = True
        MsgBox "Item selection enabled for fields."
    Else
        MsgBox "Item selection is already enabled for fields."
    End If
End Sub
EnableMultiplePageItems Property

True to allow multiple items in the page field area for OLAP PivotTables to be selected. The default value is False. Read/write Boolean.

expression.EnableMultiplePageItems

expression  Required. An expression that returns a CubeField object.
Remarks

This property only applies to Online Analytical Processing (OLAP) PivotTables. Querying or setting a non-OLAP PivotTable will result in a run-time error.
Example

This example determines if multiple page items are enabled for the cube field and notifies the user. The example assumes that an OLAP PivotTable exists on the active worksheet.

Sub UseMultiplePageItems()
    Dim pvtTable As PivotTable
    Dim cbeField As CubeField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set cbeField = pvtTable.CubeFields("[Country]")

    ' Determine setting for multiple page items.
    If cbeField.EnableMultiplePageItems = False Then
        MsgBox "Mulitple page items cannot be selected."
    Else
        MsgBox "Multiple page items can be selected."
    End If

End Sub
EnableOutlining Property

True if outlining symbols are enabled when user-interface-only protection is turned on. Read/write Boolean.
Remarks

This property applies to each worksheet and isn't saved with the worksheet or session.
Example

This example enables outlining symbols on a protected worksheet.

ActiveSheet.EnableOutlining = True
ActiveSheet.Protect contents:=True, userInterfaceOnly:=True
EnablePivotTable Property

True if PivotTable controls and actions are enabled when user-interface-only protection is turned on. Read/write Boolean.
Remarks

This property applies to each worksheet and isn't saved with the worksheet or session.

There must be a sufficient number of unlocked cells below and to the right of the PivotTable report for Microsoft Excel to recalculate and display the PivotTable report.
Example

This example enables PivotTable controls on a protected worksheet.

ActiveSheet.EnablePivotTable = True
ActiveSheet.Protect contents:=True, userInterfaceOnly:=True
EnableRefresh Property

True if the PivotTable cache or query table can be refreshed by the user. The default value is True. Read/write Boolean.
Remarks

The RefreshOnFileOpen property is ignored if the EnableRefresh property is set to False.

For OLAP data sources, setting this property to False disables updates.
**Example**

This example sets the first PivotTable report on worksheet one so that it cannot be refreshed.

```vba
Worksheets(1).PivotTables("Pivot1")_.
PivotCache.EnableRefresh = False
```
EnableResize Property

True if the window can be resized. Read/write Boolean.
Example

This example sets the active window so that it cannot be resized.

ActiveWindow.**EnableResize** = False
EnableSelection Property

Returns or sets what can be selected on the sheet. Read/write XlEnableSelection.

XlEnableSelection can be one of these XlEnableSelection constants.

xlNoSelection
xlNoRestrictions
xlUnlockedCells

expression.EnableSelection

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property takes effect only when the worksheet is protected: **xlNoSelection** prevents any selection on the sheet, **xlUnlockedCells** allows only those cells whose **Locked** property is **False** to be selected, and **xlNoRestrictions** allows any cell to be selected.
Example

This example sets worksheet one so that nothing on it can be selected.

With Worksheets(1)
  .EnableSelection = xlNoSelection
  .Protect Contents:=True, UserInterfaceOnly:=True
End With
EnableSound Property

**True** if sound is enabled for Microsoft Office. Read/write **Boolean**.
Example

This example disables sound feedback.

Application.**EnableSound** = False
EnableWizard Property

*True* if the PivotTable Wizard is available. The default value is *True*. Read/write Boolean.
Remarks

When this property is set, the field wells aren’t displayed on the worksheet.
Example

This example disables the PivotTable Wizard for the first PivotTable report on worksheet one.

`Worksheets(1).PivotTables("Pivot1").EnableWizard = False`
Encoding Property

Returns or sets the document encoding (code page or character set) to be used by the Web browser when you view the saved document. The default is the system code page. Read/write **MsoEncoding**.

MsoEncoding can be one of these MsoEncoding constants.

- `msoEncodingOEMMultilingualLatinI`
- `msoEncodingOEMNordic`
- `msoEncodingOEMTurkish`
- `msoEncodingSimplifiedChineseAutoDetect`
- `msoEncodingT61`
- `msoEncodingTaiwanEten`
- `msoEncodingTaiwanTCA`
- `msoEncodingTaiwanWang`
- `msoEncodingTraditionalChineseAutoDetect`
- `msoEncodingTurkish`
- `msoEncodingUnicodeLittleEndian`
- `msoEncodingUTF7`
- `msoEncodingVietnamese`
- `msoEncodingEBCDICJapaneseKatakanaExtended`
- `msoEncodingEBCDICJapaneseLatinExtendedAndJapanese`
- `msoEncodingEBCDICKoreanExtendedAndKorean`
- `msoEncodingEBCDICMultilingualROECULatin2`
- `msoEncodingEBCDICSerbianBulgarian`
- `msoEncodingEBCDICThai`
- `msoEncodingEBCDICTurkishLatin5`
- `msoEncodingEBCDICUSCanada`
- `msoEncodingEBCDICUSCanadaAndTraditionalChinese`
- `msoEncodingOEMModernGreek`
msoEncodingOEMMultilingualLatinII
msoEncodingOEMPortuguese
msoEncodingOEMUnitedStates
msoEncodingSimplifiedChineseGBK
msoEncodingTaiwanCNS
msoEncodingTaiwanIBM5550
msoEncodingTaiwanTeleText
msoEncodingThai
msoEncodingTraditionalChineseBig5
msoEncodingUnicodeBigEndian
msoEncodingUSASCII
msoEncodingUTF8
msoEncodingWestern
msoEncodingArabic
msoEncodingArabicASMO
msoEncodingArabicAutoDetect
msoEncodingArabicTransparentASMO
msoEncodingAutoDetect
msoEncodingBaltic
msoEncodingCentralEuropean
msoEncodingCyrillic
msoEncodingCyrillicAutoDetect
msoEncodingEBCDICArabic
msoEncodingEBCDICDenmarkNorway
msoEncodingEBCDIFinlandSweden
msoEncodingEBCDICFrance
msoEncodingEBCDICGermany
msoEncodingEBCDICGreek
msoEncodingEBCDICGreekModern
msoEncodingEBCDICHebrew
msoEncodingEBCDICIcelandic
msoEncodingEBCDICInternational
msoEncodingEBCDICItaly
msoEncodingOEMGreek437G
msoEncodingOEMHebrew
msoEncodingOEMIcelandic

expression.Encoding

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

You cannot use any of the constants that have the suffix `AutoDetect`. These constants are used by the `ReloadAs` method.
**Example**

This example checks to see whether the default document encoding is Western, and then it sets the string `strDocEncoding` accordingly.

```vbnet
If Application.DefaultWebOptions.Encoding = msoEncodingWestern Then
    strDocEncoding = "Western"
Else
    strDocEncoding = "Other"
End If
```
End Property

Returns a Range object that represents the cell at the end of the region that contains the source range. Equivalent to pressing END+UP ARROW, END+DOWN ARROW, END+LEFT ARROW, or END+RIGHT ARROW. Read-only Range object.

expression.End( Direction )

expression Required. An expression that returns one of the objects in the Applies To list.

Direction Required XlDirection. The direction in which to move.

XlDirection can be one of these XlDirection constants.

xlDown
xlToRight
xlToLeft
xlUp
**Example**

This example selects the cell at the top of column B in the region that contains cell B4.

```
Range("B4").End(xlUp).Select
```

This example selects the cell at the end of row 4 in the region that contains cell B4.

```
Range("B4").End(xlToRight).Select
```

This example extends the selection from cell B4 to the last cell in row four that contains data.

```
Worksheets("Sheet1").Activate
Range("B4", Range("B4").End(xlToRight)).Select
```
EndArrowheadLength Property

Returns or sets the length of the arrowhead at the end of the specified line. Read/write `MsoArrowheadLength`.

MsoArrowheadLength can be one of these MsoArrowheadLength constants. 
- `msoArrowheadLengthMixed`
- `msoArrowheadShort`
- `msoArrowheadLengthMedium`
- `msoArrowheadLong`

`expression.EndArrowheadLength`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
    .BeginArrowheadLength = msoArrowheadShort
    .BeginArrowheadStyle = msoArrowheadOval
    .BeginArrowheadWidth = msoArrowheadNarrow
    .EndArrowheadLength = msoArrowheadLong
    .EndArrowheadStyle = msoArrowheadTriangle
    .EndArrowheadWidth = msoArrowheadWide
End With
EndArrowheadStyle Property

Returns or sets the style of the arrowhead at the end of the specified line. Read/write MsoArrowheadStyle.

MsoArrowheadStyle can be one of these MsoArrowheadStyle constants.

msoArrowheadNone
msoArrowheadOval
msoArrowheadStyleMixed
msoArrowheadDiamond
msoArrowheadOpen
msoArrowheadStealth
msoArrowheadTriangle

expression.EndArrowheadStyle

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
    .BeginArrowheadLength = msoArrowheadShort
    .BeginArrowheadStyle = msoArrowheadOval
    .BeginArrowheadWidth = msoArrowheadNarrow
    .EndArrowheadLength = msoArrowheadLong
    .EndArrowheadStyle = msoArrowheadTriangle
    .EndArrowheadWidth = msoArrowheadWide
End With
EndArrowheadWidth Property

Returns or sets the width of the arrowhead at the end of the specified line. Read/write MsoArrowheadWidth.

MsoArrowheadWidth can be one of these MsoArrowheadWidth constants.

msoArrowheadNarrow
msoArrowheadWidthMedium
msoArrowheadWide
msoArrowheadWidthMixed

expression.EndArrowheadWidth

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a line to myDocument. There’s a short, narrow oval on the line's starting point and a long, wide triangle on its end point.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddLine(100, 100, 200, 300).Line
    .BeginArrowheadLength = msoArrowheadShort
    .BeginArrowheadStyle = msoArrowheadOval
    .BeginArrowheadWidth = msoArrowheadNarrow
    .EndArrowheadLength = msoArrowheadLong
    .EndArrowheadStyle = msoArrowheadTriangle
    .EndArrowheadWidth = msoArrowheadWide
End With
EndConnected Property

- **msoTrue** if the end of the specified connector is connected to a shape. Read-only **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.
- **msoCTrue**  Does not apply to this property.
- **msoFalse**  The end of the specified connector is not connected to a shape.
- **msoTriStateMixed**  Does not apply to this property.
- **msoTriStateToggle**  Does not apply to this property.
- **msoTrue**  The end of the specified connector is connected to a shape.

*expression*.EndConnected

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

If the end of the connector represented by shape three on myDocument is connected to a shape, this example stores the connection site number in the variable oldEndConnSite, stores a reference to the connected shape in the object variable oldEndConnShape, and then disconnects the end of the connector from the shape.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Connector Then
        With .ConnectorFormat
            If .EndConnected Then
                oldEndConnSite = .EndConnectionSite
                Set oldEndConnShape = .EndConnectedShape
                .EndDisconnect
            End If
        End With
    End If
End With
EndConnectedShape Property

Returns a Shape object that represents the shape that the end of the specified connector is attached to. Read-only.

Note  If the end of the specified connector isn’t attached to a shape, this property generates an error.
Example

This example assumes that myDocument already contains two shapes attached by a connector named "Conn1To2." The code adds a rectangle and a connector to myDocument. The end of the new connector will be attached to the same connection site as the end of the connector named "Conn1To2," and the beginning of the new connector will be attached to connection site one on the new rectangle.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    Set r3 = .AddShape(msoShapeRectangle, _
        100, 420, 200, 100)
    With .Item("Conn1To2").ConnectorFormat
        endConnSite1 = .EndConnectionSite
        Set endConnShape1 = .EndConnectedShape
    End With
    With .AddConnector(msoConnectorCurve, _
        0, 0, 10, 10).ConnectorFormat
        .BeginConnect r3, 1
        .EndConnect endConnShape1, endConnSite1
    End With
End With
EndConnectionSite Property

Returns an integer that specifies the connection site that the end of a connector is connected to. Read-only Long.

**Note** If the end of the specified connector isn’t attached to a shape, this property generates an error.
Example

This example assumes that *myDocument* already contains two shapes attached by a connector named "Conn1To2." The code adds a rectangle and a connector to *myDocument*. The end of the new connector will be attached to the same connection site as the end of the connector named "Conn1To2," and the beginning of the new connector will be attached to connection site one on the new rectangle.

    Set myDocument = Worksheets(1)
    With myDocument.Shapes
      Set r3 = .AddShape(msoShapeRectangle, _
                        100, 420, 200, 100)
      With .Item("Conn1To2").ConnectorFormat
        endConnSite1 = .EndConnectionSite
        Set endConnShape1 = .EndConnectedShape
      End With
      With .AddConnector(msoConnectorCurve, _
                          0, 0, 10, 10).ConnectorFormat
        .BeginConnect r3, 1
        .EndConnect endConnShape1, endConnSite1
      End With
    End With
EndStyle Property

Returns or sets the end style for the error bars. Can be one of the following XlEndStyleCap constants: xlCap or xlNoCap. Read/write Long.
Example

This example sets the end style for the error bars for series one in Chart1. The example should be run on a 2-D line chart that has Y error bars for the first series.

Charts("Chart1").SeriesCollection(1).ErrorBars.EndStyle = xlCap
EntireColumn Property

Returns a Range object that represents the entire column (or columns) that contains the specified range. Read-only.
Example

This example sets the value of the first cell in the column that contains the active cell. The example must be run from a worksheet.

ActiveCell.EntireColumn.Cells(1, 1).Value = 5
EntireRow Property

- Returns a Range object that represents the entire row (or rows) that contains the specified range. Read-only.
**Example**

This example sets the value of the first cell in the row that contains the active cell. The example must be run from a worksheet.

`ActiveCell.EntireRow.Cells(1, 1).Value = 5`
EnvelopeVisible Property

True if the e-mail composition header and the envelope toolbar are both visible. Read/write Boolean.
Example

This example checks to see whether the e-mail composition header and the envelope toolbar are visible in the first workbook. If they are visible, the example then sets the variable `strSubject` to the text of the e-mail subject line.

```vbnet
If Workbooks(1).EnvelopeVisible = True Then
    strSubject = "Please read: Review immediately"
End If
```
ErrorBars Property

Returns an ErrorBars object that represents the error bars for the series. Read-only.
Example

This example sets the error bar color for series one in Chart1. The example should be run on a 2-D line chart that has error bars for series one.

With Charts("Chart1").SeriesCollection(1)
    .ErrorBars.Border.ColorIndex = 8
End With
ErrorCheckingOptions Property

Returns an ErrorCheckingOptions object, which represents the error checking options for an application.

expression.ErrorCheckingOptions

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, the **TextDate** property is used in conjunction with the **ErrorCheckingOptions** property. When the user selects a cell containing a two-digit year in the date, the AutoCorrect Options button appears.

Sub CheckTextDate()

    ' Enable Microsoft Excel to identify dates written as text.
    Application.**ErrorCheckingOptions**.TextDate = True

    Range("A1").Formula = "'April 23, 00"

End Sub
ErrorMessage Property

Returns or sets the data validation error message. Read/write String.
Example

This example adds data validation to cell E5 and specifies both the input and error messages.

With Range("e5").Validation
  .Add Type:=xlValidateWholeNumber, _
    AlertStyle:= xlValidAlertStop, _
    Operator:=xlBetween, Formula1:="5", Formula2:="10"
  .InputTitle = "Integers"
  .ErrorTitle = "Integers"
  .InputMessage = "Enter an integer from five to ten"
  .ErrorMessage = "You must enter a number from five to ten"
End With
Errors Property

Allows the user to access error checking options.

`expression.Errors`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

Reference the Errors object to view a list of index values associated with error checking options.
Example

In this example, a number written as text is placed in cell A1. Microsoft Excel then determines if the number is written as text in cell A1 and notifies the user accordingly.

Sub CheckForErrors()
    Range("A1").Formula = "'12"
    If Range("A1").Errors.Item(xlNumberAsText).Value = True Then
        MsgBox "The number is written as text."
    Else
        MsgBox "The number is not written as text."
    End If
End Sub
ErrorString Property

- ErrorString property as it applies to the PivotTable object.

Returns or sets the string displayed in cells that contain errors when the DisplayErrorString property is True. The default value is an empty string (""). Read/write String.

eexpression.ErrorString

eexpression  Required. An expression that returns one of the above objects.

- ErrorString property as it applies to the ODBCError and OLEDBError objects.

Returns the ODBC error string. Read-only String.

eexpression.ErrorString

eexpression  Required. An expression that returns one of the above objects.
Example

This example displays a hyphen in cells in the specified PivotTable report that contain errors.

With Worksheets(1).PivotTables("Pivot1")
    .ErrorString = "-"
    .DisplayErrorString = True
End With
ErrorTitle Property

Returns or sets the title of the data-validation error dialog box. Read/write String.
Example

This example adds data validation to cell E5.

With Range("E5").Validation
    .Add xlValidateWholeNumber, _
        xlValidAlertInformation, xlBetween, "5", "10"
    .InputTitle = "Integers"
    .ErrorTitle = "Integers"
    .InputMessage = "Enter an integer from five to ten"
    .ErrorMessage = "You must enter a number from five to ten"
End With
EvaluateToError Property

When set to **True** (default), Microsoft Excel identifies, with an AutoCorrect Options button, selected cells that contain formulas evaluating to an error. **False** disables error checking for cells that evaluate to an error value. Read/write **Boolean**.

`expression.EvaluateToError`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
**Example**

In the following example, the AutoCorrect Options button appears for cell A3, which contains a divide-by-zero error.

Sub CheckEvaluationError()

    ' Simulate a divide-by-zero error.
    Application.ErrorCheckingOptions.EvaluateToError = True
    Range("A1").Value = 1
    Range("A2").Value = 0
    Range("A3").Formula = "=A1/A2"

End Sub
Excel4IntlMacroSheets Property

Returns a Sheets collection that represents all the Microsoft Excel 4.0 international macro sheets in the specified workbook. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Remarks

Using this property with the Application object or without an object qualifier is equivalent to using ActiveWorkbook.Excel4IntlMacroSheets.
Example

This example displays the number of Microsoft Excel 4.0 international macro sheets in the active workbook.

MsgBox "There are " & _
    ActiveWorkbook.Excel4IntlMacroSheets.Count & _
    " Microsoft Excel 4.0 international macro sheets" & _
    " in this workbook."
Excel4MacroSheets Property

Returns a Sheets collection that represents all the Microsoft Excel 4.0 macro sheets in the specified workbook. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Remarks

Using this property with the `Application` object or without an object qualifier is equivalent to using `ActiveWorkbook.Excel4MacroSheets`. 
Example

This example displays the number of Microsoft Excel 4.0 macro sheets in the active workbook.

MsgBox "There are " & ActiveWorkbook.Excel4MacroSheets.Count & _
  " Microsoft Excel 4.0 macro sheets in this workbook."
Explosion Property

Returns or sets the explosion value for a pie-chart or doughnut-chart slice. Returns 0 (zero) if there's no explosion (the tip of the slice is in the center of the pie). Read/write Long.
Example

This example sets the explosion value for point two in Chart1. The example should be run on a pie chart.

Charts("Chart1").SeriesCollection(1).Points(2).\texttt{Explosion} = 20
ExtendList Property

True if Microsoft Excel automatically extends formatting and formulas to new data that is added to a list. Read/write Boolean.
Remarks

To be extended, formats and formulas must appear in at least three of the five list rows or columns preceding the new row or column, and you must add the data to the bottom or to the right-hand side of the list.
Example

This example sets Excel to not apply formatting and formulas to data subsequently added to an existing list.

Application.**ExtendList** = False
Extent Property

Returns the type of the specified page break: full-screen or only within a print area. Can be either of the following XlPageBreakExtent constants: xlPageBreakFull or xlPageBreakPartial. Read-only Long.
Example

This example displays the total number of full-screen and print-area horizontal page breaks.

For Each pb in Worksheets(1).HPageBreaks
  If pb. Extent = xlPageBreakFull Then
    cFull = cFull + 1
  Else
    cPartial = cPartial + 1
  End If
Next
MsgBox cFull & " full-screen page breaks, " & cPartial & _
  " print-area page breaks"
ExtrusionColor Property

Returns a ColorFormat object that represents the color of the shape's extrusion. Read-only.
Example

This example adds an oval to myDocument and then specifies that the oval be extruded to a depth of 50 points and that the extrusion be purple.

Set myDocument = Worksheets(1)
Set myShape = myDocument.Shapes.AddShape(msoShapeOval, _
    90, 90, 90, 40)
With myShape.ThreeD
    .Visible = True
    .Depth = 50
    .ExtrusionColor.RGB = RGB(255, 100, 255)
' RGB value for purple
End With
ExtrusionColorType Property

Returns or sets a value that indicates whether the extrusion color is based on the extruded shape’s fill (the front face of the extrusion) and automatically changes when the shape’s fill changes, or whether the extrusion color is independent of the shape’s fill. Read/write MsoExtrusionColorType.

MsoExtrusionColorType can be one of these MsoExtrusionColorType constants.
- msoExtrusionColorAutomatic. Extrusion color based on shape fill.
- msoExtrusionColorTypeMixed
- msoExtrusionColorCustom. Extrusion color independent of shape fill.

expression.ExtrusionColorType

expression Required. An expression that returns one of the objects in the Applies To list.
Example

If shape one on myDocument has an automatic extrusion color, this example gives the extrusion a custom yellow color.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
    If .ExtrusionColorType = msoExtrusionColorAutomatic Then
        .ExtrusionColor.RGB = RGB(240, 235, 16)
    End If
End With
FeatureInstall Property

Returns or sets a value (constant) that specifies how Microsoft Excel handles calls to methods and properties that require features that aren’t yet installed. Can be one of the MsoFeatureInstall constants listed in the following table. Read/write MsoFeatureInstall.

MsoFeatureInstall can be one of these MsoFeatureInstall constants.

**msoFeatureInstallNone.** Generates a generic Automation error at run time when uninstalled features are called. This is the default constant

**msoFeatureInstallOnDemand.** Prompts the user to install new features

**msoFeatureInstallOnDemandWithUI.** Displays a progress meter during installation; doesn’t prompt the user to install new features.

expression.FeatureInstall

expression  Required. An expression that returns one of the objects in the Applies To list.
**Remarks**

You can use the `msoFeatureInstallOnDemandWithUI` constant to prevent users from thinking that the application isn't responding while a feature is being installed. Use the `msoFeatureInstallNone` constant if you want the developer to be the only one who can install features.

If you have the `DisplayAlerts` property set to `False`, users won’t be prompted to install new features even if the `FeatureInstall` property is set to `msoFeatureInstallOnDemand`. If the `DisplayAlerts` property is set to `True`, an installation progress meter will appear if the `FeatureInstall` property is set to `msoFeatureInstallOnDemand`. 
Example

This example activates a new instance of Microsoft Word and checks the value of the `FeatureInstall` property. Be sure to set a reference to the Microsoft Word object library. If the `FeatureInstall` property is set to `msoFeatureInstallNone`, the code displays a message box that asks the user whether they want to change the property setting. If the user responds Yes, the property is set to `msoFeatureInstallOnDemand`.

```vbnet
Dim WordApp As New Word.Application, Reply As Integer
Application.ActivateMicrosoftApp xlMicrosoftWord With WordApp
    If .FeatureInstall = msoFeatureInstallNone Then
        Reply = MsgBox("Uninstalled features for this " & "application " & vbCrLf _
            & "may cause a run-time error when called." & vbCrLf _
            & vbCrLf _
            & "Would you like to change this setting" & vbCrLf _
            & "to automatically install missing features?" _
            , 52, "Feature Install Setting")
        If Reply = 6 Then .FeatureInstall = msoFeatureInstallOnDemand
    End If
End With
```
FetchedRowOverflow Property

True if the number of rows returned by the last use of the Refresh method is greater than the number of rows available on the worksheet. Read-only Boolean.
Example

This example refreshes query table one. If the number of rows returned by the query exceeds the number of rows available on the worksheet, an error message is displayed.

With Worksheets(1).QueryTables(1)
    .Refresh
    If .FetchedRowOverflow Then
        MsgBox "Query too large: please redefine."
    End If
End With
FieldNames Property

True if field names from the data source appear as column headings for the returned data. The default value is True. Read/write Boolean.
Example

This example sets query table one so that the field names don’t appear in it.

`Worksheets(1).QueryTables(1).FieldNames = False`
FileConverters Property

Returns information about installed file converters. Returns Null if there are no converters installed. Read-only Variant.

expression.FileConverters(Index1, Index2)

expression Required. An expression that returns an Application object.

Index1 Optional Variant. The long name of the converter, including the file-type search string in Windows (for example, "Lotus 1-2-3 Files (*.wk*)").

Index2 Optional Variant. The path of the converter DLL or code resource.
Remarks

If you don’t specify the index arguments, this property returns an array that containing information about all the installed file converters. Each row in the array contains information about a single file converter, as shown in the following table.

<table>
<thead>
<tr>
<th>Column</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The long name of the converter</td>
</tr>
<tr>
<td>2</td>
<td>The path of the converter DLL or code resource</td>
</tr>
<tr>
<td>3</td>
<td>The file-extension search string</td>
</tr>
</tbody>
</table>
Example

This example displays a message if the Multiplan file converter is installed.

```
installedCvts = Application.FileConverters
foundMultiplan = False
If Not IsNull(installedCvts) Then
    For arrayRow = 1 To UBound(installedCvts, 1)
        If installedCvts(arrayRow, 1) Like "*Multiplan*" Then
            foundMultiplan = True
            Exit For
        End If
    Next arrayRow
End If
If foundMultiplan = True Then
    MsgBox "Multiplan converter is installed"
Else
    MsgBox "Multiplan converter is not installed"
End If
```
FileDialog Property

Returns a `FileDialog` object representing an instance of the file dialog.

`expression.FileDialog(fileDialogType)`

`expression` Required. An expression that returns one of the objects in the Applies To list.

`fileDialogType` Required `MsoFileDialogType`. The type of file dialog.

MsoFileDialogType can be one of these MsoFileDialogType constants.

- `msoFileDialogFilePicker` Allows user to select a file.
- `msoFileDialogFolderPicker` Allows user to select a folder.
- `msoFileDialogOpen` Allows user to open a file.
- `msoFileDialogSaveAs` Allows user to save a file.
Example

In this example, Microsoft Excel opens the file dialog allowing the user to select one or more files. Once these files are selected, Excel displays the path for each file in a separate message.

Sub UseFileDialogOpen()
    Dim lngCount As Long
    ' Open the file dialog
    With Application.FileDialog(msoFileDialogOpen)
        .AllowMultiSelect = True
        .Show

        ' Display paths of each file selected
        For lngCount = 1 To .SelectedItems.Count
            MsgBox .SelectedItems(lngCount)
        Next lngCount
    End With
End Sub
Returns the file format and/or type of the workbook. Read-only **XlFileFormat**.

*XlFileFormat* can be one of these *XlFileFormat* constants:

- xlCSV
- xlCSVMSDOS
- xlCurrentPlatformText
- xlDBF3
- xlDIF
- xlExcel2FarEast
- xlExcel4
- xlAddIn
- xlCSVMac
- xlCSVWindows
- xlDBF2
- xlDBF4
- xlExcel2
- xlExcel3
- xlExcel4Workbook
- xlExcel5
- xlExcel7
- xlExcel9795
- xlHtml
- xlIntlAddIn
- xlIntlMacro
- xlSYLK
- xlTemplate
- xlTextMac
- xlTextMSDOS
xlTextPrinter
xlTextWindows
xlUnicodeText
xlWebArchive
xlWJ2WD1
xlWJ3
xlWJ3FJ3
xlWK1
xlWK1ALL
xlWK1FMT
xlWK3
xlWK3FM3
xlWK4
xlWKS
xlWorkbookNormal
xlWorks2FarEast
xlWQ1
xlXMLSpreadsheet

expression.FileFormat

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.
Example

This example saves the active workbook in Normal file format if its current file format is WK3.

```vba
If ActiveWorkbook.FileFormat = xlWK3 Then
    ActiveWorkbook.SaveAs fileFormat:=xlNormal
End If
```
Returns or sets the URL (on the intranet or the Web) or path (local or network) to the location where the specified source object was saved. Read/write String.
Remarks

The **FileName** property generates an error if a folder in the specified path doesn’t exist.
Example

This example sets the location where the first item in the active workbook is to be saved.

`ActiveWorkbook.PublishObjects(1).FileName = _ "\\Server2\Q1\StockReport.htm"`
FileSearch Property

Returns a FileSearch object for use with file searches. This property is available only in Microsoft Windows.
Example

This example creates a `FoundFiles` object that represents all the Microsoft Excel workbooks in the My Documents folder.

```vba
With Application.FileSearch
    .LookIn = "c:\my documents"
    .FileType = msoFileTypeExcelWorkbooks
    .Execute
End With
```
Fill Property

Returns a FillFormat object that contains fill formatting properties for the specified chart or shape. Read-only.
Example

This example adds a rectangle to myDocument and then sets the foreground color, background color, and gradient for the rectangle's fill.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    90, 90, 90, 50).Fill
    .ForeColor.RGB = RGB(128, 0, 0)
    .BackColor.RGB = RGB(170, 170, 170)
    .TwoColorGradient msoGradientHorizontal, 1
End With
```
**FillAdjacentFormulas Property**

True if formulas to the right of the specified query table are automatically updated whenever the query table is refreshed. Read/write Boolean.
Example

This example sets query table one so that formulas to the right of it are automatically updated whenever the query table is refreshed.

Sheets("sheet1`).QueryTables(1).FillAdjacentFormulas = True
FilterMode Property

True if the worksheet is in filter mode. Read-only Boolean.
Remarks

This property is **True** if the worksheet contains a filtered list in which there are hidden rows.
Example

This example displays the filter status of Sheet1 in a message box.

If Worksheets("Sheet1").FilterMode = True Then
    MsgBox "Filter mode is on"
Else
    MsgBox "Filter mode is off"
End If
Filters Property

Returns a Filters collection that represents all the filters in an autofiltered range. Read-only.
Example

The following example sets a variable to the value of the **Criteria1** property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
With Worksheets("Crew")
    If .AutoFilterMode Then
        With .AutoFilter.Filters(1)
            If .On Then c1 = .Criteria1
            End With
        End If
    End With
End With
```
FindFormat Property

Sets or returns the search criteria for the type of cell formats to find.

\textit{expression}.	extbf{FindFormat}

\textit{expression} \quad Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, the search criteria is set to look for Arial, Regular, Size 10 font cells and the user is notified.

Sub UseFindFormat()

    ' Establish search criteria.
    With Application.FindFormat.Font
        .Name = "Arial"
        .FontStyle = "Regular"
        .Size = 10
    End With

    ' Notify user.
    With Application.FindFormat.Font
        MsgBox .Name & "-" & .FontStyle & "-" & .Size & _
            " font is what the search criteria is set to."
    End With

End Sub
FirstChild Property

Returns a `DiagramNode` object that represents the first child node of a parent node.

`expression.FirstChild`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds an organization chart diagram to the current worksheet, adds three nodes, and assigns the first and last child nodes to variables.

Sub FirstChild()

    Dim shpDiagram As Shape
    Dim dgnRoot As DiagramNode
    Dim dgnFirstChild As DiagramNode
    Dim dgnLastChild As DiagramNode
    Dim intCount As Integer

    'Add organizational chart diagram to the current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    'Add the first node to the diagram

    'Add three child nodes
    For intCount = 1 To 3
        dgnRoot.Children.AddNode
    Next intCount

    'Assign the first and last child nodes to variables
    Set dgnFirstChild = dgnRoot.Children.FirstChild
    Set dgnLastChild = dgnRoot.Children.LastChild

End Sub
FirstPageNumber Property

Returns or sets the first page number that will be used when this sheet is printed. If xlAutomatic, Microsoft Excel chooses the first page number. The default is xlAutomatic. Read/write Long.
Example

This example sets the first page number of Sheet1 to 100.

`Worksheets("Sheet1").PageSetup.FirstPageNumber = 100`
FirstSliceAngle Property

Returns or sets the angle of the first pie-chart or doughnut-chart slice, in degrees (clockwise from vertical). Applies only to pie, 3-D pie, and doughnut charts. Read/write Long.
Example

This example sets the angle for the first slice in chart group one in Chart1. The example should be run on a 2-D pie chart.

Charts("Chart1").ChartGroups(1).FirstSliceAngle = 15
FitToPagesTall Property

Returns or sets the number of pages tall the worksheet will be scaled to when it's printed. Applies only to worksheets. Read/write Variant.
Remarks

If this property is **False**, Microsoft Excel scales the worksheet according to the **FitToPagesWide** property.

If the **Zoom** property is **True**, the **FitToPagesTall** property is ignored.
**Example**

This example causes Microsoft Excel to print Sheet1 exactly one page tall and wide.

```
With Worksheets("Sheet1").PageSetup
    .Zoom = False
    .FitToPagesTall = 1
    .FitToPagesWide = 1
End With
```
FitToPagesWide Property

Returns or sets the number of pages wide the worksheet will be scaled to when it's printed. Applies only to worksheets. Read/write Variant.
Remarks

If this property is False, Microsoft Excel scales the worksheet according to the **FitToPagesTall** property.

If the **Zoom** property is True, the **FitToPagesWide** property is ignored.
Example

This example causes Microsoft Excel to print Sheet1 exactly one page wide and tall.

With Worksheets("Sheet1").PageSetup
    .Zoom = False
    .FitToPagesTall = 1
    .FitToPagesWide = 1
End With
FixedDecimal Property

All data entered after this property is set to True will be formatted with the number of fixed decimal places set by the FixedDecimalPlaces property. Read/write Boolean.
**Example**

This example sets the `FixedDecimal` property to `True` and then sets the `FixedDecimalPlaces` property to 4. Entering "30000" after running this example produces "3" on the worksheet, and entering "12500" produces "1.25."

```plaintext
Application.FixedDecimal = True
Application.FixedDecimalPlaces = 4
```
**FixedDecimalPlaces Property**

Returns or sets the number of fixed decimal places used when the `FixedDecimal` property is set to `True`. Read/write `Long`. 
Example

This example sets the **FixedDecimal** property to **True** and then sets the **FixedDecimalPlaces** property to 4. Entering "30000" after running this example produces "3" on the worksheet, and entering "12500" produces "1.25."

Application.FixedDecimal = True
Application.FixedDecimalPlaces = 4
Floor Property

Returns a Floor object that represents the floor of the 3-D chart. Read-only.

For information about using the Floor worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.
Example

This example sets the floor color of Chart1 to blue. The example should be run on a 3-D chart (the **Floor** property fails on 2-D charts).

```OBJECT
Charts("Chart1").Floor.Interior.ColorIndex = 5
```
FolderSuffix Property

Returns the folder suffix that Microsoft Excel uses when you save a document as a Web page, use long file names, and choose to save supporting files in a separate folder (that is, if the **UseLongFileNames** and **OrganizeInFolder** properties are set to **True**). Read-only **String**.

-expression.**FolderSuffix**

_expression_  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Newly created documents use the suffix returned by the `FolderSuffix` property of the `DefaultWebOptions` object. The value of the `FolderSuffix` property of the `WebOptions` object may differ from that of the `DefaultWebOptions` object if the document was previously edited in a different language version of Microsoft Excel. You can use the `UseDefaultFolderSuffix` method to change the suffix to the language you are currently using in Microsoft Office.

By default, the name of the supporting folder is the name of the Web page plus an underscore (_), a period (.), or a hyphen (-) and the word "files" (appearing in the language of the version of Excel in which the file was saved as a Web page). For example, suppose that you use the Dutch language version of Excel to save a file called "Page1" as a Web page. The default name of the supporting folder is Page1_bestanden.

The following table lists each language version of Office, and gives its corresponding `LanguageID` property value and folder suffix. For the languages that are not listed in the table, the suffix ".files" is used.

<table>
<thead>
<tr>
<th>Language</th>
<th>LanguageID</th>
<th>Folder suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>1025</td>
<td>.files</td>
</tr>
<tr>
<td>Basque</td>
<td>1069</td>
<td>_fitxategiak</td>
</tr>
<tr>
<td>Brazilian</td>
<td>1046</td>
<td>_arquivos</td>
</tr>
<tr>
<td>Bulgarian</td>
<td>1026</td>
<td>.files</td>
</tr>
<tr>
<td>Catalan</td>
<td>1027</td>
<td>_fitxers</td>
</tr>
<tr>
<td>Chinese - Simplified</td>
<td>2052</td>
<td>.files</td>
</tr>
<tr>
<td>Chinese - Traditional</td>
<td>1028</td>
<td>.files</td>
</tr>
<tr>
<td>Croatian</td>
<td>1050</td>
<td>_datoteke</td>
</tr>
<tr>
<td>Czech</td>
<td>1029</td>
<td>_soubory</td>
</tr>
<tr>
<td>Danish</td>
<td>1030</td>
<td>-filer</td>
</tr>
<tr>
<td>Dutch</td>
<td>1043</td>
<td>_bestanden</td>
</tr>
<tr>
<td>English</td>
<td>1033</td>
<td>_files</td>
</tr>
<tr>
<td>Estonian</td>
<td>1061</td>
<td>_failid</td>
</tr>
<tr>
<td>Finnish</td>
<td>1035</td>
<td>_tiedostot</td>
</tr>
<tr>
<td>Language</td>
<td>Code</td>
<td>File Type</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
<td>--------------------</td>
</tr>
<tr>
<td>French</td>
<td>1036</td>
<td>_fichiers</td>
</tr>
<tr>
<td>German</td>
<td>1031</td>
<td>-Dateien</td>
</tr>
<tr>
<td>Greek</td>
<td>1032</td>
<td>.files</td>
</tr>
<tr>
<td>Hebrew</td>
<td>1037</td>
<td>.files</td>
</tr>
<tr>
<td>Hungarian</td>
<td>1038</td>
<td>_elemei</td>
</tr>
<tr>
<td>Italian</td>
<td>1040</td>
<td>-file</td>
</tr>
<tr>
<td>Japanese</td>
<td>1041</td>
<td>.files</td>
</tr>
<tr>
<td>Korean</td>
<td>1042</td>
<td>.files</td>
</tr>
<tr>
<td>Latvian</td>
<td>1062</td>
<td>_fails</td>
</tr>
<tr>
<td>Lithuanian</td>
<td>1063</td>
<td>_bylos</td>
</tr>
<tr>
<td>Norwegian</td>
<td>1044</td>
<td>-filer</td>
</tr>
<tr>
<td>Polish</td>
<td>1045</td>
<td>_pliki</td>
</tr>
<tr>
<td>Portuguese</td>
<td>2070</td>
<td>_ficheiros</td>
</tr>
<tr>
<td>Romanian</td>
<td>1048</td>
<td>.files</td>
</tr>
<tr>
<td>Russian</td>
<td>1049</td>
<td>.files</td>
</tr>
<tr>
<td>Serbian (Cyrillic)</td>
<td>3098</td>
<td>.files</td>
</tr>
<tr>
<td>Serbian (Latin)</td>
<td>2074</td>
<td>_fajlovi</td>
</tr>
<tr>
<td>Slovakian</td>
<td>1051</td>
<td>.files</td>
</tr>
<tr>
<td>Slovenian</td>
<td>1060</td>
<td>_datoteke</td>
</tr>
<tr>
<td>Spanish</td>
<td>3082</td>
<td>_archivos</td>
</tr>
<tr>
<td>Swedish</td>
<td>1053</td>
<td>-filer</td>
</tr>
<tr>
<td>Thai</td>
<td>1054</td>
<td>.files</td>
</tr>
<tr>
<td>Turkish</td>
<td>1055</td>
<td>_dosyalar</td>
</tr>
<tr>
<td>Ukranian</td>
<td>1058</td>
<td>.files</td>
</tr>
<tr>
<td>Vietnamese</td>
<td>1066</td>
<td>.files</td>
</tr>
</tbody>
</table>
Example

This example returns the folder suffix used by the first workbook. The suffix is returned in the string variable `strFolderSuffix`.

```vba
strFolderSuffix = Workbooks(1).WebOptions.FolderSuffix
```
Font Property

- Font property as it applies to the CellFormat object.

Returns a Font object, allowing the user to set or return the search criteria based on the cell's font format.

expression.Font

expression  Required. An expression that returns one of the above objects.

- Font property as it applies to all other objects in the Applies To list.

Returns a Font object that represents the font of the specified object.

expression.Font

expression  Required. An expression that returns one of the above objects.
Example

- **As it applies to the CellFormat object.**

This example sets the search criteria to identify cells that contain red font, creates a cell with this condition, finds this cell, and notifies the user.

Sub SearchCellFormat()

    ' Set the search criteria for the font of the cell format.
    Application.FindFormat.Font.ColorIndex = 3

    ' Set the color index of the font for cell A5 to red.
    Range("A5").Font.ColorIndex = 3
    Range("A5").Formula = "Red font"
    Range("A1").Select
    MsgBox "Cell A5 has red font"

    ' Find the cells based on the search criteria.
    Cells.Find(What:="", After:=ActiveCell, LookIn:=xlFormulas, Look
    xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, Matchc
    , SearchFormat:=True).Activate

    MsgBox "Microsoft Excel has found this cell matching the search

End Sub

- **As it applies to all other objects in the Applies To list.**

This example determines if the font name for cell A1 is Arial and notifies the user.

Sub CheckFont()

    Range("A1").Select

    ' Determine if the font name for selected cell is Arial.
    If Range("A1").Font.Name = "Arial" Then
        MsgBox "The font name for this cell is 'Arial'"
    Else
        MsgBox "The font name for this cell is not 'Arial'"
    End If
End Sub
FontBold Property

True if the font in the specified WordArt is bold. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue The specified WordArt is bold.

expression.FontBold

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the font to bold for shape three on myDocument if the shape is WordArt.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Type = msoTextEffect Then
        .TextEffect.FontBold = msoTrue
    End If
End With
FontItalic Property

Returns msoTrue if the font in the specified WordArt is italic. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue  Does not apply to this property.
- msoFalse  The specified WordArt is not italic.
- msoTriStateMixed  Does not apply to this property.
- msoTriStateToggle  Does not apply to this property.
- msoTrue  The specified WordArt is italic.

expression.FontBold

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the font to italic for the shape named "WordArt 4" in myDocument.

Set myDocument = Worksheets(1)
FontName Property

Returns or sets the name of the font in the specified WordArt. Read/write **String**.
Example

This example sets the font name to "Courier New" for shape three on myDocument if the shape is WordArt.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Type = msoTextEffect Then
        .TextEffect.(FontName) = "Courier New"
    End If
End With
Fonts Property

Returns the **WebPageFonts** collection representing the set of fonts Microsoft Excel uses when you open a Web page in Excel and there is either no font information specified in the Web page, or the current default font can't display the character set in the Web page. Read-only.
Example

This example sets the default fixed-width font for the English/Western European/Other Latin Script character set to Courier New, 14 points.

With Application.DefaultWebOptions _
    .Fonts(msoCharacterSetEnglishWesternEuropeanOtherLatinScript)
        .FixedWidthFont = "Courier New"
        .FixedWidthFontSize = 14
End With
FontSize Property

Returns or sets the font size for the specified WordArt, in points. Read/write Single.
Example

This example sets the font size to 16 points for the shape named "WordArt 4" in myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes("WordArt 4").TextEffect.FontSize = 16
FontStyle Property

Returns or sets the font style. Read/write String.
Remarks

Changing this property may affect other Font properties (such as Bold and Italic).
Example

This example sets the font style for cell A1 on Sheet1 to bold and italic.

Worksheets("Sheet1").Range("A1").Font.FontStyle = "Bold Italic"
FooterMargin Property

Returns or sets the distance from the bottom of the page to the footer, in points. Read/write Double.
Example

This example sets the footer margin of Sheet1 to 0.5 inch.

Worksheets("Sheet1").PageSetup.FooterMargin = _
    Application.InchesToPoints(0.5)
ForeColor Property

- ForeColor property as it applies to the ChartFillFormat object.

Returns a ChartColorFormat object that represents the specified foreground fill or solid color. Read-only ChartColorFormat object.

expression.ForeColor

expression  Required. An expression that returns one of the above objects.

- ForeColor property as it applies to the FillFormat, LineFormat, and ShadowFormat objects.

Returns a ColorFormat object that represents the specified foreground fill or solid color. Read/write ColorFormat object.

expression.ForeColor

expression  Required. An expression that returns one of the above objects.
Example

This example sets the foreground color, background color, and gradient for the chart area fill on chart one.

With Charts(1).ChartArea.Fill
    .Visible = True
    .ForeColor.SchemeColor = 15
    .BackColor.SchemeColor = 17
    .TwoColorGradient msoGradientHorizontal, 1
End With
FormatConditions Property

Returns a `FormatConditions` collection that represents all the conditional formats for the specified range. Read-only.

For more information about returning an individual member of a collection, see [Returning an Object from a Collection](#).
Example

This example modifies an existing conditional format for cells E1:E10.

```vba
Worksheets(1).Range("e1:e10").FormatConditions(1) _.Modify xlCellValue, xlLess, 
"=$a$1"
```
FormControlType Property

Returns the Microsoft Excel control type. Read-only XlFormControl.

XlFormControl can be one of these XlFormControl constants.

xlButtonControl
xlCheckBox
xlDropDown
xlEditBox
xlGroupBox
xlLabel
xlListBox
xlOptionButton
xlScrollBar
xlSpinner

expression.FormControlType

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

You cannot use this property with **ActiveX controls** (the **Type** property for the **Shape** object must return **msoFormControl**).
Example

This example clears all the Microsoft Excel check boxes on worksheet one.

For Each s In Worksheets(1).Shapes
  If s.Type = msoFormControl Then
    If s.FormControlType = xlCheckBox Then _
      s.ControlFormat.Value = False
  End If
Next
Formula Property

- Formula property as it applies to the PivotField, PivotFormula, PivotItem, and Series objects.

Returns or sets the object's formula in A1-style notation and in the language of the macro. Read/write String.

`expression.Formula`

- Formula property as it applies to the CalculatedMember object.

Returns the member's formula in multidimensional expressions (MDX) syntax. Read-only String.

`expression.Formula`

- Formula property as it applies to the Range object.

Returns or sets the object's formula in A1-style notation and in the language of the macro. Read/write Variant.

`expression.Formula`
Remarks

This property is not available for OLAP data sources.

If the cell contains a constant, this property returns the constant. If the cell is empty, this `Formula` property returns an empty string. If the cell contains a formula, the `Formula` property returns the formula as a string in the same format that would be displayed in the formula bar (including the equal sign).

If you set the value or formula of a cell to a date, Microsoft Excel checks to see whether that cell is already formatted with one of the date or time number formats. If not, Microsoft Excel changes the number format to the default short date number format.

If the range is a one- or two-dimensional range, you can set the formula to a Visual Basic array of the same dimensions. Similarly, you can put the formula into a Visual Basic array.

Setting the formula for a multiple-cell range fills all cells in the range with the formula.
Example

- As it applies to the **Range** object.

This example sets the formula for cell A1 on Sheet1.

`Worksheets("Sheet1").Range("A1").Formula = "=$A$4+$A$10"`
**Formula1 Property**

Returns the value or expression associated with the conditional format or data validation. Can be a constant value, a string value, a cell reference, or a formula. Read-only **String**.
Example

This example changes the formula for conditional format one for cells E1:E10 if the formula specifies “less than 5.”

With Worksheets(1).Range("e1:e10").FormatConditions(1)
    If .Operator = xlLess And .Formula1 = "5" Then
        .Modify xlCellValue, xlLess, "10"
    End If
End With
Formula2 Property

Returns the value or expression associated with the second part of a conditional format or data validation. Used only when the data validation conditional format Operator property is xlBetween or xlNotBetween. Can be a constant value, a string value, a cell reference, or a formula. Read-only String.
Example

This example changes the formula for conditional format one for cells E1:E10 if the formula specifies “between 5 and 10"

With Worksheets(1).Range("e1:e10").FormatConditions(1)
    If .Operator = xlBetween And _
        .Formula1 = "5" And _
        .Formula2 = "10" Then
            .Modify xlCellValue, xlLess, "10"
    End If
End With
FormulaArray Property

Returns or sets the array formula of a range. Returns (or can be set to) a single formula or a Visual Basic array. If the specified range doesn't contain an array formula, this property returns **Null**. Read/write **Variant**.
Remarks

If you use this property to enter an array formula, the formula must use the R1C1 reference style, not the A1 reference style (see the second example).
Example

This example enters the number 3 as an array constant in cells A1:C5 on Sheet1.

\[
\text{Worksheets("Sheet1").Range("A1:C5").FormulaArray} = \"=3\"
\]

This example enters the array formula \(=\text{SUM(R1C1:R3C3)}\) in cells E1:E3 on Sheet1.

\[
\text{Worksheets("Sheet1").Range("E1:E3").FormulaArray} = _
=\text{Sum(R1C1:R3C3)}
\]
FormulaHidden Property

- FormulaHidden property as it applies to the Style object.

**True** if the formula will be hidden when the worksheet is protected. Read/write Boolean.

(expression).FormulaHidden

**expression** Required. An expression that returns a Style object.

- FormulaHidden property as it applies to the CellFormat and Range objects.

**True** if the formula will be hidden when the worksheet is protected. Returns Null if the specified range contains some cells with FormulaHidden equal to True and some cells with FormulaHidden equal to False. Read/write Variant.

(expression).FormulaHidden

**expression** Required. An expression that returns one of the above objects.
Remarks

Don’t confuse this property with the **Hidden** property. The formula will not be hidden if the workbook is protected and the worksheet is not, but only if the worksheet is protected.
Example

As it applies to the CellFormat and Range objects.

This example hides the formulas in cells A1 and B1 on Sheet1 when the worksheet is protected.

Sub HideFormulas()
    Worksheets("Sheet1").Range("A1:B1").FormulaHidden = True
End Sub
FormulaLabel Property

Returns or sets the formula label type for the specified range. Can be xlNone if the range contains no labels, or one of the following XlFormulaLabel constants. Read/write XlFormulaLabel.

XlFormulaLabel can be one of these XlFormulaLabel constants.

- xlColumnLabels
- xlMixedLabels
- xlNoLabels
- xlRowLabels

expression.FormulaLabel

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example topic sets the `AcceptLabelsInFormulas` property and then sets cells B1:D1 to be column labels.

```vba
ActiveWorkbook.AceptLabelsInFormulas = True
Worksheets(1).Range("b1:d1").FormulaLabel = xlColumnLabels
```
FormulaLocal Property

Returns or sets the formula for the object, using A1-style references in the language of the user. Read/write Variant for Range objects, read/write String for Series objects.
Remarks

If the cell contains a constant, this property returns that constant. If the cell is empty, the property returns an empty string. If the cell contains a formula, the property returns the formula as a string, in the same format in which it would be displayed in the formula bar (including the equal sign).

If you set the value or formula of a cell to a date, Microsoft Excel checks to see whether that cell is already formatted with one of the date or time number formats. If not, the number format is changed to the default short date number format.

If the range is a one- or two-dimensional range, you can set the formula to a Visual Basic array of the same dimensions. Similarly, you can put the formula into a Visual Basic array.

Setting the formula of a multiple-cell range fills all cells in the range with the formula.
Example

Assume that you enter the formula =SUM(A1:A10) in cell A11 on worksheet one, using the American English version of Microsoft Excel. If you then open the workbook on a computer that's running the German version and run the following example, the example displays the formula =SUMME(A1:A10) in a message box.

MsgBox Worksheets(1).Range(A11).

FormulaLocal
FormulaR1C1 Property

Returns or sets the formula for the object, using R1C1-style notation in the language of the macro. Read/write Variant for Range objects, read/write String for Series objects.
Remarks

If the cell contains a constant, this property returns the constant. If the cell is empty, the property returns an empty string. If the cell contains a formula, the property returns the formula as a string, in the same format in which it would be displayed in the formula bar (including the equal sign).

If you set the value or formula of a cell to a date, Microsoft Excel checks to see whether that cell is already formatted with one of the date or time number formats. If not, the number format is changed to the default short date number format.

If the range is a one- or two-dimensional range, you can set the formula to a Visual Basic array of the same dimensions. Similarly, you can put the formula into a Visual Basic array.

Setting the formula of a multiple-cell range fills all cells in the range with the formula.
Example

This example sets the formula for cell B1 on Sheet1.

`Worksheets("Sheet1").Range("B1").FormulaR1C1 = "=SQRT(R1C1)"`
FormulaR1C1Local Property

Returns or sets the formula for the object, using R1C1-style notation in the language of the user. Read/write Variant for Range objects, read/write String for Series objects.
Remarks

If the cell contains a constant, this property returns that constant. If the cell is empty, the property returns an empty string. If the cell contains a formula, the property returns the formula as a string, in the same format in which it would be displayed in the formula bar (including the equal sign).

If you set the value or formula of a cell to a date, Microsoft Excel checks to see whether that cell is already formatted with one of the date or time number formats. If not, the number format is changed to the default short date number format.

If the range is a one- or two-dimensional range, you can set the formula to a Visual Basic array of the same dimensions. Similarly, you can put the formula into a Visual Basic array.

Setting the formula of a multiple-cell range fills all cells in the range with the formula.
Example

Assume that you enter the formula =SUM(A1:A10) in cell A11 on worksheet one, using the American English version of Microsoft Excel. If you then open the workbook on a computer that's running the German version and run the following example, the example displays the formula =SUMME(Z1S1:Z10S1) in a message box.

MsgBox Worksheets(1).Range("A11").FormulaR1C1Local
Forward Property

Returns or sets the number of periods (or units on a scatter chart) that the trendline extends forward. Read/write **Long**.
**Example**

This example sets the number of units that the trendline on Chart1 extends forward and backward. The example should be run on a 2-D column chart that contains a single series with a trendline.

```vba
With Charts("Chart1").SeriesCollection(1).Trendlines(1)
    .Forward = 5
    .Backward = .5
End With
```
FreezePanes Property

True if split panes are frozen. Read/write Boolean.
Remarks

It’s possible for FreezePanes to be True and Split to be False, or vice versa.

This property applies only to worksheets and macro sheets.
Example

This example freezes split panes in the active window in Book1.xls.

Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.FreezePanes = True
**FullName Property**

Returns the name of the object, including its path on disk, as a string. Read-only String.
Remarks

This property is equivalent to the **Path** property, followed by the current file system separator, followed by the **Name** property.
Example

This example displays the path and file name of every available add-in.

For Each a In AddIns
    MsgBox a.FullName
Next a

This example displays the path and file name of the active workbook (assuming that the workbook has been saved).

MsgBox ActiveWorkbook.FullName
**FullNameURLEncoded Property**

Returns a **String** indicating the name of the object, including its path on disk, as a string. Read-only.

`expression.FullNameURLEncoded`

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel displays the path and file name of the active workbook to the user.

Sub UseCanonical()
    ' Display the full path to user.
    MsgBox ActiveWorkbook.FullNameURLEncoded
End Sub
Show All
Function Property

Returns or sets the function used to summarize the PivotTable field (data fields only). Read/write **XlConsolidationFunction**.

XlConsolidationFunction can be one of these XlConsolidationFunction constants:

- `xlAverage`
- `xlCountNums`
- `xlMin`
- `xlStDev`
- `xlSum`
- `xlVar`
- `xlCount`
- `xlMax`
- `xlProduct`
- `xlStDevP`
- `xlUnknown`
- `xlVarP`

`expression.Function`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

For OLAP data sources, this property is read-only and always returns xlUnknown. For other data sources, this property cannot be set to xlUnknown.
Example

This example sets the Sum of 1994 field in the first PivotTable report on the active sheet to use the SUM function.

```vba
ActiveSheet.PivotTables("PivotTable1") _
  .PivotFields("Sum of 1994").Function = xlSum
```
Gap Property

Returns or sets the horizontal distance (in points) between the end of the callout line and the text bounding box. Read/write **Single**.
Example

This example sets the distance between the callout line and the text bounding box to 3 points for shape one on myDocument. For the example to work, shape one must be a callout.

Set myDocument = Worksheets(1)
GapDepth Property

Returns or sets the distance between the data series in a 3-D chart, as a percentage of the marker width. The value of this property must be between 0 and 500. Read/write Long.
Example

This example sets the distance between the data series in Chart1 to 200 percent of the marker width. The example should be run on a 3-D chart (the `GapDepth` property fails on 2-D charts).

`Charts("Chart1").GapDepth = 200`
GapWidth Property

Bar and Column charts: Returns or sets the space between bar or column clusters, as a percentage of the bar or column width. The value of this property must be between 0 and 500. Read/write Long.

Pie of Pie and Bar of Pie charts: Returns or sets the space between the primary and secondary sections of the chart. The value of this property must be between 5 and 200. Read/write Long.
**Example**

This example sets the space between column clusters in Chart1 to be 50 percent of the column width.

```plaintext
Charts("Chart1").ChartGroups(1).GapWidth = 50
```
GenerateGetPivotData Property

Returns **True** when Microsoft Excel can get PivotTable report data. Read/write **Boolean**.

*expression*.GenerateGetPivotData

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, Microsoft Excel determines the status of getting PivotTable report data and notifies the user. This example assumes a PivotTable report exists on the active worksheet.

Sub PivotTableInfo()
    ' Determine the ability to get PivotTable report data and notify
    If Application.GenerateGetPivotData = True Then
        MsgBox "The ability to get PivotTable report data is enabled"
    Else
        MsgBox "The ability to get PivotTable report data is disabled"
    End If
End Sub
GermanPostReform Property

True to check the spelling of words using the German post-reform rules. False cancels this feature. Read/write Boolean.

expression.GermanPostReform

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the checking of spelling for German words is using post-reform rules and enables this feature if it's not enabled, and then notifies the user on the status.

Sub SpellingCheck()

    ' Determine if spelling check for German words is using post-ref
    If Application.SpellingOptions.GermanPostReform = False Then
        Application.SpellingOptions.GermanPostReform = True
        MsgBox "German words will now use post-reform rules."
    Else
        MsgBox "German words using post-reform rules has already bee
    End If

End Sub
GradientColorType Property

Returns the gradient color type for the specified fill. Read-only MsoGradientColorType.

MsoGradientColorType can be one of these MsoGradientColorType constants.
msGradientColorMixed
msGradientOneColor
msGradientPresetColors
msGradientTwoColors

expression.GradientColorType

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillGradient And _
    c1f.GradientColorType = msoGradientOneColor Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        .OneColorGradient c1f.GradientStyle, _
        c1f.GradientVariant, c1f.GradientDegree
    End With
End If
**GradientDegree Property**

Returns the gradient degree of the specified one-color shaded fill as a floating-point value from 0.0 (dark) through 1.0 (light). Read-only **Single**.

This property is read-only. Use the **OneColorGradient** method to set the gradient degree for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

```vba
Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillGradient And _
   c1f.GradientColorType = msoGradientOneColor Then
   With Charts(2).ChartArea.Fill
      .Visible = True
      .OneColorGradient c1f.GradientStyle, _
      c1f.GradientVariant, c1f.GradientDegree
   End With
End If
```
GradientVariant Property

Returns the shade variant for the specified fill as an integer value from 1 through 4. The values for this property correspond to the gradient variants (numbered from left to right and from top to bottom) on the Gradient tab in the Fill Effects dialog box. Read-only Long.

This property is read-only. Use the OneColorGradient or TwoColorGradient method to set the gradient variant for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillGradient And _
   c1f.GradientColorType = msoGradientOneColor Then
   With Charts(2).ChartArea.Fill
      .Visible = True
      .OneColorGradient c1f.GradientStyle, _
         c1f.GradientVariant, c1f.GradientDegree
   End With
End If
GrandTotalName Property

Returns or sets the text string label that is displayed in the grand total column or row heading in the specified PivotTable report. The default value is the string "Grand Total". Read/write String.
Example

This example sets the grand total heading label to "Regional Total" in the second PivotTable report on the active worksheet.

ActiveSheet.PivotTables("PivotTable2").GrandTotalName = "Regional To
GridlineColor Property

Returns or sets the gridline color as an RGB value. Read/write Long.
Example

This example sets the gridline color in the active window in Book1.xls to red.

Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.GridlineColor = RGB(255,0,0)
GridlineColorIndex Property

Returns or sets the gridline color as an index into the current color palette or as the following XlColorIndex constant.

XlColorIndex can be the following XlColorIndex constant.

xlColorIndexAutomatic

expression/GridlineColorIndex

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Set this property to `xlColorIndexAutomatic` to specify the automatic color.

The following illustration shows the color-index values in the default color palette.
Example

This example sets the gridline color in the active window to blue.

ActiveWindow.GridlineColorIndex = 5
GroupItems Property

Returns a **GroupShapes** object that represents the individual shapes in the specified group. Use the **Item** method of the **GroupShapes** object to return a single shape from the group. Applies to **Shape** or **ShapeRange** objects that represent grouped shapes. Read-only.
Example

This example adds three triangles to myDocument, groups them, sets a color for the entire group, and then changes the color for the second triangle only.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes
    .AddShape(msoShapeIsoscelesTriangle, _
        10, 10, 100, 100).Name = "shpOne"
    .AddShape(msoShapeIsoscelesTriangle, _
        150, 10, 100, 100).Name = "shpTwo"
    .AddShape(msoShapeIsoscelesTriangle, _
        300, 10, 100, 100).Name = "shpThree"
    With .Range(Array("shpOne", "shpTwo", "shpThree")).Group
        .Fill.PresetTextured msoTextureBlueTissuePaper
        .GroupItems(2).Fill.PresetTextured msoTextureGreenMarble
    End With
End With
```

**GroupLevel Property**

Returns the placement of the specified field within a group of fields (if the field is a member of a grouped set of fields). Read-only.
Remarks

This property is not available for OLAP data sources.

The highest-level parent field (leftmost parent field) is level one, its child is level two, and so on.
**Example**

This example displays a message box if the field that contains the active cell is the highest-level parent field.

```vba
Worksheets("Sheet1").Activate
If ActiveCell.PivotField.GroupLevel = 1 Then
    MsgBox "This is the highest-level parent field."
End If
```
Has3DEffect Property

True if the series has a three-dimensional appearance. Applies only to bubble charts. Read/write Boolean.
**Example**

This example gives series one on the embedded bubble chart a three-dimensional appearance.

```vba
With Worksheets(1).ChartObjects(1).Chart
    .SeriesCollection(1).Has3DEffect = True
End With
```
Has3DShading Property

True if the chart group has three-dimensional shading. Read/write Boolean.
Example

This example adds three-dimensional shading to chart group one on chart one.

`Charts(1).ChartGroups(1).Has3DShading = True`
HasArray Property

True if the specified cell is part of an array formula. Read-only Variant.
Example

This example displays a message if the active cell on Sheet1 is part of an array.

Worksheets("Sheet1").Activate
If ActiveCell.HasArray =True Then
    MsgBox "The active cell is part of an array"
End If
HasAutoFormat Property

True if the PivotTable report is automatically formatted when it’s refreshed or when fields are moved. Read/write Boolean.
Example

This example causes the PivotTable report to be automatically reformatted when it’s refreshed or when fields are moved.

Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.HasAutoFormat = True
HasAxis Property

Returns or sets which axes exist on the chart. Read/write Variant.

expression.HasAxis(Index1, Index2)

expression Required. An expression that returns one of the objects in the Applies To list.

Index1 Optional Variant. The axis type. Series axes apply only to 3-D charts. Can be one of the XlAxisType constants.

XlAxisType can be one of the following XlAxisType constants.
   xlCategory
   xlValue
   xlSeriesAxis

Index2 Optional Variant. The axis group. 3-D charts have only one set of axes. Can be one of the XlAxisGroup constants.

XlAxisGroup can be one of the following XlAxisGroup constants.
   xlPrimary
   xlSecondary
Remarks

Microsoft Excel may create or delete axes if you change the chart type or the AxisGroup property.
**Example**

This example turns on the primary value axis for Chart1.

Charts("Chart1").HasAxis(xlValue, xlPrimary) = True
HasBorderHorizontal Property

True if the chart data table has horizontal cell borders. Read/write Boolean.
Example

This example causes the embedded chart data table to be displayed with an outline border and no cell borders.

With Worksheets(1).ChartObjects(1).Chart
  .HasDataTable = True
  With .DataTable
    .HasBorderHorizontal = False
    .HasBorderVertical = False
    .HasBorderOutline = True
  End With
End With
HasBorderOutline Property

True if the chart data table has outline borders. Read/write Boolean.
Example

This example causes the embedded chart data table to be displayed with an outline border and no cell borders.

```vba
With Worksheets(1).ChartObjects(1).Chart
    .HasDataTable = True
    With .DataTable
        .HasBorderHorizontal = False
        .HasBorderVertical = False
        .HasBorderOutline = True
    End With
End With
```

HasBorderVertical Property

True if the chart data table has vertical cell borders. Read/write Boolean.
Example

This example causes the embedded chart data table to be displayed with an outline border and no cell borders.

With Worksheets(1).ChartObjects(1).Chart
    .HasDataTable = True
    With .DataTable
        .HasBorderHorizontal = False
        .HasBorderVertical = False
        .HasBorderOutline = True
    End With
End With
HasDataLabel Property

True if the point has a data label. Read/write Boolean.
Example

This example turns on the data label for point seven in series three in Chart1, and then it sets the data label color to blue.

With Charts("Chart1").SeriesCollection(3).Points(7)
  .HasDataLabel = True
  .ApplyDataLabels Type:=xlValue
  .DataLabel.Font.ColorIndex = 5
End With
HasDataLabels Property

True if the series has data labels. Read/write Boolean.
Example

This example turns on data labels for series three in Chart1.

With Charts("Chart1").SeriesCollection(3)
    .HasDataLabels = True
    .ApplyDataLabels Type:=xlValue
End With
HasDataTable Property

True if the chart has a data table. Read/write Boolean.
Example

This example causes the embedded chart data table to be displayed with an outline border and no cell borders.

With Worksheets(1).ChartObjects(1).Chart.
  .HasDataTable = True
  With .DataTable
    .HasBorderHorizontal = False
    .HasBorderVertical = False
    .HasBorderOutline = True
  End With
End With
Show All
HasDiagram Property

Returns whether a shape or shape range contains a diagram. Read-only MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue  Not used for this property.
- msoFalse  Returned if a shape is not a diagram.
- msoTriStateMixed  Not used for this property.
- msoTriStateToggle  Not used for this property.
- msoTrue  Returned if a shape is a diagram.

expression.HasDiagram

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

The following example places a diagram in the active worksheet and then displays a message as to whether the diagram was successfully created.

Sub CheckforDiagram()
    Dim shDiagram As Shape
    Set shDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, Top:=10, Left:=15, _
        Width:=400, Height:=475)

    ' Notify user about diagram.
    If shDiagram.HasDiagram = msoTrue Then
        MsgBox "Diagram present"
    Else
        MsgBox "No diagram present"
    End If
End Sub
HasDiagramNode Property

Returns whether a diagram node exists in a given shape or shape range. Read-only **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**  Not used for this property.
- **msoFalse**  Returns if a shape is not a diagram node.
- **msoTriStateMixed**  Not used for this property.
- **msoTriStateToggle**  Not used for this property.
- **msoTrue**  Returns if a shape is a diagram node.

*expression*.HasDiagramNode

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

The following example places a diagram node in the active worksheet and then displays a message as to whether or not the node was successfully created.

Sub IsDiagram()
    Dim shDiagram As Shape
    Dim nodItem As DiagramNode

    Set shDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, Top:=10, _
        Left:=15, Width:=400, Height:=475)
    Set nodItem = shDiagram.DiagramNode

    ' Add a root node to the diagram.
    nodItem.Children.AddNode

    ' Notify user about diagram.
    If shDiagram.HasDiagramNode = msoTrue Then
        MsgBox "Diagram node present"
    Else
        MsgBox "No diagram node present"
    End If

End Sub
HasDisplayUnitLabel Property

True if the label specified by the DisplayUnit or DisplayUnitCustom property is displayed on the specified axis. The default value is True. Read/write Boolean.
Example

This example sets the units on the value axis in Chart1 to increments of 500 but keeps the unit label hidden.

With Charts("Chart1").Axes(xlValue)
  .DisplayUnit = xlCustom
  .DisplayUnitCustom = 500
  .AxisTitle.Caption = "Rebate Amounts"
  .HasDisplayUnitLabel = False
End With
HasDropLines Property

True if the line chart or area chart has drop lines. Applies only to line and area charts. Read/write Boolean.
Example

This example turns on drop lines for chart group one in Chart1 and then sets their line style, weight, and color. The example should be run on a 2-D line chart that has one series.

With Charts("Chart1").ChartGroups(1)
  .HasDropLines = True
  With .DropLines.Border
    .LineStyle = xlThin
    .Weight = xlMedium
    .ColorIndex = 3
  End With
End With
HasErrorBars Property

True if the series has error bars. This property isn’t available for 3-D charts. Read/write Boolean.
Example

This example removes error bars from series one in Chart1. The example should be run on a 2-D line chart that has error bars for series one.

Charts("Chart1").SeriesCollection(1).HasErrorBars = False
HasFormula Property

**True** if all cells in the range contain formulas; **False** if none of the cells in the range contains a formula; **Null** otherwise. Read-only **Variant**.
Example

This example prompts the user to select a range on Sheet1. If every cell in the selected range contains a formula, the example displays a message.

```vba
Worksheets("Sheet1").Activate
Set rr = Application.InputBox( _
    prompt:="Select a range on this worksheet", _
    Type:=8)
If rr.HasFormula = True Then
    MsgBox "Every cell in the selection contains a formula"
End If
```
HasHiLoLines Property

True if the line chart has high-low lines. Applies only to line charts. Read/write Boolean.
Example

This example turns on high-low lines for chart group one in Chart1 and then sets line style, weight, and color. The example should be run on a 2-D line chart that has three series of stock-quote-like data (high-low-close).

```vba
With Charts("Chart1").ChartGroups(1)
    .HasHiLoLines = True
    With .HiLoLines.Border
        .LineStyle = xlThin
        .Weight = xlMedium
        .ColorIndex = 3
    End With
End With
```
HasLeaderLines Property

True if the series has leader lines. Read/write Boolean.
Example

This example adds data labels and blue leader lines to series one on the pie chart.

With Worksheets(1).ChartObjects(1).Chart.SeriesCollection(1)
    .HasDataLabels = True
    .DataLabels.Position = xlLabelPositionBestFit
    .HasLeaderLines = True
    .LeaderLines.Border.ColorIndex = 5
End With
HasLegend Property

True if the chart has a legend. Read/write Boolean.
Example

This example turns on the legend for Chart1 and then sets the legend font color to blue.

With Charts("Chart1")
    .HasLegend = True
    .Legend.Font.ColorIndex = 5
End With
HasMajorGridlines Property

True if the axis has major gridlines. Only axes in the primary axis group can have gridlines. Read/write Boolean.
Example

This example sets the color of the major gridlines for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    If .HasMajorGridlines Then
        .MajorGridlines.Border.ColorIndex = 3       'set color to red
    End If
End With
HasMemberProperties Property

Returns True when there are member properties specified to be displayed for the cube field. Read-only Boolean.

expression.HasMemberProperties

eexpression Required. An expression that returns a CubeField object.
Example

The example determines if there are member properties to be displayed for the cube field and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub UseHasMemberProperties()
    Dim pvtTable As PivotTable
    Dim cbeField As CubeField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set cbeField = pvtTable.CubeFields("[Country]")

    ' Determine if there are member properties to be displayed.
    If cbeField.HasMemberProperties = True Then
        MsgBox "There are member properties to be displayed."
    Else
        MsgBox "There are no member properties to be displayed."
    End If

End Sub
HasMinorGridlines Property

True if the axis has minor gridlines. Only axes in the primary axis group can have gridlines. Read/write Boolean.
Example

This example sets the color of the minor gridlines for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    If .HasMinorGridlines Then
        .MinorGridlines.Border.ColorIndex = 4
        'set color to green
    End If
End With
HasPassword Property

True if the workbook has a protection password. Read-only Boolean.
Remarks

You can assign a protection password to a workbook by using the `SaveAs` method.
Example

This example displays a message if the active workbook has a protection password.

If ActiveWorkbook.HasPassword = True Then
    MsgBox "Remember to obtain the workbook password" & Chr(13) & ":" 
    " from the Network Administrator."
End If
HasPivotFields Property

True if the PivotChart controls are displayed on the specified PivotChart report. The default value is True. For a regular chart, this property always returns False and cannot be set. Read/write Boolean.
Example

This example disables the PivotChart controls on the Sales chart in the 1996 Report workbook.

HasRadarAxisLabels Property

True if a radar chart has axis labels. Applies only to radar charts. Read/write Boolean.
Example

This example turns on radar axis labels for chart group one in Chart1 and sets their color. The example should be run on a radar chart.

With Charts("Chart1").ChartGroups(1)
   .HasRadarAxisLabels = True
End With
HasRoutingSlip Property

True if the workbook has a routing slip. Read/write Boolean.
Remarks

Setting this property to **True** creates a routing slip with default values. Setting the property to **False** deletes the routing slip.
Example

This example creates a routing slip for Book1.xls and then sends the workbook to three recipients, one after another.

Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", _
        "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
End With
Workbooks("BOOK1.XLS").Route
HasSeriesLines Property

True if a stacked column chart or bar chart has series lines or if a Pie of Pie chart or Bar of Pie chart has connector lines between the two sections. Applies only to stacked column charts, bar charts, Pie of Pie charts, or Bar of Pie charts. Read/write Boolean.
Example

This example turns on series lines for chart group one in Chart1 and then sets their line style, weight, and color. The example should be run on a 2-D stacked column chart that has two or more series.

```vba
With Charts("Chart1").ChartGroups(1)
  .HasSeriesLines = True
  With .SeriesLines.Border
    .LineStyle = xlThin
    .Weight = xlMedium
    .ColorIndex = 3
  End With
End With
```
HasTitle Property

True if the axis or chart has a visible title. Read/write Boolean.
**Remarks**

An axis title is represented by an **AxisTitle** object.

A chart title is represented by a **ChartTitle** object.
Example

This example adds an axis label to the category axis in Chart1.

With Charts("Chart1").Axes(xlCategory)
    .HasTitle = True
    .AxisTitle.Text = "July Sales"
End With
HasUpDownBars Property

True if a line chart has up and down bars. Applies only to line charts. Read/write Boolean.
Example

This example turns on up and down bars for chart group one in Chart1 and then sets their colors. The example should be run on a 2-D line chart containing two series that cross each other at one or more data points.

```
With Charts("Chart1").ChartGroups(1)
    .HasUpDownBars = True
    .DownBars.Interior.ColorIndex = 3
End With
```
Show All
HeaderMargin Property

Returns or sets the distance from the top of the page to the header, in points. Read/write Double.
Remarks

Margins are set or returned in points. Use the\n\n**InchesToPoints** method or the\n**CentimetersToPoints** method to convert measurements from inches or\ncentimeters.
Example

This example sets the header margin of Sheet1 to 0.5 inch.

`Worksheets("Sheet1").PageSetup.HeaderMargin = _
Application.InchesToPoints(0.5)`
HeartbeatInterval Property

Returns or sets a **Long** for the interval between updates for real-time data. Read/write.

*expression*.HeartbeatInterval

*expression*   Required. An expression that returns an **IRTDUpdateEvent** object.
Remarks

Setting the **HearbeatInterval** property to -1 will result in the **Heartbeat** method not being called.

**Note**  The heartbeat interval cannot be set below 15,000 milliseconds, due to the standard 15-second time out.
HebrewModes Property

- Returns or sets the mode for the Hebrew spelling checker. Read/write XlHebrewModes.

XlHebrewModes can be one of these XlHebrewModes constants.

- **xlHebrewFullScript** (default) The conventional script type as required by the Hebrew Language Academy when writing non-diacritized text.
- **xlHebrewMixedAuthorizedScript** The Hebrew traditional script.
- **xlHebrewMixedScript** In this mode the speller accepts any word recognized as Hebrew, whether in Full Script, Partial Script, or any non-conventional spelling variation that is known to the speller.
- **xlHebrewPartialScript** In this mode the speller accepts words both in Full Script and Partial Script. Some words will be flagged since this spelling is not authorized in either Full script or Partial script.

*expression*.HebrewModes

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

A legitimate Hebrew word can be a basic dictionary entry or any inflection.
Example

In this example, Microsoft Excel determines the setting for the Hebrew spelling mode and notifies the user.

Sub CheckHebrewMode()
    ' Determine the Hebrew spelling mode setting and notify user.
    Select Case Application.SpellingOptions.HebrewModes
        Case xlHebrewFullScript
            MsgBox "The Hebrew spelling mode setting is Full Script.
        Case xlHebrewMixedAuthorizedScript
            MsgBox "The Hebrew spelling mode setting is Mixed Author
        Case xlHebrewMixedScript
            MsgBox "The Hebrew spelling mode setting is Mixed Script
        Case xlHebrewPartialScript
            MsgBox "The Hebrew spelling mode setting is Partial Scri
    End Select
End Sub
Height Property

- Height property as it applies to the Application object.

The height of the main application window. If the window is minimized, this property is read-only and refers to the height of the icon. If the window is maximized, this property cannot be set. Use the WindowState property to determine the window state. Read/write Double.

expression.Height

expression     Required. An expression that returns an Application object.

- Height property as it applies to the Window object.

The height of the window. Use the UsableHeight property to determine the maximum size for the window. You cannot set this property if the window is maximized or minimized. Use the WindowState property to determine the window state. Read/write Double.

expression.Height

expression     Required. An expression that returns a Window object.

- Height property as it applies to the ChartArea, ChartObject, ChartObjects, Legend, OLEObject, OLEObjects, and PlotArea objects.

The height of the object. Read/write Double.

expression.Height

expression     Required. An expression that returns one of the above objects.

- Height property as it applies to the Axis, LegendEntry, and LegendKey objects.
The height of the object. Read-only **Double**.

*expression*.**Height**

*expression*  Required. An expression that returns one of the above objects.

- **Height property as it applies to the Graphic, Shape, and ShapeRange objects.**

The height of the object. Read/write **Single**.

*expression*.**Height**

*expression*  Required. An expression that returns one of the above objects.

- **Height property as it applies to the Range object.**

The height of the range. Read-only **Variant**.

*expression*.**Height**

*expression*  Required. An expression that returns a **Range** object.
Example

This example sets the height of the embedded chart.

`Worksheets("Sheet1").ChartObjects(1).Height = 288`
HeightPercent Property

Returns or sets the height of a 3-D chart as a percentage of the chart width (between 5 and 500 percent). Read/write Long.
Example

This example sets the height of Chart1 to 80 percent of its width. The example should be run on a 3-D chart.

Charts("Chart1").HeightPercent = 80
Hidden Property

- Hidden property as it applies to the Range object.

**True** if the rows or columns are hidden. The specified range must span an entire column or row. Read/write **Variant**.

`expression.Hidden`

`expression`  Required. An expression that returns one of the above objects.

- Hidden property as it applies to the Scenario object.

**True** if the scenario is hidden. The default value is **False**. Read/write **Boolean**.

`expression.Hidden`

`expression`  Required. An expression that returns one of the above objects.

- Hidden property as it applies to the TreeviewControl object.

Returns or sets the hidden status of the **cube** field members in the hierarchical member selection control of a cube field. Read/write **Variant**.

`expression.Hidden`

`expression`  Required. An expression that returns one of the above objects.
Remarks

Don't confuse this property with the **FormulaHidden** property.

**TreeviewControl** object: The **Hidden** property returns or sets an array. Each element of the array corresponds to a **level** of the cube field that is hidden. The maximum number of elements is the number of levels in the cube field. Each element of the array is an array of type **String**, containing unique member names that are hidden at the corresponding level of the control. See the **DrilledDown** property of the **PivotItem** object to determine when members are visible (expanded) in the control.
Example

This example hides column C on Sheet1.

Worksheets("Sheet1").Columns("C").**Hidden** = True

This example hides the second **level** member [state].[states].[CA]. [Covelo] of the first **cube** field in the first PivotTable report.

ActiveSheet.PivotTables("PivotTable1").CubeFields(1) _ .TreeviewControl.**Hidden** = _ Array(Array(""), Array(""), _ Array("[state].[states].[CA].[Covelo]"))
HiddenFields Property

Returns an object that represents either a single PivotTable field (a *PivotField* object) or a collection of all the fields (a *PivotFields* object) that are currently not shown as row, column, page, or data fields. Read-only.

*expression*.HiddenFields(*Index*)

*expression*   Required. An expression that returns a *PivotTable* object.

*Index*   Optional *Variant*. The name or number of the field to be returned (can be an array to specify more than one field).
Remarks

For OLAP data sources, this property always returns an empty collection.
Example

This example adds the hidden field names to a list on a new worksheet.

```
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.HiddenFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
```
HiddenItems Property

Returns an object that represents either a single hidden PivotTable item (a PivotItem object) or a collection of all the hidden items (a PivotItems object) in the specified field. Read-only.

expression.HiddenItems(Index)

expression  Required. An expression that returns a PivotField object.

Index  Optional Variant. The number or name of the item to be returned (can be an array to specify more than one item).
Remarks

For OLAP data sources, this property always returns an empty collection.
**Example**

This example adds the names of all the hidden items in the field named "product" to a list on a new worksheet.

```vba
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtItem In pvtTable.PivotFields("product").HiddenItems
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtItem.Name
Next pvtItem
```
HiddenItemsList Property

Returns or sets a Variant specifying an array of strings that are hidden items for a PivotTable field. Read/write.

expression.HiddenItemsList

expression Required. An expression that returns a PivotField object.
Remarks

The **HiddenItemsList** property is only valid for [Online Analytical Processing (OLAP)](http://example.com) data sources; using this property on non-OLAP data sources will return a run-time error.
Example

The example sets the item list so that only certain items are displayed. It assumes an OLAP PivotTable exists on the active worksheet.

Sub UseHiddenItemsList()

    ActiveSheet.PivotTables(1).PivotFields(1).HiddenItemsList = _
    Array("[Product].[All Products].[Food]", _
          ",
          "[Product].[All Products].[Drink]")

End Sub
HiddenLevels Property

Returns or sets the top levels of the specified hierarchy that are hidden. The default value is 0 (zero), indicating that no levels are hidden. Read/write Integer.
Remarks

To set the value of this property to an integer greater than 0, you must first set the value to 0.
Example

This example hides the top two levels of the hierarchy in the second cube field in the first PivotTable report on the active worksheet.

ActiveSheet.PivotTables(1).CubeFields(2).HiddenLevels = 2
HighlightChangesOnScreen Property

True if changes to the shared workbook are highlighted on-screen. Read/write Boolean.
Example

This example highlights changes to the shared workbook.

ThisWorkbook.HighlightChangesOnScreen
HiLoLines Property

Returns a HiLoLines object that represents the high-low lines for a series on a line chart. Applies only to line charts. Read-only.
Example

This example turns on high-low lines for chart group one in Chart1 and then sets their line style, weight, and color. The example should be run on a 2-D line chart that has three series of stock-quote-like data (high-low-close).

With Charts("Chart1").ChartGroups(1)
    .HasHiLoLines = True
    With .HiLoLines.Border
        .LineStyle = xlThin
        .Weight = xlMedium
        .ColorIndex = 3
    End With
End With
**Hinstance Property**

- `expression.Hinstance`

Returns the instance handle of the instance that is calling Microsoft Excel. Read-only **Long**.

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel notifies the user about the instance handle of the instance that is calling Excel.

Sub CheckHinstance()
    MsgBox Application.Hinstance
End Sub
HorizontalAlignment Property

- HorizontalAlignment property as it applies to the Style and TextFrame objects.

Returns or sets the horizontal alignment for the specified object. For all objects, this can be one of the following XlHAlign constants. Read/write XlHAlign.

XlHAlign can be one of these XlHAlign constants.
- xlHAlignCenter
- xlHAlignCenterAcrossSelection
- xlHAlignDistributed
- xlHAlignFill
- xlHAlignGeneral
- xlHAlignJustify
- xlHAlignLeft
- xlHAlignRight

expression.HorizontalAlignment

expression Required. An expression that returns one of the above objects.

- HorizontalAlignment property as it applies to the AxisTitle, CellFormat, ChartTitle, DataLabel, DataLabels, DisplayUnitLabel, and Range objects.

Returns or sets the horizontal alignment for the specified object. Read/write Variant.

expression.HorizontalAlignment

expression Required. An expression that returns one of the above objects.
Remarks

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you've selected or installed.
Example

This example left aligns the range A1:A5 on Sheet1.

Worksheets("Sheet1").Range("A1:A5").HorizontalAlignment = xlLeft
HorizontalFlip Property

True if the specified shape is flipped around the horizontal axis. Read-only MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue The specified shape is flipped around the horizontal axis.

expression.HorizontalFlip

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example restores each shape on myDocument to its original state if it’s been flipped horizontally or vertically.

```vba
Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.HorizontalFlip Then s.Flip msoFlipHorizontal
    If s.VerticalFlip Then s.Flip msoFlipVertical
Next
```
HPageBreaks Property

Returns an HPageBreaks collection that represents the horizontal page breaks on the sheet. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Remarks

Note  There is a limit of 1026 horizontal page breaks per sheet.
Example

This example displays the number of full-screen and print-area horizontal page breaks.

For Each pb in Worksheets(1).HPageBreaks
    If pb.Extent = xlPageBreakFull Then
        cFull = cFull + 1
    Else
        cPartial = cPartial + 1
    End If
Next
MsgBox cFull & " full-screen page breaks, " & cPartial & _
" print-area page breaks"
**HTMLProject Property**

Returns the [HTMLProject](#) object in the specified workbook, which represents a top-level project branch, as in the Project Explorer in the Microsoft Script Editor. Read-only.
Example

This example refreshes the HTML project in the active workbook.

ActiveWorkbook.HTMLProject.RefreshProject
HtmlType Property

Returns or sets the type of HTML generated by Microsoft Excel when you save the specified item to a Web page. Can be one of the XlHtmlType constants listed in the following table, specifying whether the item is static or interactive in the Web page. The default value is xlHtmlStatic. Read/write XlHtmlType.

XlHtmlType can be one of these XlHtmlType constants.
- **xlHtmlCalc**. Use the Spreadsheet component.
- **xlHtmlChart**. Use the Chart component.
- **xlHtmlList**. Use the PivotTable component.
- **xlHtmlStatic**. Use static (noninteractive) HTML for viewing only.

*expression*.HtmlType

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

This example saves the range D5:D9 on the First Quarter worksheet in the active workbook to a Web page called “stockreport.htm.” You use the Spreadsheet component to add interactivity to the Web page.

ActiveWorkbook.PublishObjects.Add( _
    SourceType:=xlSourceRange, _
    Filename:="\\Server2\Q1\stockreport.htm", _
    Sheet:="First Quarter", _
    Source:="D5:D9", _
    HtmlType:=xlHTMLCalc).Publish
Hwnd Property

- Returns a Long indicating the top-level window handle of the Microsoft Excel window. Read-only.

expression.Hwnd

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel notifies the user of the top-level window handle of the Excel window.

Sub CheckHwnd()
    MsgBox "The top-level window handle is: " & _
        Application.Hwnd
End Sub
Hyperlink Property

Returns a Hyperlink object that represents the hyperlink for the shape.
Example

This example loads the document attached to the hyperlink on shape one.

`Worksheets(1).Shapes(1).Hyperlink.Follow NewWindow:=True`
Hyperlinks Property

Returns a Hyperlinks collection that represents the hyperlinks for the range or worksheet.

For more information about returning an object from a collection, see Returning an Object from a Collection.
Example

This example checks to see whether any of the hyperlinks on worksheet one contain the word “Microsoft.”

For Each h in Worksheets(1).Hyperlinks
    If Instr(h.Name, "Microsoft") <> 0 Then h.Follow
Next
ID Property

- ID property as it applies to the Shape and ShapeRange objects.

Returns the type for the specified object. Read-only Long.

expression.ID

expression  Required. An expression that returns one of the above objects.

- ID property as it applies to the Range object.

Returns or sets the identifying label for the specified cell when the page is saved as a Web page. Read/write String.

expression.ID

expression  Required. An expression that returns a Range object.
Remarks

You can use an ID label as a hyperlink reference in other HTML documents or on the same Web page.
Example

This example sets the ID of cell A1 on the active worksheet to "target".

ActiveSheet.Range("A1").ID = "target"

Later, the document is saved as a Web page, and the following line of HTML is added to the Web page.

<A HREF="#target">Quarterly earnings</A>

When the user then views the page in a Web browser and clicks the hyperlink, the browser displays the cell.
Ignore Property

- Allows the user to set or return the state of an error checking option for a range. **False** enables an error checking option for a range. **True** disables an error checking option for a range. Read/write **Boolean**.

  *expression*.Ignore

  *expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

Reference the **ErrorCheckingOptions** object to view a list of index values associated with error checking options.
Example

This example disables the ignore flag in cell A1 for checking empty cell references.

Sub IgnoreChecking()
    Range("A1").Select
    ' Determine if empty cell references error checking is on, if no
    If Application.Range("A1").Errors(xlEmptyCellReferences).Ignore
        Application.Range("A1").Errors(xlEmptyCellReferences).Ignore
        MsgBox "Empty cell references error checking has been enable
    Else
        MsgBox "Empty cell references error checking is already enab
    End If
End Sub
IgnoreBlank Property

True if blank values are permitted by the range data validation. Read/write Boolean.
Remarks

If the IgnoreBlank property is True, cell data is considered valid if the cell is blank, or if a cell referenced by either the MinVal or MaxVal property is blank.
Example

This example causes data validation for cell E5 to allow blank values.

Range("e5").Validation.IgnoreBlank = True
IgnoreCaps Property

False instructs Microsoft Excel to check for uppercase words, True instructs Excel to ignore words in uppercase when using the spelling checker. Read/write Boolean.

expression.IgnoreCaps

expression Required. An expression that returns one of the objects in the Applies To list.
**Example**

In this example, Microsoft Excel determines what the setting is for checking the spelling of uppercase words and notifies the user.

```vba
Sub SpellingOptionsCheck()
    If Application.SpellingOptions.IgnoreCaps = True Then
        MsgBox "Spelling options for checking uppercase words is dis" 
    Else
        MsgBox "Spelling options for checking uppercase words is ena"
    End If
End Sub
```
IgnoreFileNames Property

False instructs Microsoft Excel to check for Internet and file addresses, True instructs Excel to ignore Internet and file addresses when using the spell checker. Read/write **Boolean**.

*expression*.IgnoreFileNames

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines what the setting is for checking spelling of Internet and file addresses and notifies the user.

Sub SpellingOptionsCheck()
    If Application.SpellingOptions. IgnoreFileNames = True Then
        MsgBox "Spelling options for checking Internet and file addr"
    Else
        MsgBox "Spelling options for checking Internet and file addr"
    End If
End Sub
IgnoreMixedDigits Property

False instructs Microsoft Excel to check for mixed digits, True instructs Excel to ignore mixed digits when checking spelling. Read/write Boolean.

expression.IgnoreMixedDigits

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines what the setting is for the checking of spelling for mixed digits and notifies the user.

Sub SpellingOptionsCheck()
    If Application.SpellingOptions.IgnoreMixedDigits = True Then
        MsgBox "Spelling options for checking mixed digits is disabled."
    Else
        MsgBox "Spelling options for checking mixed digits is enabled."
    End If
End Sub
IgnoreRemoteRequests Property

True if remote DDE requests are ignored. Read/write Boolean.
Example

This example sets the `IgnoreRemoteRequests` property to `True` so that remote DDE requests are ignored.

```vbnet
Application.IgnoreRemoteRequests = True
```
IMEMode Property

Returns or sets the description of the Japanese input rules. Can be one of the XlIMEMode constants listed in the following table. Read/write Long.

expression.IMEMode

expression  Required. An expression that returns one of the objects in the Applies To list.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlIMEModeAlpha</td>
<td>Half-width alphanumeric</td>
</tr>
<tr>
<td>xlIMEModeAlphaFull</td>
<td>Full-width alphanumeric</td>
</tr>
<tr>
<td>xlIMEModeDisable</td>
<td>Disable</td>
</tr>
<tr>
<td>xlIMEModeHiragana</td>
<td>Hiragana</td>
</tr>
<tr>
<td>xlIMEModeKatakana</td>
<td>Katakana</td>
</tr>
<tr>
<td>xlIMEModeKatakanaHalf</td>
<td>Katakana (half-width)</td>
</tr>
<tr>
<td>xlIMEModeNoControl</td>
<td>No control</td>
</tr>
<tr>
<td>xlIMEModeOff</td>
<td>Off (English mode)</td>
</tr>
<tr>
<td>xlIMEModeOn</td>
<td>On</td>
</tr>
</tbody>
</table>
Remarks

Note that this property can be set only when Japanese language support has been installed and selected.
Example

This example sets the data input rule for cell E5.

With Range("E5").Validation
    .Add Type:=xlValidateWholeNumber, _
        AlertStyle:= xlValidAlertStop, _
            Operator:=xlBetween, Formula1:="5", Formula2:="10"
    .InputTitle = "整数値"
    .ErrorTitle = "整数値"
    .InputMessage = "5 から 10 の整数を入力してください。"
    .ErrorMessage = "入力できるのは 5 から 10 までの値です。"
    .IMEMode = xlIMEModeAlpha
End With
InCellDropdown Property

True if data validation displays a drop-down list that contains acceptable values. Read/write Boolean.
Remarks

This property is ignored if the validation type isn’t xlValidateList.

Use the Minimum argument of the Add or Modify method of the Validation object to specify the range that contains valid data.
Example

This example adds data validation to cell E5. The range A1:A10 contains the acceptable values for the cell and the cell displays a drop-down list that contains those values.

```vbnet
With Range("e5").Validation
    .Add xlValidateList, xlValidAlertStop, xlBetween, "=$A$1:$A$10"
    .InCellDropdown = True
End With
```
IncludeAlignment Property

True if the style includes the AddIndent, HorizontalAlignment, VerticalAlignment, WrapText, and Orientation properties. Read/write Boolean.
**Example**

This example sets the style attached to cell A1 on Sheet1 to include alignment format.

```vba
Worksheets("Sheet1").Range("A1").Style.IncludeAlignment = True
```
IncludeBorder Property

True if the style includes the Color, ColorIndex, LineStyle, and Weight border properties. Read/write Boolean.
Example

This example sets the style attached to cell A1 on Sheet1 to include border format.

_worksheets("Sheet1").Range("A1").Style.IncludeBorder = True_
IncludeFont Property

True if the style includes the **Background**, **Bold**, **Color**, **ColorIndex**, **FontStyle**, **Italic**, **Name**, **OutlineFont**, **Shadow**, **Size**, **Strikethrough**, **Subscript**, **Superscript**, and **Underline** font properties. Read/write **Boolean**.
Example

This example sets the style attached to cell A1 on Sheet1 to include font format.

`Worksheets("Sheet1").Range("A1").Style.IncludeFont = True`
IncludeNumber Property

True if the style includes the NumberFormat property. Read/write Boolean
Example

This example sets the style attached to cell A1 on Sheet1 to include number format.

Worksheets("Sheet1").Range("A1").Style.IncludeNumber = True
IncludePatterns Property

*True* if the style includes the *Color, ColorIndex, InvertIfNegative, Pattern, PatternColor, and PatternColorIndex* interior properties. Read/write *Boolean*.
**Example**

This example sets the style attached to cell A1 on Sheet1 to include pattern format.

`Worksheets("Sheet1").Range("A1").Style.IncludePatterns = True`
IncludeProtection Property

True if the style includes the FormulaHidden and Locked protection properties. Read/write Boolean.
Example

This example sets the style attached to cell A1 on Sheet1 to include protection format.

Worksheets("Sheet1").Range("A1").Style.IncludeProtection = True
InconsistentFormula Property

When set to **True** (default), Microsoft Excel identifies cells containing an inconsistent formula in a region. **False** disables the inconsistent formula check. Read/write **Boolean**.

*expression*.InconsistentFormula

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

Consistent formulas in the region must reside to the left and right or above and below the cell containing the inconsistent formula for the `InconsistentFormula` property to work properly.
Example

In the following example, when the user selects cell B4 (which contains an inconsistent formula), the **AutoCorrect Options** button appears.

Sub CheckFormula()

    Application.ErrorCheckingOptions.InconsistentFormula = True

    Range("A1:A3").Value = 1
    Range("B1:B3").Value = 2
    Range("C1:C3").Value = 3

    Range("A4").Formula = "=SUM(A1:A3)"  ' Consistent formula.
    Range("B4").Formula = "=SUM(B1:B2)"  ' Inconsistent formula.
    Range("C4").Formula = "=SUM(C1:C3)"  ' Consistent formula.

End Sub
IndentLevel Property

- IndentLevel property as it applies to the **Style** object.

Returns or sets the indent level for the style. Read/write **Long**.

*expression*.IndentLevel

*expression*  Required. An expression that returns a **Style** object.

- IndentLevel property as it applies to the **CellFormat** and **Range** objects.

Returns or sets the indent level for the cell or range. Can be an integer from 0 to 15. Read/write **Variant**.

*expression*.IndentLevel

*expression*  Required. An expression that returns one of the above objects.
Remarks

Using this property to set the indent level to a number less than 0 (zero) or greater than 15 causes an error.
Example

- As it applies to the CellFormat and Range objects.

This example increases the indent level to 15 in cell A10.

```vba
With Range("A10")
  .IndentLevel = 15
End With
```
Index Property

- Index property as it applies to the PivotFormula object.

For the PivotFormula object, returns or sets the index number of the object within the PivotFormulas collection. Read/write Long.

expression.Index

expression Required. An expression that returns one of the above objects.

- Index property as it applies to all other objects in the Applies To list.

Returns the index number of the object within the collection of similar objects. Read-only Long.

expression.Index

expression Required. An expression that returns one of the above objects.

For information about using the Index worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.
**Example**

This example displays the tab number of the sheet name that you type. For example, if Chart1 is the third tab in the active workbook, the example displays "3" in a message box.

```vba
sheetname = InputBox("Type a sheet name, such as Sheet12")
MsgBox "This sheet is tab number " & Sheets(sheetname).Index
```
IndicatorColorIndex Property

Returns or sets the color of the indicator for error checking options. Read/write \texttt{XlColorIndex}.

\texttt{XlColorIndex} can be one of these \texttt{XlColorIndex} constants.

- \texttt{xlColorIndexAutomatic} The default system color.
- \texttt{xlColorIndexNone} Not used with this property.

\texttt{expression.IndicatorColorIndex}

\textit{expression}  Required. An expression that returns one of the objects in the Applies To list.
**Remarks**

You can specify a particular color for the indicator by entering the corresponding index value. You can use the **Colors** property to return the current color palette.

The following illustration shows the color-index values in the default color palette.

```
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35
36 37 38 39 40 41 42
43 44 45 46 47 48 49
50 51 52 53 54 55 56
```
Example

In the following example, Microsoft Excel checks to see if the indicator color for error checking is set to the default system color and notifies the user accordingly.

Sub CheckIndexColor()
    If Application.ErrorCheckingOptions.IndicatorColorIndex = xlColorIndexAutomatic Then
        MsgBox "Your indicator color for error checking is set to the default system color."
    Else
        MsgBox "Your indicator color for error checking is not set to the default system color."
    End If
End Sub
This keyword is not implemented. It is reserved for future use.
InnerDetail Property

Returns or sets the name of the field that will be shown as detail when the ShowDetail property is True for the innermost row or column field. Read/write String.
Remarks

This property isn’t available for OLAP data sources.
Example

This example displays the name of the field that will be shown as detail when the **ShowDetail** property is **True** for the innermost row field or column field.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
MsgBox pvtTable.InnerDetail
```
InputMessage Property

Returns or sets the data validation input message. Read/write String.
Example

This example adds data validation to cell E5 and specifies both the input and error messages.

With Range("e5").Validation
    .Add Type:=xlValidateWholeNumber, _
        AlertStyle:=xlValidAlertStop, _
        Operator:=xlBetween, Formula1:="5", Formula2:="10"
    .InputTitle = "Integers"
    .ErrorTitle = "Integers"
    .InputMessage = "Enter an integer from five to ten"
    .ErrorMessage = "You must enter a number from five to ten"
End With
InputTitle Property

Returns or sets the title of the data-validation input dialog box. Read/write String.
Example

This example turns on data validation for cell E5.

With Range("e5").Validation
    .Add xlValidateWholeNumber, _
        xlValidAlertInformation, xlBetween, "5", "10"
    .InputTitle = "Integers"
    .ErrorMessage = "Enter an integer from five to ten"
End With
InsideHeight Property

Returns the inside height of the plot area, in points. Read-only Double.
Remarks

The plot area used for this measurement doesn’t include the axis labels. The **Height** property for the plot area uses the bounding rectangle that includes the axis labels.
Example

This example draws a dotted rectangle around the inside of the plot area in Chart1.

```vbnet
With Charts("chart1")
    Set pa = .PlotArea
    With .Shapes.AddShape(msoShapeRectangle, _
        pa.InsideLeft, pa.InsideTop, _
        pa.InsideWidth, pa.InsideHeight)
        .Fill.Transparency = 1
        .Line.DashStyle = msoLineDashDot
    End With
End With
```
InsideLeft Property

- Returns the distance from the chart edge to the inside left edge of the plot area, in points. Read-only Double.
Remarks

The plot area used for this measurement doesn’t include the axis labels. The \texttt{Left} property for the plot area uses the bounding rectangle that includes the axis labels.
Example

This example draws a dotted rectangle around the inside of the plot area in Chart1.

With Charts("chart1")
    Set pa = .PlotArea
    With .Shapes.AddShape(msoShapeRectangle, _
        pa.InsideLeft, pa.InsideTop, _
        pa.InsideWidth, pa.InsideHeight)
        .Fill.Transparency = 1
        .Line.DashStyle = msoLineDashDot
    End With
End With
InsideTop Property

- Returns the distance from the chart edge to the inside top edge of the plot area, in points. Read-only Double.
Remarks

The plot area used for this measurement doesn’t include the axis labels. The Top property for the plot area uses the bounding rectangle that includes the axis labels.
Example

This example draws a dotted rectangle around the inside of the plot area in Chart1.

```vba
With Charts("chart1")
    Set pa = .PlotArea
    With .Shapes.AddShape(msoShapeRectangle, _
        pa.InsideLeft, pa.InsideTop, _
        pa.InsideWidth, pa.InsideHeight)
        .Fill.Transparency = 1
        .Line.DashStyle = msoLineDashDot
    End With
End With
```
InsideWidth Property

Returns the inside width of the plot area, in points. Read-only Double.
Remarks

The plot area used for this measurement doesn’t include the axis labels. The **Width** property for the plot area uses the bounding rectangle that includes the axis labels.
Example

This example draws a dotted rectangle around the inside of the plot area in Chart1.

With Charts("chart1")
    Set pa = .PlotArea
    With .Shapes.AddShape(msoShapeRectangle, _
        pa.InsideLeft, pa.InsideTop, _
        pa.InsideWidth, pa.InsideHeight)
        .Fill.Transparency = 1
        .Line.DashStyle = msoLineDashDot
    End With
End With
Installed Property

**True** if the add-in is installed. Read/write **Boolean**.
Remarks

Setting this property to **True** installs the add-in and calls its Auto_Add functions. Setting this property to **False** removes the add-in and calls its Auto_Remove functions.
Example

This example uses a message box to display the installation status of the Solver add-in.

Set a = AddIns("Solver Add-In")
If a.**Installed** = True Then
    MsgBox "The Solver add-in is installed"
Else
    MsgBox "The Solver add-in is not installed"
End If
Interactive Property

True if Microsoft Excel is in interactive mode; this property is usually True. If you set the this property to False, Microsoft Excel will block all input from the keyboard and mouse (except input to dialog boxes that are displayed by your code). Blocking user input will prevent the user from interfering with the macro as it moves or activates Microsoft Excel objects. Read/write Boolean.
Remarks

This property is useful if you're using DDE or OLE Automation to communicate with Microsoft Excel from another application.

If you set this property to **False**, don't forget to set it back to **True**. Microsoft Excel won't automatically set this property back to **True** when your macro stops running.
Example

This example sets the **Interactive** property to **False** while it's using DDE in Windows and then sets this property back to **True** when it's finished. This prevents the user from interfering with the macro.

```vba
Application. Interactive = False
Application.DisplayAlerts = False
channelNumber = Application.DDEInitiate(_
    app:="WinWord", _
    topic:="C:\WINWORD\FORMLETR.DOC")
Application.DDEExecute channelNumber, "[FILEPRINT]"
Application.DDETerminate channelNumber
Application.DisplayAlerts = True
Application. Interactive = True
```
**Intercept Property**

Returns or sets the point where the trendline crosses the value axis. Read/write Double.

For information about using the **Intercept** worksheet function in Visual Basic, see [Using Worksheet Functions in Visual Basic](Using Worksheet Functions in Visual Basic).
Remarks

Setting this property sets the `InterceptIsAuto` property to `False`. 
Example

This example sets trendline one in Chart1 to cross the value axis at 5. The example should be run on a 2-D column chart that contains a single series with a trendline.

Charts("Chart1").SeriesCollection(1).Trendlines(1).Intercept = 5
InterceptIsAuto Property

True if the point where the trendline crosses the value axis is automatically determined by the regression. Read/write Boolean.
Remarks

Setting the **Intercept** property sets this property to **False**.
Example

This example sets Microsoft Excel to automatically determine the trendline intercept point for Chart1. The example should be run on a 2-D column chart that contains a single series with a trendline.

Charts("Chart1").SeriesCollection(1).Trendlines(1) _.InterceptIsAuto = True
**Interior Property**

- **Interior property as it applies to the CellFormat object.**

Returns an **Interior** object allowing the user to set or return the search criteria based on the cell's interior format.

`expression.Interior`

*expression* Required. An expression that returns one of the above objects.

- **Interior property as it applies to all other objects in the Applies To list.**

Returns an **Interior** object that represents the interior of the specified object.

`expression.Interior`

*expression* Required. An expression that returns one of the above objects.
Example

- As it applies to the **CellFormat** object.

This example sets the search criteria to identify cells that contain a solid yellow interior, creates a cell with this condition, finds this cell, and notifies the user.

Sub SearchCellFormat()

  ' Set the search criteria for the interior of the cell format.
  With Application.FindFormat.Interior
    .ColorIndex = 6
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
  End With

  ' Create a yellow interior for cell A5.
  Range("A5").Select
  With Selection.Interior
    .ColorIndex = 6
    .Pattern = xlSolid
    .PatternColorIndex = xlAutomatic
  End With
  Range("A1").Select
  MsgBox "Cell A5 has a yellow interior."

  ' Find the cells based on the search criteria.
  Cells.Find(What="", After:=ActiveCell, LookIn:=xlFormulas, Look
    xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, Match
    , SearchFormat:=True).Activate
  MsgBox "Microsoft Excel has found this cell matching the search"

End Sub

- As it applies to all other objects in the Applies To list.

This example sets the interior color for cell A1 on Sheet1 to cyan.

Sub SetColor()

  Worksheets("Sheet1").Range("A1").Interior.ColorIndex = 8  ' Cyan

End Sub
International Property

Returns information about the current country/region and international settings. Read-only Variant.

expression.International(Index)
Elements

*expression* Required. An expression that returns an **Application** object.

**Index** Required **Long**. The setting to be returned. Can be one of the **XlApplicationInternational** constants listed in the following tables.

### Brackets and Braces

<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlLeftBrace</td>
<td>String</td>
<td>Character used instead of the left brace ({) in array literals.</td>
</tr>
<tr>
<td>xlLeftBracket</td>
<td>String</td>
<td>Character used instead of the left bracket ([) in R1C1-style relative references.</td>
</tr>
<tr>
<td>xlLowerCaseColumnLetter</td>
<td>String</td>
<td>Lowercase column letter.</td>
</tr>
<tr>
<td>xlLowerCaseRowLetter</td>
<td>String</td>
<td>Lowercase row letter.</td>
</tr>
<tr>
<td>xlRightBrace</td>
<td>String</td>
<td>Character used instead of the right brace (}) in array literals.</td>
</tr>
<tr>
<td>xlRightBracket</td>
<td>String</td>
<td>Character used instead of the right bracket (]) in R1C1-style references.</td>
</tr>
<tr>
<td>xlUpperCaseColumnLetter</td>
<td>String</td>
<td>Uppercase column letter.</td>
</tr>
<tr>
<td>xlUpperCaseRowLetter</td>
<td>String</td>
<td>Uppercase row letter (for R1C1-style references).</td>
</tr>
</tbody>
</table>

### Country/Region Settings

<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlCountrySetting</td>
<td>Long</td>
<td>Current country/region setting in the Windows Control Panel.</td>
</tr>
<tr>
<td>xlGeneralFormatName</td>
<td>String</td>
<td>Name of the General number format.</td>
</tr>
</tbody>
</table>

### Currency
<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlCurrencyBefore</td>
<td>Boolean</td>
<td>True if the currency symbol precedes the currency values; False if it follows them.</td>
</tr>
<tr>
<td>xlCurrencyCode</td>
<td>String</td>
<td>Currency symbol.</td>
</tr>
<tr>
<td>xlCurrencyDigits</td>
<td>Long</td>
<td>Number of decimal digits to be used in currency formats.</td>
</tr>
<tr>
<td>xlCurrencyLeadingZeros</td>
<td>Boolean</td>
<td>True if leading zeros are displayed for zero currency values.</td>
</tr>
<tr>
<td>xlCurrencyMinusSign</td>
<td>Boolean</td>
<td>True if you’re using a minus sign for negative numbers; False if you’re using parentheses.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Currency format for negative currency values:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 = (symbol)x or (x)symbol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = -symbolx or -x-symbol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = symbol-x or x-symbol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 = symbolx- or xsymbol-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>where symbol is the currency symbol of the country or region. Note that the position of the currency symbol is determined by xlCurrencyBefore.</td>
</tr>
<tr>
<td>xlCurrencySpaceBefore</td>
<td>Boolean</td>
<td>True if a space is added before the currency symbol.</td>
</tr>
<tr>
<td>xlCurrencyTrailingZeros</td>
<td>Boolean</td>
<td>True if trailing zeros are displayed for zero currency values.</td>
</tr>
<tr>
<td>xlNoncurrencyDigits</td>
<td>Long</td>
<td>Number of decimal digits to be used in noncurrency formats.</td>
</tr>
</tbody>
</table>

**Date and Time**

<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xl24HourClock</td>
<td>Boolean</td>
<td>True if you’re using 24-hour time; False if you’re using 12-hour time.</td>
</tr>
<tr>
<td>xl4DigitYears</td>
<td>Boolean</td>
<td>True if you’re using four-digit years; False if you’re using two-digit years.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Order of date elements:</td>
</tr>
</tbody>
</table>
xlDateOrder | Long | 0 = month-day-year
| | | 1 = day-month-year
| | | 2 = year-month-day
xlDateSeparator | String | Date separator (/).
xlDayCode | String | Day symbol (d).
xlDayLeadingZero | Boolean | True if a leading zero is displayed in days.
xlHourCode | String | Hour symbol (h).
xlMDY | Boolean | True if the date order is month-day-year for dates displayed in the long form; False if the date order is day-month-year.
xlMinuteCode | String | Minute symbol (m).
xlMonthCode | String | Month symbol (m).
xlMonthLeadingZero | Boolean | True if a leading zero is displayed in months (when months are displayed as numbers).
xlMonthNameChars | Long | Always returns three characters for backward compatibility. Abbreviated month names are read from Microsoft Windows and can be any length.
xlSecondCode | String | Second symbol (s).
xlTimeSeparator | String | Time separator (:).
xlTimeLeadingZero | Boolean | True if a leading zero is displayed in times.
xlWeekdayNameChars | Long | Always returns three characters for backward compatibility. Abbreviated weekday names are read from Microsoft Windows and can be any length.
xlYearCode | String | Year symbol in number formats (y).

Measurement Systems

<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlMetric</td>
<td>Boolean</td>
<td>True if you’re using the metric system; False if you’re using the English measurement system.</td>
</tr>
<tr>
<td>xlNonEnglishFunctions</td>
<td>Boolean</td>
<td>True if you’re not displaying functions in English.</td>
</tr>
</tbody>
</table>
## Separators

<table>
<thead>
<tr>
<th>Index</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlAlternateArraySeparator</td>
<td>String</td>
<td>Alternate array item separator to be used if the current array separator is the same as the decimal separator.</td>
</tr>
<tr>
<td>xlColumnSeparator</td>
<td>String</td>
<td>Character used to separate columns in array literals.</td>
</tr>
<tr>
<td>xlDecimalSeparator</td>
<td>String</td>
<td>Decimal separator.</td>
</tr>
<tr>
<td>xlListSeparator</td>
<td>String</td>
<td>List separator.</td>
</tr>
<tr>
<td>xlRowSeparator</td>
<td>String</td>
<td>Character used to separate rows in array literals.</td>
</tr>
<tr>
<td>xlThousandsSeparator</td>
<td>String</td>
<td>Zero or thousands separator.</td>
</tr>
</tbody>
</table>
Remarks

Symbols, separators, and currency formats shown in the preceding table may differ from those used in your language or geographic location and may not be available to you, depending on the language support (U.S. English, for example) that you’ve selected or installed.


Example

This example displays the international decimal separator.

MsgBox "The decimal separator is " & _
    Application.International(xlDecimalSeparator)
InvertIfNegative Property

True if Microsoft Excel inverts the pattern in the item when it corresponds to a negative number. Read/write Variant for the Interior object, read/write Boolean for all other objects.
Example

This example inverts the pattern for negative values in series one in Chart1. The example should be run on a 2-D column chart.

Charts("Chart1").SeriesCollection(1).InvertIfNegative = True
**IsAddin Property**

*True* if the workbook is running as an add-in. Read/write *Boolean*. 
Remarks

When you set this property to **True**, the workbook has the following characteristics:

- You won’t be prompted to save the workbook if changes are made while the workbook is open.
- The workbook window won’t be visible.
- Any macros in the workbook won’t be visible in the **Macro** dialog box (displayed by pointing to **Macro** on the **Tools** menu and clicking **Macros**).
- Macros in the workbook can still be run from the **Macro** dialog box even though they’re not visible. In addition, macro names don’t need to be qualified with the workbook name.
- Holding down the SHIFT key when you open the workbook has no effect.
**Example**

This example runs a section of code if the workbook is an add-in.

```vba
If ThisWorkbook.IsAddin Then
    ' this code runs when the workbook is an add-in
End If
```
Show All
IsCalculated Property

True if the PivotTable field or PivotTable item is a calculated field or item. Read-only Boolean.
Remarks

For OLAP data sources, this property always returns False.
Example

This example disables the **PivotTable Field** dialog box if the specified PivotTable report contains any calculated fields.

```vba
set pt =Worksheets(1).PivotTables("Pivot1")
For Each fld in pt.PivotFields
  If fld.IsCalculated Then pt.EnableFieldDialog = False
Next
```
IsConnected Property

Returns True if the MaintainConnection property is True and the PivotTable cache is currently connected to its source. Returns False if it is not currently connected to its source. Read-only Boolean.

expression.IsConnected

expression Required. An expression that returns a PivotCache object.
Remarks

The **IsConnected** property does not check to see if the connection is connected. Even if this property returns **True**, sending commands to the provider could result in an error if the connection is no longer valid.

Requires that the cache source type is external and that it is an OLE DB data source.
Example

The following example determines if the cache is connected to its source and notifies the user. This example assumes a PivotTable exists on the active worksheet.

Sub CheckIsConnected()

    ' Handle run-time error if external source is not an OLEDB.
    On Error GoTo Not_OLEDB

    ' Check connection setting and notify the user accordingly.
    If Application.ActiveWorkbook.PivotCaches.Item(1).IsConnected = True Then
        MsgBox "The PivotCache is currently connected to its source."
    Else
        MsgBox "The PivotCache is not currently connected to its source."
    End If
    Exit Sub

Not_OLEDB:
    MsgBox "The data source is not an OLEDB data source."

End Sub
IsInPlace Property

True if the specified workbook is being edited in place. False if the workbook has been opened in Microsoft Excel for editing. Read-only Boolean.
Example

This example indicates whether the workbook was opened for editing in place or in Microsoft Excel.

```vba
Private Sub Workbook_Open()
    If ThisWorkbook.IsInPlace = True Then
        MsgBox "Editing in place"
    Else
        MsgBox "Editing in Microsoft Excel"
    End If
End Sub
```
IsMemberProperty Property

Returns **True** when the PivotField contains member properties. Read-only **Boolean**.

`expression.IsMemberProperty`

*expression*  Required. An expression that returns a **PivotField** object.
Remarks

This property will return a run-time error if an Online Analytical Processing (OLAP) data source is not used.
Example

This example determines if the PivotTable field contains member properties and notifies the user. It assumes that a PivotTable exists on the active worksheet and that it is connected to an OLAP data source.

Sub CheckForMembers()

    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields(1)

    ' Determine if member properties exist and notify user.
    If pvtField.IsMemberProperty = True Then
        MsgBox "The PivotField contains member properties."
    Else
        MsgBox "The PivotField does not contain member properties."
    End If

End Sub
IsValid Property

Returns a Boolean that indicates whether the specified calculated member has been successfully instantiated with the OLAP provider during the current session.

expression.IsValid

expression Required. An expression that returns a CalculatedMember object.
Remarks

This property returns True even if the PivotTable is not connected to its data source. Make sure that the PivotTable is connected before querying the value of the IsValid Property.
Example

This example notifies the user about whether the calculated member is valid or not. It assumes a PivotTable exists on the active worksheet.

Sub CheckValidity()
    Dim pvtTable As PivotTable
    Dim pvtCache As PivotCache
    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)
    ' Make connection for PivotTable before testing IsValid property
    pvtCache.MakeConnection
    ' Check if calculated member is valid.
    If pvtTable.CalculatedMembers.Item(1).IsValid = True Then
    MsgBox "The calculated member is valid."
    Else
    MsgBox "The calculated member is not valid."
    End If
End Sub
Italic Property

True if the font style is italic. Read/write Boolean.
Example

This example sets the font style to italic for the range A1:A5 on Sheet1.

`Worksheets("Sheet1").Range("A1:A5").Font.Italic = True`
Show All
Item Property

- Item property as it applies to the Adjustments object.

Returns or sets the adjustment value specified by the Index argument. For linear adjustments, an adjustment value of 0.0 generally corresponds to the left or top edge of the shape, and a value of 1.0 generally corresponds to the right or bottom edge of the shape. However, adjustments can pass beyond shape boundaries for some shapes. For radial adjustments, an adjustment value of 1.0 corresponds to the width of the shape. For angular adjustments, the adjustment value is specified in degrees. The Item property applies only to shapes that have adjustments. Read/write Single.

(expression.Item(Index))

expression  Required. An expression that returns an Adjustments object.

Index  Required Long. The index number of the adjustment.
Remarks

AutoShapes, connectors, and WordArt objects can have up to eight adjustments.

- **Item property as it applies to the Areas, Filters, HPageBreaks, Panes, Phonetics, RecentFiles, and VPageBreaks objects.**

Returns a single object from a collection.

\[
expression.Item(\text{Index})
\]

expression Required. An expression that returns one of the above objects.

Index Required **Long**. The index number of the object.

- **Item property as it applies to the Borders object.**

Returns a **Border** object that represents one of the borders of either a range of cells or a style.

\[
expression.Item(\text{Index})
\]

expression Required. An expression that returns a **Borders** collection.

Index Required **XlBordersIndex**.

XlBordersIndex can be one of these XlBordersIndex constants.

- xlDiagonalDown
- xlDiagonalUp
- xlEdgeBottom
- xlEdgeLeft
- xlEdgeRight
- xlEdgeTop
- xlInsideHorizontal
- xlInsideVertical

- **Item property as it applies to the Dialogs object.**
Returns a **Dialog** object that represents a single built-in dialog box.

**expression.Item(Index)**

**expression** Required. An expression that returns a **Dialogs** object.

**Index** Required **XlBuiltInDialog**.

XlBuiltInDialog can be one of these XlBuiltInDialog constants.

- **_xlDialogChartSourceData**
- **_xlDialogPhonetic**
- **xlDialogActivate**
- **xlDialogActiveCellFont**
- **xlDialogAddChartAutoformat**
- **xlDialogAddinManager**
- **xlDialogAlignment**
- **xlDialogApplyNames**
- **xlDialogApplyStyle**
- **xlDialogAppMove**
- **xlDialogAppSize**
- **xlDialogArrangeAll**
- **xlDialogAssignToObject**
- **xlDialogAssignToTool**
- **xlDialogAttachText**
- **xlDialogAttachToolbars**
- **xlDialogAutoCorrect**
- **xlDialogAxes**
- **xlDialogBorder**
- **xlDialogCalculation**
- **xlDialogCellProtection**
- **xlDialogChangeLink**
- **xlDialogChartAddData**
- **xlDialogChartLocation**
- **xlDialogChartOptionsDataLabelMultiple**
- **xlDialogChartOptionsDataLabels**
xlDialogEditSeries
xlDialogErrorbarX
xlDialogErrorbarY
xlDialogErrorChecking
xlDialogEvaluateFormula
xlDialogExternalDataProperties
xlDialogExtract
xlDialogFileDelete
xlDialogFileSharing
xlDialogFillGroup
xlDialogFillWorkgroup
xlDialogFilter
xlDialogFilterAdvanced
xlDialogFindFile
xlDialogFont
xlDialogFontProperties
xlDialogFormatAuto
xlDialogFormatChart
xlDialogFormatCharttype
xlDialogFormatFont
xlDialogFormatLegend
xlDialogFormatMain
xlDialogFormatMove
xlDialogFormatNumber
xlDialogFormatOverlay
xlDialogFormatSize
xlDialogFormatText
xlDialogFormulaFind
xlDialogFormulaGoto
xlDialogFormulaReplace
xlDialogFunctionWizard
xlDialogGallery3dArea
xlDialogGallery3dBar
xlDialogGallery3dColumn
xlDialogGallery3dLine
xlDialogGallery3dPie
xlDialogGallery3dSurface
xlDialogGalleryArea
xlDialogGalleryBar
xlDialogGalleryColumn
xlDialogGalleryCustom
xlDialogGalleryDoughnut
xlDialogGalleryLine
xlDialogGalleryPie
xlDialogGalleryRadar
xlDialogGalleryScatter
xlDialogGoalSeek
xlDialogGridlines
xlDialogImportTextFile
xlDialogInsert
xlDialogInsertHyperlink
xlDialogInsertNameLabel
xlDialogInsertObject
xlDialogInsertPicture
xlDialogInsertTitle
xlDialogItemProperties
xlDialogLabelProperties
xlDialogListboxProperties
xlDialogMacroOptions
xlDialogMailEditMailer
xlDialogMailLogon
xlDialogMailNextLetter
xlDialogMainChart
xlDialogMainChartType
xlDialogMenuEditor
xlDialogMove
xlDialogNew
xlDialogNewWebQuery
xlDialogNote
xlDialogObjectProperties
xlDialogObjectProtection
xlDialogOpen
xlDialogOpenLinks
xlDialogOpenMail
xlDialogOpenText
xlDialogOptionsCalculation
xlDialogOptionsChart
xlDialogOptionsEdit
xlDialogOptionsGeneral
xlDialogOptionsListsAdd
xlDialogOptionsME
xlDialogOptionsTransition
xlDialogOptionsView
xlDialogOutline
xlDialogOverlay
xlDialogOverlayChartType
xlDialogPageSetup
xlDialogParse
xlDialogPasteNames
xlDialogPasteSpecial
xlDialogPatterns
xlDialogPhonetic
xlDialogPivotCalculatedField
xlDialogPivotCalculatedItem
xlDialogPivotClientServerSet
xlDialogPivotFieldGroup
xlDialogPivotFieldProperties
xlDialogPivotFieldUngroup
xlDialogPivotShowPages
xlDialogPivotSolveOrder
xlDialogPivotTableOptions
xlDialogPivotTableWizard
xlDialogPlacement
xlDialogPrint
xlDialogPrinterSetup
xlDialogPrintPreview
xlDialogPromote
xlDialogProperties
xlDialogProtectDocument
xlDialogProtectSharing
xlDialogPublishAsWebPage
xlDialogPushbuttonProperties
xlDialogReplaceFont
xlDialogRoutingSlip
xlDialogRowHeight
xlDialogRun
xlDialogSaveAs
xlDialogSaveCopyAs
xlDialogSaveNewObject
xlDialogSaveWorkbook
xlDialogSaveWorkspace
xlDialogScale
xlDialogScenarioAdd
xlDialogScenarioCells
xlDialogScenarioEdit
xlDialogScenarioMerge
xlDialogScenarioSummary
xlDialogScrollbarProperties
xlDialogSearch
xlDialogSelectSpecial
xlDialogSendMail
xlDialogSeriesAxes
Remarks

Using the Item property of the Dialogs collection and the Show method, you can display approximately 200 built-in dialog boxes. Each dialog box has a constant assigned to it; these constants all begin with "xlDialog."

For a table of the available constants and their corresponding argument lists, see Built-In Dialog Box Argument Lists.

The Item property of the Dialogs collection may fail if you try to show a dialog box in an incorrect context. For example, to display the Data Labels dialog box (using the Visual Basic expression Application.Dialogs(xlDialogDataLabel).Show), the active sheet must be a chart; otherwise, the property fails.

- **Item property as it applies to the Errors object.**

  Returns a single member of the Error object.

  \[ expression.Item(Index) \]

  *expression* Required. An expression that returns an Errors object.

  *Index* Required Variant. The Index can also be one these constants:

  - xlEvaluateToError The cell evaluates to an error value.
  - xlTextDate The cell contains a text date with 2 digit years.
  - xlNumberAsText The cell contains a number stored as text.
  - xlInconsistentFormula The cell contains an inconsistent formula for a region.
  - xlOmittedCells The cell contains a formula omitting a cell for a region.
  - xlUnlockedFormulaCells The cell which is unlocked contains a formula.
  - xlEmptyCellReferences The cell contains a formula referring to empty cells.

- **Item property as it applies to the Range object.**

  Returns a Range object that represents a range at an offset to the specified range.
**expression.Item(RowIndex, ColumnIndex)**

*expression*  Required. An expression that returns a **Range** object.

**RowIndex**  Required **Variant**. The index number of the cell you want to access, in order from left to right, then down. Range.Item(1) returns the upper-left cell in the range; Range.Item(2) returns the cell immediately to the right of the upper-left cell.

**ColumnIndex**  Optional **Variant**. A number or string that indicates the column number of the cell you want to access, starting with either 1 or "A" for the first column in the range.
Remarks

Syntax 1 uses a row number and a column number or letter as index arguments. For more information about this syntax, see the Range object. The RowIndex and ColumnIndex arguments are relative offsets. In other words, specifying a RowIndex of 1 returns cells in the first row of the range, not the first row of the worksheet. For example, if the selection is cell C3, Selection.Cells(2, 2) returns cell D4 (you can use the Item property to index outside the original range).

- Item property as it applies to all other objects in the Applies To list.

Returns a single object from a collection.

expression.Item(Index)

expression  Required. An expression that returns one of the above objects.

Index  Required Variant. The name or index number of the object.
Remarks

For more information about returning a single member of a collection, see Returning an Object from a Collection.
Example

- **As it applies to the `AddIns` object.**

This example displays the status of the Analysis ToolPak add-in. Note that the string used as the index to the `AddIns` method is the `Title` property of the `AddIn` object.

```vba
If AddIns.Item("Analysis ToolPak").Installing = True Then
    MsgBox "Analysis ToolPak add-in is installed"
Else
    MsgBox "Analysis ToolPak add-in is not installed"
End If
```

- **As it applies to the `AllowEditRanges` object.**

This example allows edits to range ("A1:A4") on the active worksheet, notifies the user, then changes the password for this specified range and notifies the user of this change.

```vba
Sub UseChangePassword()
    Dim wksOne As Worksheet
    Set wksOne = Application.ActiveSheet

    ' Establish a range that can allow edits
    ' on the protected worksheet.
    wksOne.Protection.AllowEditRanges.Add _
        Title:="Classified", _
        Range:=Range("A1:A4"), _
        Password:="secret"

    MsgBox "Cells A1 to A4 can be edited on the protected worksheet."

    ' Change the password.
    wksOne.Protection.AllowEditRanges.Item(1).ChangePassword _
        Password:="moresecret"

    MsgBox "The password for these cells has been changed."
End Sub
```
As it applies to the **Areas** object.

This example clears the first area in the current selection if the selection contains more than one area.

If Selection.Areas.Count <> 1 Then
    Selection.Areas.Item(1).Clear
End If

As it applies to the **Borders** object.

This following example sets the color of the bottom border of cells A1:G1.

Worksheets("Sheet1").Range("a1:g1"). _
    Borders.Item(xlEdgeBottom).Color = RGB(255, 0, 0)

As it applies to the **CalculatedMembers** object.

The following example notifies the user if the calculated member is valid or not. This example assumes a PivotTable exists on the active worksheet that contains either a valid or invalid calculated member.

Sub CheckValidity()

    Dim pvtTable As PivotTable
    Dim pvtCache As PivotCache

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)

    ' Handle run-time error if external source is not an OLEDB data
    On Error GoTo Not_OLEDB

    ' Check connection setting and make connection if necessary.
    If pvtCache.IsConnected = False Then
        pvtCache.MakeConnection
    End If

    ' Check if calculated member is valid.
    If pvtTable.CalculatedMembers.Item(1).IsValid = True Then
        MsgBox "The calculated member is valid."
    Else
        MsgBox "The calculated member is not valid."
    End If

End Sub

Not_OLEDB:
End Sub

As it applies to the **Charts** object.

This example sets the number of units that the trendline on Chart1 extends forward and backward. The example should be run on a 2-D column chart that contains a single series with a trendline.

With Charts.Item("Chart1").SeriesCollection(1).Trendlines(1)
    .Forward = 5
    .Backward = .5
End With

As it applies to the **CubeFields** object.

This example finds the first PivotTable report whose first **cube** field name contains the string “Paris”. The **Boolean** variable `blnFoundName` is set to **True** if the name is found.

```vba
blnFoundName = False
For Each objPT in ActiveSheet.PivotTables
    Set objCubeField = _
        objPT.CubeFields.Item(1)
    If instr(1, objCubeField.Name, "Paris") <> 0 Then
        blnFoundName = True
        Exit For
    End If
Next objPT
```

As it applies to the **CustomProperties** object.

The following example demonstrates this feature. In this example, Microsoft Excel adds identifier information to the active worksheet and returns the name and value to the user.

```vba
Sub CheckCustomProperties()
    Dim wksSheet1 As Worksheet
    Set wksSheet1 = Application.ActiveSheet
    ' Add metadata to worksheet.
    wksSheet1.CustomProperties.Add _
        Name:="Market", Value:="Nasdaq"
```
'Display metadata.
With wksSheet1.CustomProperties.Item(1)
    MsgBox .Name & vbTab & .Value
End With

End Sub

- As it applies to the **Dialogs** object.

This example displays the **Open** dialog box and selects the **Read-Only** option.


- As it applies to the **Filters** object.

The following example sets a variable to the value of the **On** property of the filter for the first column in the filtered range on the Crew worksheet.

 Set w = Worksheets("Crew")
 If w.AutoFilterMode Then
     filterIsOn = w.AutoFilter.Filters.Item(1).On
 End If

- As it applies to the **HPageBreaks** object.

This example changes the location of horizontal page break one.

 Worksheets(1).HPageBreaks.Item(1).Location = .Range("e5")

- As it applies to the **Hyperlinks** object.

The following example activates hyperlink one on cell E5.

 Worksheets(1).Range("E5").Hyperlinks.Item(1).Follow

- As it applies to the **Panes** object.

This example splits the window in which worksheet one is displayed and then scrolls through the pane in the lower-left corner of the window until row five is at the top of the pane.

 Worksheets(1).Activate
ActiveWindow.Split = True
ActiveWindow.Panes.Item(3).ScrollRow = 5

- **As it applies to the **Phonetics** object.**

This example makes the first phonetic text string in the active cell visible.

ActiveCell.Phonetics.Item(1).Visible = True

- **As it applies to the **PublishObjects** object.**

This example obtains the identifier from a <DIV> tag and finds the line in a Web page (q198.htm) that you saved from a workbook. The example then creates a copy of the Web page (newq1.htm) and inserts a comment line before the <DIV> tag in the copy of the file.

```
strTargetDivID = ActiveWorkbook.PublishObjects.Item(1).DivID
Open "\server1\reports\q198.htm" For Input As #1
Open "\server1\reports\newq1.htm" For Output As #2
While Not EOF(1)
    Line Input #1, strFileLine
    If InStr(strFileLine, strTargetDivID) > 0 And _
        InStr(strFileLine, "<div") > 0 Then
        Print #2, "<!--Saved item-->
    End If
    Print #2, strFileLine
Wend
Close #2
Close #1
```

- **As it applies to the **Range** object.**

This example fills the range A1:A10 on Sheet1, based on the contents of cell A1.

Worksheets("Sheet1").Range.Item("A1:A10").FillDown

- **As it applies to the **RecentFiles** object.**

This example opens file two in the list of recently used files.

Application.RecentFiles.Item(2).Open

- **As it applies to the **Sheets** object.**
This example activates Sheet1.

Sheets.Item("sheet1").Activate

- **As it applies to the SmartTagRecognizer object.**

This example notifies the user the full name of the first smart tag recognizer.

MsgBox Application.SmartTagRecognizers.Item(1).FullName

- **As it applies to the Styles object.**

This example changes the Normal style for the active workbook by setting the style's **Bold** property.

ActiveWorkbook.Styles.Item("Normal").Font.Bold = True

- **As it applies to the VPageBreaks object.**

This example changes the location of vertical page break one.

Worksheets(1).VPageBreaks.Item(1).Location = .Range("e5")

- **As it applies to the Windows object.**

This example maximizes the active window.

Windows.Item(1).WindowState = xlMaximized

- **As it applies to the Workbooks object.**

This example sets the **wb** variable to the workbook for Myaddin.xla.

Set wb = Workbooks.Item("myaddin.xla")

- **As it applies to the Worksheets object.**

  **Item** is the default member for a collection. For example, the following two lines of code are equivalent.

ActiveWorkbook.Worksheets.Item(1)  
ActiveWorkbook.Worksheets(1)
Iteration Property

True if Microsoft Excel will use iteration to resolve circular references. Read/write Boolean.
Example

This example sets the **Iteration** property to **True** so that circular references will be resolved by iteration.

Application.**Iteration** = True
KeepChangeHistory Property

True if change tracking is enabled for the shared workbook. Read/write Boolean.
Example

This example sets the number of days shown in the change history for the active workbook if change tracking is enabled.

With ActiveWorkbook
  If .KeepChangeHistory Then
    .ChangeHistoryDuration = 7
  End If
End With
KernedPairs Property

True if character pairs in the specified WordArt are kerned. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue Character pairs in the specified WordArt are kerned.

expression.KernedPairs

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example turns on character pair kerning for shape three on `myDocument` if the shape is WordArt.

```vba
Set myDocument =Worksheets(1)
With myDocument.Shapes(3)
    If .Type = msoTextEffect Then
        .TextEffect.KernedPairs = msoTrue
    End If
End With
```
When set to **True**, this enables Microsoft Excel to combine Korean auxiliary verbs and adjectives when using the spelling checker. Read/write **Boolean**.

`expression. KoreanCombineAux`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks to see if the spell checking option to combine Korean auxiliary verbs and adjectives is on or off and notifies the user accordingly.

Sub KoreanSpellCheck()

    If Application.SpellingOptions.KoreanCombineAux = True Then
        MsgBox "The spell checking feature to combine Korean auxilia"
    Else
        MsgBox "The spell checking feature to combine Korean auxilia"
    End If

End Sub
KoreanProcessCompound Property

When set to True, this enables Microsoft Excel to process Korean compound nouns when using the spelling checker. Read/write Boolean.

expression.KoreanProcessCompound

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks to see if the spell checking option to process Korean compound nouns is on or off and notifies the user accordingly.

Sub KoreanSpellCheck()

    If Application.SpellingOptions.KoreanProcessCompound = True Then
        MsgBox "The spell checking feature to process Korean compound nouns is on."
    Else
        MsgBox "The spell checking feature to process Korean compound nouns is off."
    End If

End Sub
KoreanUseAutoChangeList Property

When set to True, this enables Microsoft Excel to use the auto-change list for Korean words when using the spelling checker. Read/write Boolean.

expression.KoreanUseAutoChangeList

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks to see if the spell checking option to auto-change Korean words is on or off and notifies the user accordingly.

Sub KoreanSpellCheck()
    If Application.SpellingOptions.KoreanUseAutoChangeList = True Then
        MsgBox "The spell checking feature to auto-change Korean words is on.
    Else
        MsgBox "The spell checking feature to auto-change Korean words is off."
    End If
End Sub
LabelRange Property

For a **PivotField** object, returns a **Range** object that represents the cell (or cells) that contain the field label. For a **PivotItem** object, returns a **Range** object that represents all the cells in the PivotTable report that contain the item. Read-only.
Example

This example selects the field button for the field named "ORDER_DATE."

Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
Set pvtField = pvtTable.PivotFields("ORDER_DATE")
Worksheets("Sheet1").Activate
pvtField.LabelRange.Select
LanguageSettings Property

- Returns the `LanguageSettings` object, which contains information about the language settings in Microsoft Excel. Read-only.

`expression.LanguageSettings`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example returns the language identifier for the language you selected when you installed Microsoft Excel.

```vbscript
Set objLangSet = Application.LanguageSettings
MsgBox objLangSet.LanguageID(msoLanguageIDInstall)
```
LargeChange Property

Returns or sets the amount that the scroll box increments or decrements for a page scroll (when the user clicks in the scroll bar body region). Read/write Long
Example

This example creates a scroll bar and sets its linked cell, minimum, maximum, large change, and small change values.

Set sb =Worksheets(1).Shapes.AddFormControl(xlScrollBar,_
Left:=10, Top:=10, Width:=10, Height:=200)
With sb.ControlFormat
  .LinkedCell = "D1"
  .Max = 100
  .Min = 0
  .LargeChange = 10
  .SmallChange = 2
End With
**LastChild Property**

Returns a **DiagramNode** object that represents the last child node of a parent node.

`expression.LastChild`

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

The following example adds a child node to the last child diagram node in a newly-created diagram.

Sub LastChildNode()
    Dim nodDiagram As DiagramNode
    Dim nodLast As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer

    Set shDiagram = ActiveSheet.Shapes.AddDiagram _
        (Type:=msoDiagramOrgChart, Left:=10, Top:=15, _
         Width:=400, Height:=475)

    ' Add three diagram child nodes under the first diagram node
    For intCount = 1 To 3
        nodDiagram.Children.AddNode
    Next intCount

    ' Assign the last child node to a variable
    Set nodLast = nodDiagram.Children.LastChild

    ' Add a node to the last child node.
    nodLast.Children.AddNode
End Sub
Layout Property

Returns or sets an **MsoOrgChartLayoutType** constant to indicate the formatting of the child nodes of an organization chart. Read/write.

MsoOrgChartLayoutType can be one of these MsoOrgChartLayoutType constants.

- **msoOrgChartLayoutAssistant** Places child nodes as assistants.
- **msoOrgChartLayoutBothHanging** Places child nodes vertically from the parent node on both the left and the right side.
- **msoOrgChartLayoutLeftHanging** Places child nodes vertically from the parent node on the left side.
- **msoOrgChartLayoutMixed** Return value for a parent node that has children formatted using more than one **MsoOrgChartLayoutType**.
- **msoOrgChartLayoutRightHanging** Places child nodes vertically from the parent node on the right side.
- **msoOrgChartLayoutStandard** Places child nodes horizontally below the parent node.

**expression(Layout**

**expression** Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, an organization chart's layout is modified to display as right-hanging instead of standard.

Sub Layout()
    Dim nodRoot As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer

    Set shDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramOrgChart, Top:=10, _
        Left:=15, Width:=400, Height:=475)


    ' Add three mode nodes.
    For intCount = 1 To 3
        nodRoot.Children.AddNode
    Next

    ' Change the layout to right-hanging.
    nodRoot.Layout = msoOrgChartLayoutRightHanging
End Sub
**LayoutBlankLine Property**

*True* if a blank row is inserted after the specified row field in a PivotTable report. The default value is *False*. Read/write *Boolean*. 
Remarks

You can set this property for any PivotTable field; however, the blank row appears only if the specified field is a row field other than the innermost (lowest-level) row field. For non-OLAP data sources, the value of this property doesn’t change when the field is rearranged or added to the PivotTable report.

You cannot enter data in the blank row in the PivotTable report.
Example

This example adds a blank line after the state field in the first PivotTable report on the active worksheet.

With ActiveSheet.PivotTables("PivotTable1")
    .PivotFields("state")
        .LayoutBlankLine = True
End With
LayoutForm Property

- Returns or sets the way the specified PivotTable items appear—in table format or in outline format. Read/write XlLayoutFormType.

XlLayoutFormType can be one of these XlLayoutFormType constants.

xlTabular Default.

xlOutline The LayoutSubtotalLocation property specifies where the subtotal appears in the PivotTable report.

expression.LayoutForm

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

You can set this property for any PivotTable field; however, the formatting appears only if the specified field is a row field other than the innermost (lowest-level) row field. For non-OLAP data sources, the value of this property doesn’t change when the field is rearranged or when it is added to or removed from the PivotTable report.
Example

This example displays the state field in the first PivotTable report on the active worksheet in outline format, and it displays the subtotals at the top of the field.

```vba
With ActiveSheet.PivotTables("PivotTable1")
    .PivotFields("state")
        .LayoutForm = xlOutline
        .LayoutSubtotalLocation = xlTop
End With
```
LayoutPageBreak Property

True if a page break is inserted after each field. The default value is False. Read/write Boolean.
Remarks

Although you can set this property for any PivotTable field, the print option appears only if the specified field is a row field other than the innermost (lowest-level) row field. For non-OLAP data sources, the value of this property doesn’t change when the field is rearranged or when it is added to or removed from the PivotTable report.
Example

This example adds a page break after the state field in the first PivotTable report on the active worksheet.

With ActiveSheet.PivotTables("PivotTable1") _
    .PivotFields("state")
    .LayoutPageBreak = True
End With
Show All
LayoutSubtotalLocation Property

Returns or sets the position of the PivotTable field subtotals in relation to (either above or below) the specified field. Read/write XlSubtototalLocationType.

XlSubtototalLocationType can be one of these XlSubtototalLocationType constants.
xlAtTop
xlAtBottom default

expression.LayoutSubtotalLocation

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

You can set this property for any PivotTable field in outline format; however, the formatting appears only if the specified field is a row field other than the innermost (lowest level) row field. For non-OLAP data sources, the value of this property doesn’t change when the field is rearranged or when it is added to or from removed from the report.

The LayoutForm property determines whether the report appears in table format or in outline format.
Example

This example displays the state field in the first PivotTable report on the active worksheet in outline format, and it displays the subtotals at the top of the field.

```vba
With ActiveSheet.PivotTables("PivotTable1")
  .PivotFields("state")
  .LayoutForm = xlOutline
  .LayoutSubtotalLocation = xlAtTop
End With
```
LeaderLines Property

Returns a `LeaderLines` object that represents the leader lines for the series. Read-only.
Example

This example adds data labels and blue leader lines to series one on the pie chart.

With Worksheets(1).ChartObjects(1).Chart.SeriesCollection(1)
    .HasDataLabels = True
    .DataLabels.Position = xlLabelPositionBestFit
    .HasLeaderLines = True
    .LeaderLines.Border.ColorIndex = 5
End With
Left Property

- **Left property as it applies to the Application object.**

The distance from the left edge of the screen to the left edge of the main Microsoft Excel window. Read/write **Double**.

```
expression.Left
```

expression Required. An expression that returns one of the above objects.

- **Left property as it applies to the Window object.**

The distance from the left edge of the client area to the left edge of the window. Read/write **Double**.

```
expression.Left
```

expression Required. An expression that returns one of the above objects.

- **Left property as it applies to the AxisTitle, ChartArea, ChartObject, ChartObjects, ChartTitle, DataLabel, DisplayUnitLabel, Legend, OLEObject, OLEObjects, and PlotArea objects.**

The distance from the left edge of the object to the left edge of column A (on a worksheet) or the left edge of the chart area (on a chart). Read/write **Double**.

```
expression.Left
```

expression Required. An expression that returns one of the above objects.
- **Left property as it applies to the Axis, LegendEntry, and LegendKey objects.**

  The distance from the left edge of the object to the left edge of the chart area. Read-only **Double**.

  
  expression.Left

  expression Required. An expression that returns one of the above objects.

- **Left property as it applies to the Shape and ShapeRange objects.**

  The distance from the left edge of the object to the left edge of column A (on a worksheet) or the left edge of the chart area (on a chart). Read/write **Single**.

  expression.Left

  expression Required. An expression that returns one of the above objects.

- **Left property as it applies to the Range object.**

  The distance from the left edge of column A to the left edge of the range. If the range is discontinuous, the first area is used. If the range is more than one column wide, the leftmost column in the range is used. Read-only **Variant**.

  expression.Left

  expression Required. An expression that returns one of the above objects.

If the window is maximized, `Application.Left` returns a negative number that varies based on the width of the window border. Setting `Application.Left` to 0 (zero) will make the window a tiny bit smaller than it would be if the application window were maximized. In other words, if `Application.Left` is 0 (zero), the left border of the main Microsoft Excel window will just barely be visible on the screen.
Example

This example aligns the left edge of the embedded chart with the left edge of column B.

With Worksheets("Sheet1")
    .ChartObjects(1).Left = .Columns("B").Left
End With
LeftFooter Property

Returns or sets the left part of the footer. Read/write String.
Remarks

Special format codes can be used in the footer text.
Example

This example prints the page number in the lower-left corner of every page.

Worksheets("Sheet1").PageSetup.LeftFooter = "$P"
LeftFooterPicture Property

Returns a Graphic object that represents the picture for the left section of the footer. Used to set attributes about the picture.

\[ expression.LeftFooterPicture \]

\[ expression \] Required. An expression that returns a PageSetup object.
Remarks

The **LeftFooterPicture** property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the left section of the footer. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.LeftFooterPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the left footer.
    ActiveSheet.PageSetup.LeftFooter = "&G"

End Sub

Note  It is required that "&G" is a part of the LeftFooter property string in order for the image to show up in the left footer.
LeftHeader Property

Returns or sets the left part of the header. Read/write String.
Remarks

Special format codes can be used in the header text.
Example

This example prints the date in the upper-left corner of every page.

`Worksheets("Sheet1").PageSetup.LeftHeader = "&D"`
LeftHeaderPicture Property

Returns a Graphic object that represents the picture for the left section of the header. Used to set attributes about the picture.

expression.LeftHeaderPicture

expression  Required. An expression that returns a PageSetup object.
Remarks

The `LeftHeaderPicture` property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the left section of the header. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.LeftHeaderPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the left header.
    ActiveSheet.PageSetup.LeftHeader = "&G"

End Sub

Note  It is required that "&G" is a part of the LeftHeader property string in order for the image to show up in the left header.
LeftMargin Property

Returns or sets the size of the left margin, in points. Read/write Double.
Remarks

Margins are set or returned in points. Use the **InchesToPoints** method or the **CentimetersToPoints** method to convert measurements from inches or centimeters.
Example

This example sets the left margin of Sheet1 to 1.5 inches.

`Worksheets("Sheet1").PageSetup.LeftMargin = _
Application.InchesToPoints(1.5)`

This example sets the left margin of Sheet1 to 2 centimeters.

`Worksheets("Sheet1").PageSetup.LeftMargin = _
Application.CentimetersToPoints(2)`

This example displays the current left-margin setting for Sheet1.

`marginInches = Worksheets("Sheet1").PageSetup.LeftMargin / _
Application.InchesToPoints(1)`
`MsgBox "The current left margin is " & marginInches & " inches"`
Legend Property

Returns a Legend object that represents the legend for the chart. Read-only.
Example

This example turns on the legend for Chart1 and then sets the legend font color to blue.

Charts("Chart1").HasLegend = True
Charts("Chart1").Legend.Font.ColorIndex = 5
LegendKey Property

Returns a LegendKey object that represents the legend key associated with the entry.
Example

This example sets the legend key for legend entry one on Chart1 to be a triangle. The example should be run on a 2-D line chart.

Charts("Chart1").Legend.LegendEntries(1).LegendKey.MarkerStyle = xlMarkerStyleTriangle
Length Property

- Length property as it applies to the **CalloutFormat** object.

For a **CalloutFormat** object, when the **AutoLength** property of the specified callout is set to **False**, the **Length** property returns the length (in points) of the first segment of the callout line (the segment attached to the text callout box). Applies only to callouts whose lines consist of more than one segment (types **msoCalloutThree** and **msoCalloutFour**). Read-only **Single**.

\[ \text{expression}.\text{Length} \]

**expression** Required. An expression that returns one of the above objects.

- Length property as it applies to the **Phonetics** object.

For a **Phonetic** object, the **Length** property returns the number of characters of phonetic text from the position you’ve specified with the **Start** property. Read-only **Long**.

\[ \text{expression}.\text{Length} \]

**expression** Required. An expression that returns one of the above objects.
Remarks

This property is read-only. Use the `CustomLength` method to set the value of this property for a `CalloutFormat` object.
Example

If the first line segment in the callout named "callout1" has a fixed length, this example specifies that the length of the first line segment in the callout named "callout2" on worksheet one will also be fixed at that length. For the example to work, both callouts must have multiple-segment lines.

```vbnet
Set myDocument = Worksheets(1)
With myDocument.Shapes
    With .Item("callout1").Callout
        If Not .AutoLength Then len1 = .Length
    End With
    If len1 Then .Item("callout2").Callout.CustomLength len1
End With
```

This example returns the length of the second phonetic text string in the active cell.

```vbnet
ActiveCell.FormulaR1C1 = "東京都渋谷区代々木"
ActiveCell.Phonetics.Add Start:=1, Length:=3, Text:="トウキョウト"
ActiveCell.Phonetics.Add Start:=4, Length:=3, Text:="シブク"
MsgBox ActiveCell.Phonetics(2).Length
```
LibraryPath Property

Returns the path to the Library folder, but without the final separator. Read-only String.
Example

This example opens the file Oscar.xla in the Library folder.

pathSep = Application.PathSeparator
f = Application.LibraryPath & pathSep & "Oscar.Xla"
Workbooks.Open filename:=f
Line Property

Returns a LineFormat object that contains line formatting properties for the specified shape. (For a line, the LineFormat object represents the line itself; for a shape with a border, the LineFormat object represents the border.) Read-only.
Example

This example adds a blue dashed line to myDocument.

Set myDocument = Worksheets(1)
    .DashStyle = msoLineDashDotDot
    .ForeColor.RGB = RGB(50, 0, 128)
End With

This example adds a cross to myDocument and then sets its border to be 8 points thick and red.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeCross, 10, 10, 50, 70).Line
    .Weight = 8
    .ForeColor.RGB = RGB(255, 0, 0)
End With
Line3DGroup Property

Returns a ChartGroup object that represents the line chart group on a 3-D chart. Read-only.
**Example**

This example sets the 3-D line group in Chart1 to use a different color for each data marker.

`Charts("Chart1").Line3DGroup.VaryByCategories = True`
LineStyle Property

Returns or sets the line style for the border. Read/write **XlLineStyle**.

XlLineStyle can be one of these XlLineStyle constants.

- **xlContinuous**
- **xlDash**
- **xlDashDot**
- **xlDashDotDot**
- **xIDot**
- **xIDouble**
- **xISlantDashDot**
- **xILineStyleNone**

```
expression.LineStyle
```

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

This example puts a border around the chart area and the plot area of Chart1.

With Charts("Chart1")
    .ChartArea.Border.LineStyle = xlDashDot
    With .PlotArea.Border
        .LineStyle = xlDashDotDot
        .Weight = xlThick
    End With
End With
**LinkedCell Property**

Returns or sets the worksheet range linked to the control's value. If you place a value in the cell, the control takes this value. Likewise, if you change the value of the control, that value is also placed in the cell. Read/write **String**.
Remarks

You cannot use this property with multiselect list boxes.
Example

This example adds a check box to worksheet one and links the check box value to cell A1.

With Worksheets(1)
    Set cb = .Shapes.AddFormControl(xlCheckBox, 10, 10, 100, 10)
    cb.ControlFormat.LinkedCell = "A1"
End With
LinkFormat Property

Returns a LinkFormat object that contains linked OLE object properties. Read-only.
Example

This example updates all linked OLE objects on worksheet one.

For Each s In Worksheets(1).Shapes
    If s.Type = msoLinkedOLEObject Then s.LinkFormat.Update
Next
ListChangesOnNewSheet Property

True if changes to the shared workbook are shown on a separate worksheet. Read/write Boolean.
Example

This example shows changes to the shared workbook on a separate worksheet.

With ActiveWorkbook
  .HighlightChangesOptions _
    When:=xlSinceMyLastSave, _
    Who:="Everyone"
  .ListChangesOnNewSheet = True
End With
ListCount Property

Returns the number of entries in a list box or combo box. Returns 0 (zero) if there are no entries in the list. Read-only Long.
Example

This example adjusts a combo box to display all entries in its list. If Shapes(1) does not represent a combo box, this example fails.

Set cf = Worksheets(1).Shapes(1).ControlFormat
cf.DropDownLines = cf.ListCount
ListFillRange Property

Returns or sets the worksheet range used to fill the specified list box. Setting this property destroys any existing list in the list box. Read/write String.
Remarks

Microsoft Excel reads the contents of every cell in the range and inserts the cell values into the list box. The list tracks changes in the range’s cells.

If the list in the list box was created with the AddItem method, this property returns an empty string (""").
Example

This example adds a list box to worksheet one and sets the fill range for the list box.

With Worksheets(1)
    Set lb = .Shapes.AddFormControl(xlListBox, 100, 10, 100, 100)
End With
ListHeaderRows Property

Returns the number of header rows for the specified range. Read-only Long.
Remarks

Before you use this property, use the `CurrentRegion` property to find the boundaries of the range.
Example

This example sets the rTbl variable to the range represented by the current region for the active cell, not including any header rows.

Set rTbl = ActiveCell.CurrentRegion
' remove the headers from the range
iHdrRows = rTbl.ListHeaderRows
If iHdrRows > 0 Then
   ' resize the range minus n rows
   Set rTbl = rTbl.Resize(rTbl.Rows.Count - iHdrRows)
   ' and then move the resized range down to
   ' get to the first non-header row
   Set rTbl = rTbl.Offset(iHdrRows)
End If
ListIndex Property

Returns or sets the index number of the currently selected item in a list box or combo box. Read/write Long.
Remarks

You cannot use this property with multiselect list boxes.
Example

This example removes the selected item from a list box. If Shapes(2) doesn’t represent a list box, this example fails.

Set lbcf = Worksheets(1).Shapes(2).ControlFormat
lbcf.RemoveItem lbcf.ListIndex
LoadPictures Property

True if images are loaded when you open a document in Microsoft Excel, usually when the images and document were not created in Microsoft Excel. False if the images are not loaded. The default value is True. Read/write Boolean.
**Example**

This example causes images to load when the document is opened in Excel.

`Application.DefaultWebOptions.LoadPictures = True`
Show All
LocalConnection Property

Returns or sets the connection string to an offline cube file. Read/write String.
Remarks

For a non-OLAP data source, the value of the LocalConnection property is an empty string, and the UseLocalConnection property is set to False.

Setting the LocalConnection property doesn’t immediately initiate the connection to the data source. You must first use the Refresh method to make the connection and retrieve the data.

The value of the LocalConnection property is used if the UseLocalConnection property is set to True. If the UseLocalConnection property is set to False, the Connection property specifies the connection string for query tables based on sources other than local cube files.

For more information about the syntax for connection strings, see the Help topic for the Add method of the PivotTables collection.
Example

This example sets the connection string of the first PivotTable cache to reference an offline cube file.

With ActiveWorkbook.PivotCaches(1)
    .LocalConnection = _
        "OLEDB;Provider=MSOLAP;Data Source=C:\Data\DataCube.cub"
    .UseLocalConnection = True
End With
Location Property

For the HPageBreak and VPageBreak objects, this property returns or sets the cell (a Range object) that defines the page-break location. Horizontal page breaks are aligned with the top edge of the location cell; vertical page breaks are aligned with the left edge of the location cell. Read/write Range.
Example

This example moves the horizontal page-break location.

`Worksheets(1).HPageBreaks(1).Location = Worksheets(1).Range("e5")`
LocationInTable Property

Returns a constant that describes the part of the PivotTable report that contains the upper-left corner of the specified range. Can be one of the following XlLocationInTable constants. Read-only Long.

XlLocationInTable can be one of these XlLocationInTable constants.

- xlRowHeader
- xlColumnHeader
- xlPageHeader
- xlDataHeader
- xlRowItem
- xlColumnItem
- xlPageItem
- xlDataItem
- xlTableBody
Example

This example displays a message box that describes the location of the active cell within the PivotTable report.

```vba
Worksheets("Sheet1").Activate
Select Case ActiveCell. LocationInTable
Case Is = xlRowHeader
    MsgBox "Active cell is part of a row header"
Case Is = xlColumnHeader
    MsgBox "Active cell is part of a column header"
Case Is = xlPageHeader
    MsgBox "Active cell is part of a page header"
Case Is = xlDataHeader
    MsgBox "Active cell is part of a data header"
Case Is = xlRowItem
    MsgBox "Active cell is part of a row item"
Case Is = xlColumnItem
    MsgBox "Active cell is part of a column item"
Case Is = xlPageItem
    MsgBox "Active cell is part of a page item"
Case Is = xlDataItem
    MsgBox "Active cell is part of a data item"
Case Is = xlTableBody
    MsgBox "Active cell is part of the table body"
End Select
```
**LocationOfComponents Property**

Returns or sets the central URL (on the intranet or Web) or path (local or network) to the location from which authorized users can download Microsoft Office Web components when viewing your saved document. The default value is the local or network installation path for Microsoft Office. Read/write **String**.
Remarks

Office Web components are automatically downloaded with the specified Web page if the `DownloadComponents` property is set to `True`, the components are not already installed, the path is valid and points to a location that contains the necessary components, and the user has a valid Microsoft Office 2000 license.
Example

This example sets the path to the location from which users can download Microsoft Office Web components.

Application.DefaultWebOptions.DownloadComponents = True
Application.DefaultWebOptions.LocationOfComponents = Application.Path & Application.PathSeparator & "foo"
LockAspectRatio Property

True if the specified shape retains its original proportions when you resize it. False if you can change the height and width of the shape independently of one another when you resize it. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

- msoCTrue
- msoFalse You can change the height and width of the shape independently of one another when you resize it.
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The specified shape retains its original proportions when you resize it.

expression.LockAspectRatio

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a cube to myDocument. The cube can be moved and resized, but not reproportioned.

Set myDocument = Worksheets(1)
myDocument.Shapes.AddShape(msoShapeCube, _,
    50, 50, 100, 200).LockAspectRatio = msoTrue
Locked Property

- Locked property as it applies to the ChartObject, ChartObjects, LinkFormat, OLEObject, OLEObjects, Scenario, Shape, and Style objects.

**True** if the object is locked, **False** if the object can be modified when the sheet is protected. Read/write **Boolean**.

`expression.Locked`

`expression`  Required. An expression that returns one of the above objects.

- Locked property as it applies to the CellFormat and Range objects.

**True** if the object is locked, **False** if the object can be modified when the sheet is protected. Returns **Null** if the specified range contains both locked and unlocked cells. Read/write **Variant**.

`expression.Locked`

`expression`  Required. An expression that returns one of the above objects.
Example

- As it applies to the **CellFormat** and **Range** objects.

This example unlocks cells A1:G37 on Sheet1 so that they can be modified when the sheet is protected.

```vba
Worksheets("Sheet1").Range("A1:G37").Locked = False
Worksheets("Sheet1").Protect
```
LockedText Property

True if the text in the specified object will be locked to prevent changes when the workbook is protected. Read/write Boolean.
Example

This example locks text in embedded chart one when the workbook is protected.

`Worksheets(1).ChartObjects(1).LockedText = True`
**MacroType Property**

Returns or sets what the name refers to. Read/write `XlXLMMacroType`.

`XlXLMMacroType` can be one of these `XlXLMMacroType` constants.  
`xlCommand`. The name refers to a user-defined macro.  
`xlFunction`. The name refers to a user-defined function.  
`xlNotXLM`. The name doesn't refer to a function or macro.

expression.**MacroType**

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example assumes that you created a custom function or command on a Microsoft Excel version 4.0 macro sheet. The example displays the function category, in the language of the macro. It assumes that the name of the custom function or command is the only name in the workbook.

With ActiveWorkbook.Names(1)
    If .MacroType <> xlNotXLM Then
        MsgBox "The category for this name is " & .Category
    Else
        MsgBox "This name does not refer to" & _
            " a custom function or command."
    End If
End With
This keyword is not implemented. It is reserved for future use.
MailEnvelope Property

Represents an e-mail header for a document.

expression.MailEnvelope

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the comments for the header of the active worksheet.

Sub HeaderComments()
    ActiveSheet.MailEnvelope.Introduction = "To Whom It May Concern:
End Sub
MailSession Property

Returns the MAPI mail session number as a hexadecimal string (if there's an active session), or returnsNullif there's no session. Read-onlyVariant.
Remarks

This property applies only to mail sessions created by Microsoft Excel (it doesn't return a mail session number for Microsoft Mail).

This property isn't used on PowerTalk mail systems.
Example

This example closes the established mail session, if there is one.

If Not IsNull(Application.MailSession) Then Application.MailLogoff
MailSystem Property

Returns the mail system that's installed on the host machine. Read-only XLMailSystem.

XLMailSystem can be one of these XLMailSystem constants.
xlMAPI
xlNoMailSystem
xlPowerTalk

expression.MailSystem

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the name of the mail system that's installed on the computer.

Select Case Application.MailSystem
  Case xlMAPI
    MsgBox "Mail system is Microsoft Mail"
  Case xlPowerTalk
    MsgBox "Mail system is PowerTalk"
  Case xlNoMailSystem
    MsgBox "No mail system installed"
End Select
MaintainConnection Property

True if the connection to the specified data source is maintained after the refresh and until the workbook is closed. The default value is True. Read/write Boolean.
Remarks

You can set the `MaintainConnection` property only if the `QueryType` property of the query table or PivotTable cache is set to `xlOLEDBQuery`.

If you anticipate frequent queries to a server, setting this property to `True` might improve performance by reducing reconnection time. Setting the property to `False` causes an open connection to be closed.
Example

This example creates a new PivotTable cache based on an OLAP provider, and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet. The example terminates the connection after the initial refresh.

With ActiveWorkbook.PivotCaches.Add(SourceType:=xlExternal)
  .Connection = "OLEDDB;Provider=MSOLAP;Location=srvdata;Initial Catalog=National"
    .MaintainConnection = False
  .CreatePivotTable TableDestination:=Range("A3"), _
      TableName:= "PivotTable1"
End With
With ActiveSheet.PivotTables("PivotTable1")
  .SmallGrid = False
  .PivotCache.RefreshPeriod = 0
With .CubeFields("[state]")
    .Orientation = xlColumnField
    .Position = 0
End With
With .CubeFields("[Measures].[Count Of au_id]"
    .Orientation = xlDataField
    .Position = 0
End With
End With
MajorGridlines Property

Returns a Gridlines object that represents the major gridlines for the specified axis. Only axes in the primary axis group can have gridlines. Read-only.
Example

This example sets the color of the major gridlines for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    If .HasMajorGridlines Then
        .MajorGridlines.Border.ColorIndex = 5    'set color to blue
    End If
End With
MajorTickMark Property

Returns or sets the type of major tick mark for the specified axis. Read/write XlTickMark.

XlTickMark can be one of these XlTickMark constants.
- xlTickMarkInside
- xlTickMarkOutside
- xlTickMarkCross
- xlTickMarkNone

expression.MajorTickMark

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the major tick marks for the value axis in Chart1 to be outside the axis.

Charts("Chart1").Axes(xlValue).MajorTickMark = xlTickMarkOutside
MajorUnit Property

Returns or sets the major units for the axis. Read/write Double.
Remarks

Setting this property sets the **MajorUnitIsAuto** property to **False**.

Use the **TickMarkSpacing** property to set tick mark spacing on the category axis.
Example

This example sets the major and minor units for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
  .MajorUnit = 100
  .MinorUnit = 20
End With
**MajorUnitIsAuto Property**

*True* if Microsoft Excel calculates the major units for the axis. Read/write Boolean.
Remarks

Setting the `MajorUnit` property sets this property to `False`. 
**Example**

This example automatically sets the major and minor units for the value axis in Chart1.

```vba
With Charts("Chart1").Axes(xlValue)
    .MajorUnitIsAuto = True
    .MinorUnitIsAuto = True
End With
```
MajorUnitScale Property

Returns or sets the major unit scale value for the category axis when the CategoryType property is set to xlTimeScale. Read/write XlTimeUnit.

XlTimeUnit can be one of these XlTimeUnit constants.
- xlMonths
- xlDays
- xlYears

expression.MajorUnitScale

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the category axis to use a time scale and sets the major and minor units.

```vba
With Charts(1).Axes(xlCategory)
    .CategoryType = xlTimeScale
    .MajorUnit = 5
    .MajorUnitScale = xlDays
    .MinorUnit = 1
    .MinorUnitScale = xlDays
End With
```
ManualUpdate Property

- **True** if the PivotTable report is recalculated only at the user's request. The default value is **False**. Read/write **Boolean**.

expression.ManualUpdate

description Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property is set to **False** immediately after your program terminates and after you execute the statement in the Immediate window of the Microsoft Visual Basic Editor.
Example

This example causes the PivotTable report to be recalculated only at the user's request.

`Worksheets(1).PivotTables("Pivot1").ManualUpdate = True`
MapPaperSize Property

True if documents formatted for another country's/region's standard paper size (for example, A4) are automatically adjusted so that they're printed correctly on your country's/region's standard paper size (for example, Letter). Read/write Boolean.

expression.MapPaperSize

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example determines if Microsoft Excel can adjust the paper size according to the country/region setting and notifies the user.

Sub UseMapPaperSize()

    ' Determine setting and notify user.
    If Application.MapPaperSize = True Then
        MsgBox "Microsoft Excel automatically " & _
            "adjusts the paper size according to the country/region"
    Else
        MsgBox "Microsoft Excel does not " & _
            "automatically adjusts the paper size according to the c"
    End If

End Sub
MarginBottom Property

Returns or sets the distance (in points) between the bottom of the text frame and the bottom of the inscribed rectangle of the shape that contains the text. Read/write **Single**.
Example

This example adds a rectangle to myDocument, adds text to the rectangle, and then sets the margins for the text frame.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    0, 0, 250, 140).TextFrame
    .AutoMargins = False
    .Characters.Text = "Here is some test text"
    .MarginBottom = 0
    .MarginLeft = 100
    .MarginRight = 0
    .MarginTop = 20
End With
MarginLeft Property

Returns or sets the distance (in points) between the left edge of the text frame and the left edge of the inscribed rectangle of the shape that contains the text. Read/write Single.
Example

This example adds a rectangle to myDocument, adds text to the rectangle, and then sets the margins for the text frame.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    0, 0, 250, 140).TextFrame
    .AutoMargins = False
    .Characters.Text = "Here is some test text"
    .MarginBottom = 0
    .MarginLeft = 100
    .MarginRight = 0
    .MarginTop = 20
End With
MarginRight Property

Returns or sets the distance (in points) between the right edge of the text frame and the right edge of the inscribed rectangle of the shape that contains the text. Read/write Single.
Example

Set myDocument =Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    0, 0, 250, 140).TextFrame
    .AutoMargins = False
    .Characters.Text = "Here is some test text"
    .MarginBottom = 0
    .MarginLeft = 100
    .MarginRight = 0
    .MarginTop = 20
End With
MarginTop Property

Returns or sets the distance (in points) between the top of the text frame and the top of the inscribed rectangle of the shape that contains the text. Read/write Single.
Example

This example adds a rectangle to myDocument, adds text to the rectangle, and then sets the margins for the text frame.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeRectangle, _
    0, 0, 250, 140).TextFrame
    .AutoMargins = False
    .Characters.Text = "Here is some test text"
    .MarginBottom = 0
    .MarginLeft = 100
    .MarginRight = 0
    .MarginTop = 20
End With
MarkerBackgroundColor Property

Returns or sets the marker background color as an RGB value. Applies only to line, scatter, and radar charts. Read/write Long.
Example

This example sets the marker background and foreground colors for the second point in series one in Chart1.

With Charts("Chart1").SeriesCollection(1).Points(2)
    .MarkerBackgroundColor = RGB(0,255,0)  ' green
    .MarkerForegroundColor = RGB(255,0,0)   ' red
End With
MarkerBackgroundColorColorIndex Property

Returns or sets the marker background color as an index into the current color palette, or as one of the following XlColorIndex constants: xlColorIndexAutomatic or xlColorIndexNone. Applies only to line, scatter, and radar charts. Read/write Long.
Remarks

The following illustration shows the color-index values in the default color palette.
Example

This example sets the marker background and foreground colors for the second point in series one in Chart1.

```vba
With Charts("Chart1").SeriesCollection(1).Points(2)
    .MarkerBackgroundColorIndex = 4  'green
    .MarkerForegroundColorIndex = 3  'red
End With
```
MarkerForegroundColor Property

Returns or sets the foreground color of the marker as an RGB value. Applies only to line, scatter, and radar charts. Read/write Long.
Example

This example sets the marker background and foreground colors for the second point in series one in Chart1.

```
With Charts("Chart1").SeriesCollection(1).Points(2)
    .MarkerBackgroundColor = RGB(0,255,0)  ' green
    .MarkerForegroundColor = RGB(255,0,0)  ' red
End With
```
MarkerForegroundColorColorIndex Property

Returns or sets the marker foreground color as an index into the current color palette, or as one of the following XlColorIndex constants: xlColorIndexAutomatic or xlColorIndexNone. Applies only to line, scatter, and radar charts. Read/write Long.
Remarks

The following illustration shows the color-index values in the default color palette.
Example

This example sets the marker background and foreground colors for the second point in series one in Chart1.

With Charts("Chart1").SeriesCollection(1).Points(2)
    .MarkerBackgroundColorIndex = 4    'green
    .MarkerForegroundColorIndex = 3    'red
End With
MarkerSize Property

Returns or sets the data-marker size, in points. Read/write Long.
Example

This example sets the data-marker size for all data markers on series one.

```vba
Worksheets(1).ChartObjects(1).Chart.SeriesCollection(1).MarkerSize = 10
```
MarkerStyle Property

Returns or sets the marker style for a point or series in a line chart, scatter chart, or radar chart. Read/write XlMarkerStyle.

XlMarkerStyle can be one of these XlMarkerStyle constants.
- xlMarkerStyleAutomatic. Automatic markers
- xlMarkerStyleCircle. Circular markers
- xlMarkerStyleDash. Long bar markers
- xlMarkerStyleDiamond. Diamond-shaped markers
- xlMarkerStyleDot. Short bar markers
- xlMarkerStyleNone. No markers
- xlMarkerStylePicture. Picture markers
- xlMarkerStylePlus. Square markers with a plus sign
- xlMarkerStyleSquare. Square markers
- xlMarkerStyleStar. Square markers with an asterisk
- xlMarkerStyleTriangle. Triangular markers
- xlMarkerStyleX. Square markers with an X

expression.MarkerStyle

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the marker style for series one in Chart1. The example should be run on a 2-D line chart.

Charts("Chart1").SeriesCollection(1).MarkerStyle = xlMarkerStyleCircle
MathCoprocessorAvailable Property

True if a math coprocessor is available. Read-only Boolean.
Example

This example displays a message box if a math coprocessor isn't available.

If Not Application.MathCoprocessorAvailable Then
    MsgBox "This macro requires a math coprocessor"
End If
Max Property

Returns or sets the maximum value of a scroll bar or spinner range. The scroll bar or spinner won’t take on values greater than this maximum value. Read/write Long.

For information about using the Max worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.
Remarks

The value of the **Max** property must be greater than the value of the **Min** property.
Example

This example creates a scroll bar and sets its linked cell, minimum, maximum, large change, and small change values.

Set sb = Worksheets(1).Shapes.AddFormControl(xlScrollBar, _
    Left:=10, Top:=10, Width:=10, Height:=200)
With sb.ControlFormat
    .LinkedCell = "D1"
    .Max = 100
    .Min = 0
    .LargeChange = 10
    .SmallChange = 2
End With
MaxChange Property

Returns or sets the maximum amount of change between each iteration as Microsoft Excel resolves circular references. Read/write Double.
Remarks

The MaxIterations property sets the maximum number of iterations that Microsoft Excel can use when resolving circular references.
Example

This example sets the maximum amount of change for each iteration to 0.1.

Application. \texttt{MaxChange} = 0.1
Maximum Property

Returns or sets the maximum number of files in the list of recently used files. Can be a value from 0 (zero) through 9. Read/write Long.
Example

This example sets the maximum number of files in the list of recently used files to 6.

Application.RecentFiles.Maximum = 6
MaximumScale Property

Returns or sets the maximum value on the axis. Read/write Double.
Remarks

Setting this property sets the **MaximumScaleIsAuto** property to **False**.
Example

This example sets the minimum and maximum values for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    .MinimumScale = 10
    .MaximumScale = 120
End With
MaximumScaleIsAuto Property

True if Microsoft Excel calculates the maximum value for the axis. Read/write Boolean.
Remarks

Setting the **MaximumScale** property sets this property to **False**.
Example

This example automatically calculates the minimum scale and the maximum scale for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    .MinimumScaleIsAuto = True
    .MaximumScaleIsAuto = True
End With
MaxIterations Property

Returns or sets the maximum number of iterations that Microsoft Excel can use to resolve a circular reference. Read/write Long.
Remarks

The MaxChange property sets the maximum amount of change between each iteration when Microsoft Excel is resolving circular references.
Example

This example sets the maximum number of iterations at 1000.

Application.\texttt{MaxIterations} = 1000
MDX Property

Returns a String indicating the MDX (Multidimensional Expression) that would be sent to the provider to populate the current PivotTable view. Read-only.

expression.MDX

expression  Required. An expression that returns a PivotTable object.
Remarks

Querying this value for a non-
Online Analytical Processing (OLAP) PivotTable,
or when there is no PivotTable view (no data items), will return a run-time error.
Example

This example returns the MDX string for the PivotTable. It assumes a PivotTable exists on the active worksheet.

Sub CheckMDX()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    MsgBox "The MDX string for the PivotTable is:" & _
    pvtTable.MDX
End Sub
MemoryFree Property

Returns the amount of memory that's still available for Microsoft Excel to use, in bytes. Read-only Long.
Example

This example displays a message box showing the number of free bytes.

```
MsgBox "Microsoft Excel has " & _
    Application.MemoryFree & " bytes free"
```
MemoryTotal Property

Returns the total amount of memory (in bytes) that's available to Microsoft Excel, including memory already in use. Read-only Long.
Remarks

MemoryTotal is equal to MemoryUsed + MemoryFree.
**Example**

This example displays a message box showing the total number of available bytes.

MsgBox "Microsoft Excel has " & Application.MemoryTotal & " total bytes available"
MemoryUsed Property

Application object: Returns the amount of memory that Microsoft Excel is currently using, in bytes. Read-only Long.

PivotCache or PivotField object: Returns the amount of memory currently being used by the object, in bytes. Read-only Long.
Remarks

For **PivotCache** objects, this property reflects the transient state of the cache at the time that it’s queried.

If the **PivotCache** object has no PivotTable report attached to it, this property returns 0 (zero).
Example

This example displays a message box showing the number of bytes that Microsoft Excel is currently using.

MsgBox "Microsoft Excel is currently using " & _
    Application.MemoryUsed & " bytes"
MergeArea Property

Returns a Range object that represents the merged range containing the specified cell. If the specified cell isn’t in a merged range, this property returns the specified cell. Read-only Variant.

expression.MergeArea

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

The **MergeArea** property only works on a single-cell range.
Example

This example sets the value of the merged range that contains cell A3.

Set ma = Range("a3").MergeArea
If ma.Address = "$A$3" Then
    MsgBox "not merged"
Else
    ma.Cells(1, 1).Value = "42"
End If
MergeCells Property

True if the range or style contains merged cells. Read/write Variant.
Remarks

When you select a range that contains merged cells, the resulting selection may be different from the intended selection. Use the *Address* property to check the address of the selected range.
Example

This example sets the value of the merged range that contains cell A3.

Set ma = Range("a3").MergeArea
If Range("a3").MergeCells Then
    ma.Cells(1, 1).Value = "42"
End If
MergeLabels Property

True if the specified PivotTable report’s outer-row item, column item, subtotal, and grand total labels use merged cells. Read/write Boolean.
Example

This example causes the first PivotTable report on worksheet one to use merged-cell outer-row item, column item, subtotal, and grand total labels.

`Worksheets(1).PivotTables(1).MergeLabels = True`
Message Property

Returns or sets the message text for the routing slip. This text is used as the body text of mail messages that are used to route the workbook. Read/write `String`.
Example

This example sends Book1.xls to three recipients, one after another.

Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", _
                       "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
End With
Workbooks("BOOK1.XLS").Route
Min Property

Returns or sets the minimum value of a scroll bar or spinner range. The scroll bar or spinner won’t take on values less than this minimum value. Read/write Long.

For information about using the Min worksheet function in Visual Basic, see Using Worksheet Functions in Visual Basic.
Remarks

The value of the Min property must be less than the value of the Max property.
Example

This example creates a scroll bar and sets its linked cell, minimum, maximum, large change, and small change values.

Set sb = Worksheets(1).Shapes.AddFormControl(xlScrollBar, _
    Left:=10, Top:=10, Width:=10, Height:=200)
With sb.ControlFormat
    .LinkedCell = "D1"
    .Max = 100
    .Min = 0
    .LargeChange = 10
    .SmallChange = 2
End With
MinimumScale Property

Returns or sets the minimum value on the axis. Read/write **Double**.
Remarks

Setting this property sets the MinimumScaleIsAuto property to False.
Example

This example sets the minimum and maximum values for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
   .MinimumScale = 10
   .MaximumScale = 120
End With
MinimumScaleIsAuto Property

True if Microsoft Excel calculates the minimum value for the axis. Read/write Boolean.
Remarks

Setting the MinimumScale property sets this property to False.
Example

This example automatically calculates the minimum scale and the maximum scale for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    .MinimumScaleIsAuto = True
    .MaximumScaleIsAuto = True
End With
MinorGridlines Property

Returns a Gridlines object that represents the minor gridlines for the specified axis. Only axes in the primary axis group can have gridlines. Read-only.
Example

This example sets the color of the minor gridlines for the value axis in Chart1.

```
With Charts("Chart1").Axes(xlValue)
    If .HasMinorGridlines Then
        .MinorGridlines.Border.ColorIndex = 5 'set color to blue
    End If
End With
```
MinorTickMark Property

Returns or sets the type of minor tick mark for the specified axis. Read/write XlTickMark.

XlTickMark can be one of these XlTickMark constants:
- xlTickMarkInside
- xlTickMarkOutside
- xlTickMarkCross
- xlTickMarkNone

expression.MinorTickMark

expression Required. An expression that returns one of the objects in the Applies To list.
**Example**

This example sets the minor tick marks for the value axis in Chart1 to be inside the axis.

Charts("Chart1").Axes(xlValue).**MinorTickMark** = xlTickMarkInside
MinorUnit Property

Returns or sets the minor units on the axis. Read/write Double.
Remarks

Setting this property sets the MinorUnitIsAuto property to False.

Use the TickMarkSpacing property to set tick mark spacing on the category axis.
Example

This example sets the major and minor units for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    .MajorUnit = 100
    .MinorUnit = 20
End With
MinorUnitIsAuto Property

True if Microsoft Excel calculates minor units for the axis. Read/write Boolean.
Remarks

Setting the **MinorUnit** property sets this property to **False**.
Example

This example automatically calculates major and minor units for the value axis in Chart1.

With Charts("Chart1").Axes(xlValue)
    .MajorUnitIsAuto = True
    .MinorUnitIsAuto = True
End With
MinorUnitScale Property

Returns or sets the minor unit scale value for the category axis when the CategoryType property is set to xlTimeScale. Read/write XlTimeUnit.

XlTimeUnit can be one of these XlTimeUnit constants.

xlMonths
xlDays
xlYears

expression.MinorUnitScale

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the category axis to use a time scale and sets the major and
minor units.

With Charts(1).Axes(xlCategory)
  .CategoryType = xlTimeScale
  .MajorUnit = 5
  .MajorUnitScale = xlDays
  .MinorUnit = 1
  .MinorUnitScale = xlDays
End With
Returns or sets the maximum quantity of unique items per PivotTable field that are retained even when they have no supporting data in the cache records. Read/write `XIPivotTableMissingItems`.

`XIPivotTableMissingItems` can be one of these `XIPivotTableMissingItems` constants.

- `xlMissingItemsDefault`: The default number of unique items per PivotField allowed.
- `xlMissingItemsMax`: The maximum number of unique items per PivotField allowed (32,500).
- `xlMissingItemsNone`: No unique items per PivotField allowed (zero).

`expression.MissingItemsLimit` is required. An expression that returns a `PivotCache` object.
Remarks

This property can be set to a value between 0 and 32500. If an integer less than zero is specified, this is equivalent to specifying `xlMissingItemsDefault`. Integers greater than 32,500 can be specified but will have the same effect as specifying `xlMissingItemsMax`.

The `MissingItemsLimit` property only works for non-OLAP PivotTables; otherwise, a run-time error can occur.
**Example**

This example determines the maximum quantity of unique items per field and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub CheckMissingItemsList()

    Dim pvtCache As PivotCache

    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)

    ' Determine the maximum number of unique items allowed per Pivot
    Select Case pvtCache.MissingItemsLimit
        Case xlMissingItemsDefault
            MsgBox "The default value of unique items per PivotField is allowed."  
        Case xlMissingItemsMax
            MsgBox "The maximum value of unique items per PivotField is allowed."  
        Case xlMissingItemsNone
            MsgBox "No unique items per PivotField are allowed."  
    End Select

End Sub
MouseAvailable Property

True if a mouse is available. Read-only Boolean.
Example

This example displays a message if a mouse isn't available.

```vba
If Application.MouseAvailable = False Then
    MsgBox "Your system does not have a mouse"
End If
```
MoveAfterReturn Property

**True** if the active cell will be moved as soon as the ENTER (RETURN) key is pressed. Read/write **Boolean**.
Remarks

Use the MoveAfterReturnDirection property to specify the direction in which the active cell is to be moved.
Example

This example sets the **MoveAfterReturn** property to **True**.

Application.MoveAfterReturn = True
**MoveAfterReturnDirection Property**

Returns or sets the direction in which the active cell is moved when the user presses ENTER. Read/write **XlDirection**.

XlDirection can be one of these XlDirection constants.

- xlDown
- xlToLeft
- xlToRight
- xlUp

**expression.MoveAfterReturnDirection**

**expression** Required. An expression that returns one of the objects in the Applies To list.
Remarks

If the `MoveAfterReturn` property is `False`, the selection doesn’t move at all, regardless of how the `MoveAfterReturnDirection` property is set.
**Example**

This example causes the active cell to move to the right when the user presses ENTER.

Application.MoveAfterReturn = True
Application.MoveAfterReturnDirection = xlToRight
MultiSelect Property

Returns or sets the selection mode of the specified list box. Can be one of the following constants: **xlNone**, **xlSimple**, or **xlExtended**. Read/write **Long**.
Remarks

Single select (xlNone) allows only one item at a time to be selected. Clicking the mouse or pressing the SPACEBAR cancels the selection and selects the clicked item.

Simple multiselect (xlSimple) toggles the selection on an item in the list when click it with the mouse or press the SPACEBAR when the focus is on the item. This mode is appropriate for pick lists, in which there are often multiple items selected.

Extended multiselect (xlExtended) usually acts like a single-selection list box, so when you click an item, you cancel all other selections. When you hold down SHIFT while clicking the mouse or pressing an arrow key, you select items sequentially from the current item. When you hold down CTRL while clicking the mouse, you add single items to the list. This mode is appropriate when multiple items are allowed but not often used.

You can use the Value or ListIndex property to return and set the selected item in a single-select list box.

You cannot link multiselect list boxes by using the LinkedCell property.
Example

This example creates a simple multiselect list box.

Set lb = Worksheets(1).Shapes.AddFormControl(xlListBox, _
    Left:=10, Top:=10, Height:=100, Width:=100)
lb.ControlFormat.MultiSelect = xlSimple
MultiUserEditing Property

True if the workbook is open as a shared list. Read-only Boolean.
Remarks

To save a workbook as a shared list, use the **SaveAs** method. To switch the workbook from shared mode to exclusive mode, use the **ExclusiveAccess** method.
Example

This example determines whether the active workbook is open in exclusive mode. If it is, the example saves the workbook as a shared list.

If Not ActiveWorkbook.MultiUserEditing Then
    ActiveWorkbook.SaveAs fileName:=ActiveWorkbook.FullName, accessMode:=xlShared
End If
Name Property

- **Name property as it applies to the Chart, ChartObject, ColorFormat, CustomProperty, Name, OLEObject, Parameter, PivotField, PivotItem, PivotTable, QueryTable, Scenario, Series, Shape, ShapeRange, Trendline, and Worksheet objects.**

Returns or sets the name of the object. Read/write **String**.

`expression.Name`

`expression` Required. An expression that returns one of the above objects.

- **Name property as it applies to the AddIn, Application, AxisTitle, CalculatedMember, ChartArea, ChartTitle, Corners, CubeField, CustomView, DataLabel, DataLabels, DisplayUnitLabel, DownBars, DropLines, ErrorBars, Factoid, FactoidAction, Floor, Gridlines, HiLoLines, Hyperlink, Legend, PlotArea, RecentFile, SeriesLines, Style, TickLabels, UpBars, Walls, and Workbook objects.**

Returns or sets the name of the object. Read-only **String**.

`expression.Name`

`expression` Required. An expression that returns one of the above objects.

- **Name property as it applies to the Font and Range objects.**

Returns or sets the name of the object. The name of a **Range** object is a **Name** object. For every other type of object, the name is a string. Read/write **Variant**.

`expression.Name`

`expression` Required. An expression that returns one of the above objects.
Remarks

The following table shows example values of the **Name** property and related properties given an **OLAP** data source with the unique name "[Europe].[France].[Paris]" and a non-OLAP data source with the item name "Paris".

<table>
<thead>
<tr>
<th>Property</th>
<th>Value (OLAP data source)</th>
<th>Value (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caption</strong></td>
<td>Paris</td>
<td>Paris</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
<tr>
<td><strong>SourceName</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>(Same as SQL property value, read-only)</td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
</tbody>
</table>

When specifying an index into the **PivotItems** collection, you can use the syntax shown in the following table.

<table>
<thead>
<tr>
<th>Syntax (OLAP data source)</th>
<th>Syntax (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression.PivotItems(&quot;[Europe].[France].[Paris]&quot;)</td>
<td>expression.PivotItems(&quot;Paris&quot;)</td>
</tr>
</tbody>
</table>

When using the **Item** property to reference a specific member of a collection, you can use the text index name as shown in the following table.

<table>
<thead>
<tr>
<th>Name (OLAP data source)</th>
<th>Name (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Europe].[France].[Paris]</td>
<td>Paris</td>
</tr>
</tbody>
</table>
Example

This example displays the name of style one in the active workbook, first in the language of the macro and then in the language of the user.

With ActiveWorkbook.Styles(1)
    MsgBox "The name of the style is " & .Name
    MsgBox "The localized name of the style is " & .NameLocal
End With
NameIsAuto Property

True if Microsoft Excel automatically determines the name of the trendline. Read/write Boolean.
Example

This example sets Microsoft Excel to automatically determine the name for trendline one in Chart1. The example should be run on a 2-D column chart that contains a single series with a trendline.

Charts("Chart1").SeriesCollection(1) _
   .Trendlines(1).NameIsAuto = True
NameLocal Property

- Returns or sets the name of the object, in the language of the user. Read/write String for Name, read-only String for Style.
Remarks

If the style is a built-in style, this property returns the name of the style in the language of the current locale.
Example

This example displays the name and localized name of style one in the active workbook.

```vba
With ActiveWorkbook.Styles(1)
    MsgBox "The name of the style is " & .Name
    MsgBox "The localized name of the style is " & .NameLocal
End With
```
Names Property

For an **Application** object, returns a **Names** collection that represents all the names in the active workbook. For a **Workbook** object, returns a **Names** collection that represents all the names in the specified workbook (including all worksheet-specific names). For a **Worksheet** object, returns a **Names** collection that represents all the worksheet-specific names (names defined with the "WorksheetName!" prefix). Read-only **Names** object.

```
expression.Names
```

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks
For information about returning a single member of a collection, see Returning an Object from a Collection.

Using this property without an object qualifier is equivalent to using ActiveWorkbook.Names.
Example
This example defines the name "myName" for cell A1 on Sheet1.

ActiveWorkbook.Names.Add Name:="myName", RefersToR1C1:_
"=Sheet1!R1C1"
Native Property

Returns a provider-specific numeric value that specifies an error. The error number corresponds to an error condition that resulted after the most recent OLE DB query. Read-only Long.
Example

This example displays the native error number and other error information returned by the most recent OLE DB query.

Set objEr = Application.OLEDBErrors(1)
MsgBox "The following error occurred:" & _
    objEr.Number & "," & objEr.Native & "," & _
    objEr.ErrorString & ":" & objEr.SqlState
NetworkTemplatesPath Property

Returns the network path where templates are stored. If the network path doesn’t exist, this property returns an empty string. Read-only String.
Example

This example displays the network path where templates are stored.

Msgbox Application.NetworkTemplatesPath
NewWorkbook Property

Returns a StartWorking object.

expression.NewWorkbook

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel sets the variable wkbOne to a `StartWorking` object.

Sub SetStartWorking()
  Dim wkbOne As StartWorking
  ' Create a reference to an instance of the StartWorking object
  Set wkbOne = Application.NewWorkbook
End Sub
Next Property

Returns a Chart, Range, or Worksheet object that represents the next sheet or cell. Read-only.
Remarks

If the object is a range, this property emulates the TAB key, although the property returns the next cell without selecting it.

On a protected sheet, this property returns the next unlocked cell. On an unprotected sheet, this property always returns the cell immediately to the right of the specified cell.
Example

This example selects the next unlocked cell on Sheet1. If Sheet1 is unprotected, this is the cell immediately to the right of the active cell.

Worksheets("Sheet1").Activate
ActiveCell.Next.Select
Nodes Property

- Nodes property as it applies to the Diagram object.

Returns a DiagramNodes object that contains a flat list of all the nodes in the specified diagram.

expression.Nodes

expression  Required. An expression that returns a Diagram object.

- Nodes property as it applies to the Shape and ShapeRange objects.

Returns a ShapeNodes collection that represents the geometric description of the specified shape. Applies to Shape or ShapeRange objects that represent freeform drawings.

expression.Nodes

expression  Required. An expression that returns one of the above objects.
Example

- As it applies to the `Shape` and `ShapeRange` objects.

This example adds a smooth node with a curved segment after node four in shape three on `myDocument`. Shape three must be a freeform drawing with at least four nodes.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    .Insert 4, msoSegmentCurve, msoEditingSmooth, 210, 100
End With
```
NormalizedHeight Property

True if all characters (both uppercase and lowercase) in the specified WordArt are the same height. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse
msoTriStateMixed
msoTriStateToggle
msoTrue All characters (both uppercase and lowercase) in the specified WordArt are the same height.

expression.NormalizedHeight

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds WordArt that contains the text "Test Effect" to myDocument and gives the new WordArt the name "texteff1." The code then makes all characters in the shape named “texteff1” the same height.

```vba
Set myDocument =Worksheets(1)
myDocument.Shapes.AddTextEffect( _
    PresetTextEffect:=msoTextEffect1, _
    Text:="Test Effect", FontName:="Courier New", _
    FontSize:=44, FontBold:=True, _
    FontItalic:=False, Left:=10, Top:=10).Name = "texteff1"
myDocument.Shapes("texteff1").TextEffect.NormalizedHeight = msoTrue
```
NullString Property

Returns or sets the string displayed in cells that contain null values when the DisplayNullString property is True. The default value is an empty string (""'). Read/write String.
Example

This example causes the PivotTable report to display "NA" in cells that contain null values.

```vba
With Worksheets(1).PivotTables("Pivot1")
    .NullString = "NA"
    .DisplayNullString = True
End With
```
Number Property

Returns a numeric value that specifies an error. The error number corresponds to a unique trap number corresponding to an error condition that resulted after the most recent OLE DB query. Read-only Long.
Example

This example displays the error number and other error information returned by the most recent OLE DB query.

Set objEr = Application.OLEDBErrors(1)
MsgBox "The following error occurred:" & _
    objEr.Number & "," & objEr.Native & "," & _
    objEr>ErrorString & ":" & objEr.SqlState
NumberAsText Property

When set to **True** (default), Microsoft Excel identifies, with an **AutoCorrect Options** button, selected cells that contain numbers written as text. **False** disables error checking for numbers written as text. Read/write **Boolean**.

*expression*.NumberAsText

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, the **AutoCorrect Options** button appears for cell A1, which contains a number stored as text.

Sub CheckNumberAsText()
    ' Simulate an error by referencing a number stored as text.
    Application.ErrorCheckingOptions.NumberAsText = True
    Range("A1").Value = "'1"
End Sub
NumberFormat Property

- NumberFormat property as it applies to the DataLabel, DataLabels, PivotField, Style, and TickLabels objects.

Returns or sets the format code for the object. Read/write String.

expression.NumberFormat

expression  Required. An expression that returns one of the above objects.

- NumberFormat property as it applies to the CellFormat and Range objects.

Returns or sets the format code for the object. Returns Null if all cells in the specified range don't have the same number format. Read/write Variant.

expression.NumberFormat

expression  Required. An expression that returns one of the above objects.
Remarks

For the PivotField object, you can set the **NumberFormat** property only for a data field.

The format code is the same string as the **Format Codes** option in the **Format Cells** dialog box. The **Format** function uses different format code strings than do the **NumberFormat** and **NumberFormatLocal** properties.
Example

These examples set the number format for cell A17, row one, and column C (respectively) on Sheet1.

Worksheets("Sheet1").Range("A17").NumberFormat = "General"
Worksheets("Sheet1").Rows(1).NumberFormat = "hh:mm:ss"
Worksheets("Sheet1").Columns("C").__
  NumberFormat = "$#,##0.00_;[Red]($#,##0.00)"
**NumberFormatLinked Property**

*True* if the number format is linked to the cells (so that the number format changes in the labels when it changes in the cells). Read/write **Boolean**.
**Example**

This example links the number format for tick-mark labels to its cells for the value axis in Chart1.

`Charts("Chart1").Axes(xlValue).TickLabels.NumberFormatLinked = True`
NumberFormatLocal Property

- NumberFormatLocal property as it applies to the Style object.

Returns or sets the format code for the object as a string in the language of the user. Read/write String.

expression.NumberFormatLocal

expression  Required. An expression that returns a Style object.

- NumberFormatLocal property as it applies to the CellFormat, DataLabel, DataLabels, Range, and TickLabels objects.

Returns or sets the format code for the object as a string in the language of the user. Read/write Variant.

eexpression .NumberFormatLocal

eexpression  Required. An expression that returns one of the above objects.
Remarks

The Format function uses different format code strings than do the NumberFormat and NumberFormatLocal properties.
Example

As it applies to the CellFormat, DataLabel, DataLabels, Range, and TickLabels objects.

This example displays the number format for cell A1 on Sheet1 in the language of the user.

MsgBox "The number format for cell A1 is " & _
           Worksheets("Sheet1").Range("A1").NumberFormatLocal


Object Property

Returns the OLE Automation object associated with this OLE object. Read-only Object.
Example

This example inserts text at the beginning of an embedded Word document object on Sheet1. Note that the three statements in the With control structure are WordBasic statements.

Set wordObj = Worksheets("Sheet1").OLEObjects(1)
wordObj.Activate
With wordObj.Object.Application.WordBasic
    .StartOfDocument
    .Insert "This is the beginning"
    .InsertPara
End With
Obscured Property

True if the shadow of the specified shape appears filled in and is obscured by the shape, even if the shape has no fill. False if the shadow has no fill and the outline of the shadow is visible through the shape if the shape has no fill. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.

msoCTrue
msoFalse The shadow has no fill and the outline of the shadow is visible through the shape if the shape has no fill.
msoTriStateMixed
msoTriStateToggle
msoTrue The shadow of the specified shape appears filled in and is obscured by the shape, even if the shape has no fill.

expression.Obscured

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the horizontal and vertical offsets for the shadow of shape three on myDocument. The shadow is offset 5 points to the right of the shape and 3 points above it. If the shape doesn't already have a shadow, this example adds one to it. The shadow will be filled in and obscured by the shape, even if the shape has no fill.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Shadow
    .Visible = True
    .OffsetX = 5
    .OffsetY = -3
    .Obscured = msoTrue
End With
```
ODBCErrors Property

Returns an ODBCErrors collection that contains all the ODBC errors generated by the most recent query table or PivotTable report operation. Read-only.

For more information about returning a single object from a collection, see Returning an Object from a Collection.
Remarks

If there’s more than one query running at the same time, the `ODBCErrors` collection contains the ODBC errors from the query that’s finished last.
Example

This example refreshes query table one and displays any ODBC errors that occur.

With Worksheets(1).QueryTables(1)
    .Refresh
    Set errs = Application.ODBCErrors
    If errs.Count > 0 Then
        Set r = .Destination.Cells(1)
        r.Value = "The following errors occurred:
        c = 0
        For Each er In errs
            c = c + 1
            r.offset(c, 0).value = er.ErrorString
            r.offset(c, 1).value = er.SqlState
        Next
        Else
        MsgBox "Query complete: all records returned."
    End If
End With
ODBCTimeout Property

Returns or sets the ODBC query time limit, in seconds. The default value is 45 seconds. Read/write Long.
Remarks

The value 0 (zero) indicates an indefinite time limit.
**Example**

This example sets the ODBC query time limit to 15 seconds.

Application.**ODBCTimeout** = 15
Offset Property

- **Offset property as it applies to the Range object.**

Returns a Range object that represents a range that’s offset from the specified range. Read-only.

*expression*.Offset(*RowOffset*, *ColumnOffset*)

*expression*  Required. An expression that returns a Range object.

*RowOffset*  Optional Variant. The number of rows (positive, negative, or 0 (zero)) by which the range is to be offset. Positive values are offset downward, and negative values are offset upward. The default value is 0.

*ColumnOffset*  Optional Variant. The number of columns (positive, negative, or 0 (zero)) by which the range is to be offset. Positive values are offset to the right, and negative values are offset to the left. The default value is 0.

- **Offset property as it applies to the TickLabels object.**

Returns or sets the distance between the levels of labels, and the distance between the first level and the axis line. The default distance is 100 percent, which represents the default spacing between the axis labels and the axis line. The value can be an integer percentage from 0 through 1000, relative to the axis label’s font size. Read/write Long.

*expression*.Offset

*expression*  Required. An expression that returns a TickLabels object.
Example

- **As it applies to the **Range** object.**

This example activates the cell three columns to the right of and three rows down from the active cell on Sheet1.

```vba
Worksheets("Sheet1").Activate
ActiveCell.Offset(rowOffset:=3, columnOffset:=3).Activate
```

This example assumes that Sheet1 contains a table that has a header row. The example selects the table, without selecting the header row. The active cell must be somewhere in the table before the example is run.

```vba
Set tbl = ActiveCell.CurrentRegion
tbl.Offset(1, 0).Resize(tbl.Rows.Count - 1, _
```

- **As it applies to the **TickLabels** object.**

This example sets the label spacing of the value axis in Chart1 to twice the current setting, if the offset is less than 500.

```vba
With Charts("Chart1").Axes(xlValue).TickLabels
    If .Offset < 500 then
        .Offset = .Offset * 2
    End If
End With
```
OffsetX Property

Returns or sets the horizontal offset of the shadow from the specified shape, in points. A positive value offsets the shadow to the right of the shape; a negative value offsets it to the left. Read/write Single.

expression.OffsetX

expression Required. An expression that returns one of the objects in the Applies To list.

Remarks

If you want to nudge a shadow horizontally or vertically from its current position without having to specify an absolute position, use the IncrementOffsetX method or the IncrementOffsetY method.
**Example**

This example sets the horizontal and vertical offsets for the shadow of shape three on `myDocument`. The shadow is offset 5 points to the right of the shape and 3 points above it. If the shape doesn't already have a shadow, this example adds one to it.

```vba
Set myDocument = Workbooks(1)
With myDocument.Shapes(3).Shadow
    .Visible = True
    .OffsetX = 5
    .OffsetY = -3
End With
```
OffsetY Property

Returns or sets the vertical offset of the shadow from the specified shape, in points. A positive value offsets the shadow to the right of the shape; a negative value offsets it to the left. Read/write Single.
Remarks

If you want to nudge a shadow horizontally or vertically from its current position without having to specify an absolute position, use the `IncrementOffsetX` method or the `IncrementOffsetY` method.
Example

This example sets the horizontal and vertical offsets for the shadow of shape three on myDocument. The shadow is offset 5 points to the right of the shape and 3 points above it. If the shape doesn't already have a shadow, this example adds one to it.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Shadow
    .Visible = True
    .OffsetX = 5
    .OffsetY = -3
End With
OLAP Property

Returns **True** if the PivotTable cache is connected to an [Online Analytical Processing (OLAP)](https://en.wikipedia.org/wiki/OLAP) server. Read-only **Boolean**.

*expression*.OLAP

Example

This example determines if the cache connection is to an OLAP server or not. The example assumes a PivotTable exists on the active worksheet.

Sub CheckPivotCache()
    ' Determine if PivotCache has OLAP connection.
    If Application.ActiveWorkbook.PivotCaches.Item(1).OLAP = True Then
        MsgBox "The PivotCache is connected to an OLAP server"
    Else
        MsgBox "The PivotCache is not connected to an OLAP server."
    End If
End Sub
OLEDBErrors Property

Returns the OLEDBErrors collection, which represents the error information returned by the most recent OLE DB query. Read-only.
Example

This example displays the error description and SqlState property value for an OLE DB error returned by the most recent OLE DB query.

Set objEr = Application.OLEDBErrors.Item(1)
MsgBox "The following error occurred:" & _
    objEr.ErrorString & " : " & objEr.SqlState
OLEFormat Property

Returns an OLEFormat object that contains OLE object properties. Read-only.
Example

This example activates an OLE object. If Shapes(1) doesn’t represent an embedded OLE object, this example fails..

Worksheets(1).Shapes(1).OLEFormat.Activate
OLEType Property

Returns the OLE object type. Can be one of the following XlOLEType constants: xlOLELink or xlOLEEmbed. Returns xlOLELink if the object is linked (it exists outside of the file), or returns xlOLEEmbed if the object is embedded (it's entirely contained within the file). Read-only Long.
Example

This example creates a list of link types for OLE objects on Sheet1. The list appears on a new worksheet created by the example.

Set newSheet = Worksheets.Add
i = 2
newSheet.Range("A1").Value = "Name"
newSheet.Range("B1").Value = "Link Type"
For Each obj In Worksheets("Sheet1").OLEObjects
    newSheet.Cells(i, 1).Value = obj.Name
    If obj.OLEType = x1OLELink Then
        newSheet.Cells(i, 2) = "Linked"
    Else
        newSheet.Cells(i, 2) = "Embedded"
    End If
    i = i + 1
Next
**OmittedCells Property**

When set to **True** (default), Microsoft Excel identifies, with an AutoCorrect Options button, the selected cells that contain formulas referring to a range that omits adjacent cells that could be included. **False** disables error checking for omitted cells. Read/write **Boolean**.

`expression.OmittedCells`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, the **AutoCorrect Options** button appears for cell A4, which contains a formula.

Sub CheckOmittedCells()

    Application.ErrorCheckingOptions.OmittedCells = True
    Range("A1").Value = 1
    Range("A2").Value = 2
    Range("A3").Value = 3
    Range("A4").Formula = "+=Sum(A1:A2)"

End Sub
On Property

True if the specified filter is on. Read-only Boolean.
Example

The following example sets a variable to the value of the **Criteria1** property of the filter for the first column in the filtered range on the Crew worksheet.

```vba
With Worksheets("Crew")
    If .AutoFilterMode Then
        With .AutoFilter.Filters(1)
            If .On Then c1 = .Criteria1
        End With
    End If
End With
```
OnAction Property

Returns or sets the name of a macro that's run when the specified object is clicked. Read/write String.
Remarks

Setting this property for a menu item overrides any custom help information set up for the menu item with the information set up for the assigned macro.
Example

This example causes Microsoft Excel to run the ShapeClick procedure whenever shape one is clicked.

Worksheets(1).Shapes(1).OnAction = "ShapeClick"
OnWindow Property

Returns or sets the name of the procedure that’s run whenever you activate a window. Read/write String.
Remarks

The procedure specified by this property isn’t run when other procedures switch
to the window or when a command to switch to a window is received through a
DDE channel. Instead, the procedure responds to the user's actions, such as
clicking a window with the mouse, clicking **Go To** on the **Edit** menu, and so on.

If a worksheet or macro sheet has an Auto_Activate or Auto_Deactivate macro
defined for it, those macros will be run after the procedure specified by the
**OnWindow** property.
Example

This example causes the WindowActivate procedure to be run whenever window one is activated.

ThisWorkbook.Windows(1).OnWindow = "WindowActivate"
OperatingSystem Property

Returns the name and version number of the current operating system — for example, "Windows (32-bit) 4.00" or "Macintosh 7.00". Read-only String.
Example

This example displays the name of the operating system.

MsgBox "Microsoft Excel is using " & Application.OperatingSystem
Operator Property

- **Operator property as it applies to the Filter object.**

Returns the operator that associates the two criteria applied by the specified filter. Read-only **XlAutoFilterOperator**.

XlAutoFilterOperator can be one of these XlAutoFilterOperator constants. 
xlAnd  
xlBottom10Percent  
xlTop10Items  
xlBottom10Items  
xlOr  
xlTop10Percent

*expression*.Operator

*expression*  Required. An expression that returns one of the above objects.

- **Operator property as it applies to the FormatCondition and Validation objects.**

Returns the operator for the conditional format or data validation. Read-only **Long**.

*expression*.Operator

*expression*  Required. An expression that returns one of the above objects.
Example

As it applies to the FormatCondition object.

This example changes the formula for conditional format one, for cells E1:E10 if the formula specifies "less than 5."

With Worksheets(1).Range("e1:e10").FormatConditions(1)
    If .Operator = xlLess And .Formula1 = "5" Then
        .Modify xlCellValue, xlBetween, "5", "15"
    End If
End With
OptimizeCache Property

True if the PivotTable cache is optimized when it’s constructed. The default value is False. Read/write Boolean.
Remarks

Cache optimization results in additional queries and degrades initial performance of the PivotTable report.

For OLE DB data sources, this property is read-only and always returns False.
**Example**

This example causes the PivotTable cache for the first PivotTable report on worksheet one to be optimized when it’s constructed.

```vbnet
Worksheets(1).PivotTables("Pivot1") _.PivotCache.OptimizeCache = True
```
Order Property

- **Order property as it applies to the PageSetup object.**

Returns or sets the order that Microsoft Excel uses to number pages when printing a large worksheet. Read/write **XlOrder**.

XlOrder can be one of these XlOrder constants.

- xlDownThenOver
- xlOverThenDown

`expression.Order`

*expression* Required. An expression that returns one of the above objects.

- **Order property as it applies to the Trendline object.**

Returns or sets the trendline order (an integer greater than 1) when the trendline type is **xlPolynomial**. Read/write **Long**.

`expression.Order`

*expression* Required. An expression that returns one of the above objects.
Example

This example breaks Sheet1 into pages when the worksheet is printed. Numbering and printing proceed from the first page to the pages to the right, and then move down and continue printing across the sheet.

Worksheets("Sheet1").PageSetup.Order = xlOverThenDown
OrganizationName Property

Returns the registered organization name. Read-only String.
Example

This example displays the registered organization name.

MsgBox "The registered organization is " & _
    Application.OrganizationName
OrganizeInFolder Property

**True** if all supporting files, such as background textures and graphics, are organized in a separate folder when you save the specified document as a Web page. **False** if supporting files are saved in the same folder as the Web page. The default value is **True**. Read/write **Boolean**.
Remarks

The new folder is created in the folder where you have saved the Web page, and is named after the document. If long file names are used, a suffix is added to the folder name. The FolderSuffix property returns the folder suffix for the language support you have selected or installed, or the default folder suffix.

If you save a document that was previously saved with the OrganizeInFolder property set to a different value, Microsoft Excel automatically moves the supporting files into or out of the folder, as appropriate.

If you don't use long file names (that is, if the UseLongFileNames property is set to False), Microsoft Excel automatically saves any supporting files in a separate folder. The files cannot be saved in the same folder as the Web page.
This example specifies that all supporting files are saved in the same folder when the document is saved as a Web page.

Application.DefaultWebOptions.OrganizeInFolder = False
Orientation Property

- **Orientation property as it applies to the TextFrame object.**

  The text frame orientation. Can be an integer value from –90 to 90 degrees or one of the MsoTextOrientation constants. Read/write **MsoTextOrientation**.

  MsoTextOrientation can be one of these MsoTextOrientation constants.
  - `msoTextOrientationDownward`
  - `msoTextOrientationHorizontal`
  - `msoTextOrientationHorizontalRotatedFarEast`
  - `msoTextOrientationMixed`
  - `msoTextOrientationUpward`
  - `msoTextOrientationVertical`
  - `msoTextOrientationVerticalFarEast`

  `expression.Orientation`

  `expression` Required. An expression that returns a **TextFrame** object.

- **Orientation property as it applies to the Style object.**

  The text orientation. Can be an integer value from –90 to 90 degrees or one of the XlOrientation constants. Read/write **XlOrientation**.

  XlOrientation can be one of these XlOrientation constants.
  - `xlDownward`
  - `xlUpward`
  - `xlHorizontal`
  - `xlVertical`

  `expression.Orientation`
expression Required. An expression that returns a Style object.

- Orientation property as it applies to the PageSetup object.

  Portrait or landscape printing mode. Read/write XlPageOrientation.

  XlPageOrientation can be one of these XlPageOrientation constants.
  - xlPortrait
  - xlLandscape

expression.Orientation

expression Required. An expression that returns a PageSetup object.

- Orientation property as it applies to the CubeField and PivotField objects.

  The location of the field in the specified PivotTable report. Read/write XLPivotFieldOrientation.

  XLPivotFieldOrientation can be one of these XLPivotFieldOrientation constants.
  - xlColumnField
  - xlDataField
  - xlHidden
  - xlPageField
  - xlRowField

expression.Orientation

expression Required. An expression that returns one of the above objects.

- Orientation property as it applies to the TickLabels object.

  The text orientation. Can be an integer value from – 90 to 90 degrees or one of the XlTickLabelOrientation constants. Read/write XlTickLabelOrientation.

  XlTickLabelOrientation can be one of these XlTickLabelOrientation constants.
  - xlTickLabelOrientationAutomatic
  - xlTickLabelOrientationHorizontal
xlTickLabelOrientationVertical
xlTickLabelOrientationDownward
xlTickLabelOrientationUpward

expression.Orientation

type expression

Required. An expression that returns a \texttt{TickLabels} object.

- \texttt{Orientation} property as it applies to the \texttt{AxisTitle}, \texttt{CellFormat}, \texttt{ChartTitle}, \texttt{DataLabel}, \texttt{DataLabels}, \texttt{DisplayUnitLabel}, and \texttt{Range} objects.

The text orientation. Can be an integer value from – 90 to 90 degrees. Read/write \texttt{Variant}.

expression.Orientation

\textit{expression} Required. An expression that returns one of the above objects.
Remarks

For OLAP data sources, setting this property for one field in a hierarchy sets the orientation for the other fields in the same hierarchy. Dimension fields can only be oriented in the row, column, and page field areas of the PivotTable report. Measure fields can only be oriented in the data area. Setting a hierarchy or data field to xlHidden removes the hierarchy or field from the PivotTable report.
Example

- As it applies to the **PivotField** object.

This example displays the orientation for the ORDER_DATE field.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
Set pvtField = pvtTable.PivotFields("ORDER_DATE")
Select Case pvtField.Orientation
    Case xlHidden
        MsgBox "Hidden field"
    Case xlRowField
        MsgBox "Row field"
    Case xlColumnField
        MsgBox "Column field"
    Case xlPageField
        MsgBox "Page field"
    Case xlDataField
        MsgBox "Data field"
End Select
```

- As it applies to the **PageSetup** object.

This example sets Sheet1 to be printed in landscape orientation.

```vba
Worksheets("Sheet1").PageSetup.Orientation = xlLandscape
```
Outline Property

Returns an Outline object that represents the outline for the specified worksheet. Read-only.
Example

This example sets the outline on Sheet1 to use automatic styles.

`Worksheets("Sheet1").Outline.AutomaticStyles = True`
OutlineFont Property

True if the font is an outline font. Read/write Boolean.
Remarks

This property has no effect in Windows, but its value is retained (it can be set and returned).
Example

This example sets the font for cell A1 on Sheet1 to an outline font.

`Worksheets("Sheet1").Range("A1").Font.OutlineFont = True`
OutlineLevel Property

Returns or sets the current outline level of the specified row or column. Read/write Variant.
Remarks

Level one is the outermost summary level.
Example

This example sets the outline level for row two on Sheet1.

`Worksheets("Sheet1").Rows(2).OutlineLevel = 1`
Overlap Property

Specifies how bars and columns are positioned. Can be a value between –100 and 100. Applies only to 2-D bar and 2-D column charts. Read/write Long.
Remarks

If this property is set to $-100$, bars are positioned so that there's one bar width between them. If the overlap is 0 (zero), there's no space between bars (one bar starts immediately after the preceding bar). If the overlap is 100, bars are positioned on top of each other.
Example

This example sets the overlap for chart group one to $-50$. The example should be run on a 2-D column chart that has two or more series.

 Charts("Chart1").ChartGroups(1).Overlap = -50
This keyword is not implemented. It is reserved for future use.
PageBreak Property

Returns or sets the location of a page break. Can be one of the following XlPageBreak constants: xlPageBreakAutomatic, xlPageBreakManual, or xlPageBreakNone. Read/write Long.
Remarks

This property can return the location of either automatic or manual page breaks, but it can only set the location of manual breaks (it can only be set to \texttt{xlPageBreakManual} or \texttt{xlPageBreakNone}).

To remove all manual page breaks on a worksheet, set \texttt{Cells.PageBreak} to \texttt{xlPageBreakNone}.
Example

This example sets a manual page break above row 25 on Sheet1.


This example sets a manual page break to the left of column J on Sheet1.


This example deletes the two page breaks that were set in the preceding examples.

Worksheets("Sheet1").Rows(25).PageBreak = xlPageBreakNone
Worksheets("Sheet1").Columns("J").PageBreak = xlNone
Returns or sets the order in which page fields are added to the PivotTable report’s layout. Can be one of the following XlOrder constants: xlDownThenOver or xlOverThenDown. The default constant is xlDownThenOver. Read/write Long.
Example

This example causes the PivotTable report to draw three page fields in a row before starting a new row.

With Worksheets(1).PivotTables("Pivot1")
    .PageFieldOrder = xlOverThenDown
    .PageFieldWrapCount = 3
End With
PageFields Property

Returns an object that represents either a single PivotTable field (a PivotField object) or a collection of all the fields (a PivotFields object) that are currently showing as page fields. Read-only.

expression.PageFields(Index)

expression  Required. An expression that returns a PivotTable object.

Index  Optional Variant. The name or number of the field to be returned (can be an array to specify more than one field).
Remarks

A hierarchy can contain only one page field.

For a PivotTable report based on a PivotTable cache, the collection of PivotTable fields that’s returned reflects what’s currently in the cache.
Example

This example adds the page field names to a list on a new worksheet.

Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.PageFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
PageFieldStyle Property

Returns or sets the style used in the bound page field area. The default value is a null string (no style is applied by default). Read/write String.
Remarks

This style is used as the default style for the background area, and it’s applied before any user formatting. Cells vacated when a field is pivoted from the page field area to another location retain this style.
Example

This example sets the page field area of the first PivotTable report on worksheet one to the PurpleAndGold style.

`Worksheets(1).PivotTables("Pivot1") .PageFieldStyle = "PurpleAndGold"`
PageFieldWrapCount Property

Returns or sets the number of page fields in each column or row in the PivotTable report. Read/write Long.
Example

This example causes the PivotTable report to draw three page fields in a row before starting a new row.

```vba
With Worksheets(1).PivotTables("Pivot1")
    .PageFieldOrder = xlOverThenDown
    .PageFieldWrapCount = 3
End With
```
PageRange Property

- Returns a Range object that represents the range that contains the page area in the PivotTable report. Read-only.
Example

This example selects the page headers in the PivotTable report.

Worksheets("Sheet1").Activate
Range("A3").Select
ActiveCell.PivotTable.PageRange.Select
PageRangeCells Property

Returns a **Range** object that represents only the cells in the specified PivotTable report that contain the page fields and item drop-down lists.
Example

This example selects only the cells in the PivotTable report that contain page fields and item drop-down lists.

`Worksheets(1).PivotTables(1).PageRangeCells.Select`
PageSetup Property

Returns a PageSetup object that contains all the page setup settings for the specified object. Read-only.
Example

This example sets the center header text for Chart1.

Charts("Chart1").PageSetup.CenterHeader = "December Sales"
Panes Property

Returns a **Panes** collection that represents all the panes in the specified window. Read-only.

For information about returning a single member of a collection, see [Returning an Object from a Collection](Returning an Object from a Collection).
Remarks

This property is available for a window only if the window’s Split property can be set to True.
Example

This example displays the number of panes in the active window in Book1.xls.

```
Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
MsgBox "There are " & ActiveWindow.Panes.Count & " panes in the active window"
```

This example activates the pane in the upper-left corner of the active window in Book1.xls.

```
Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.Panes(1).Activate
```
**PaperSize Property**

Returns or sets the size of the paper. Read/write `XlPaperSize`.

XlPaperSize can be one of these XlPaperSize constants.

- `xlPaper11x17`. 11 in. x 17 in.
- `xlPaperA4`. A4 (210 mm x 297 mm)
- `xlPaperA5`. A5 (148 mm x 210 mm)
- `xlPaperB5`. A5 (148 mm x 210 mm)
- `xlPaperDsheet`. D size sheet
- `xlPaperEnvelope11`. Envelope #11 (4-1/2 in. x 10-3/8 in.)
- `xlPaperEnvelope14`. Envelope #14 (5 in. x 11-1/2 in.)
- `xlPaperEnvelopeB4`. Envelope B4 (250 mm x 353 mm)
- `xlPaperEnvelopeB6`. Envelope B6 (176 mm x 125 mm)
- `xlPaperEnvelopeC4`. Envelope C4 (229 mm x 324 mm)
- `xlPaperEnvelopeC6`. Envelope C6 (114 mm x 162 mm)
- `xlPaperEnvelopeDL`. Envelope DL (110 mm x 220 mm)
- `xlPaperEnvelopeMonarch`. Envelope Monarch (3-7/8 in. x 7-1/2 in.)
- `xlPaperEsheet`. E size sheet
- `xlPaperFanfoldLegalGerman`. German Legal Fanfold (8-1/2 in. x 13 in.)
- `xlPaperLedger`. Ledger (17 in. x 11 in.)
- `xlPaperLetter`. Letter (8-1/2 in. x 11 in.)
- `xlPaperNote`. Note (8-1/2 in. x 11 in.)
- `xlPaperStatement`. Statement (5-1/2 in. x 8-1/2 in.)
- `xlPaperUser`. User-defined
- `xlPaper10x14`. 10 in. x 14 in.
- `xlPaperA3`. A3 (297 mm x 420 mm)
- `xlPaperA4Small`. A4 Small (210 mm x 297 mm)
- `xlPaperB4`. B4 (250 mm x 354 mm)
**xlPaperCsheet.** C size sheet
**xlPaperEnvelope10.** Envelope #10 (4-1/8 in. x 9-1/2 in.)
**xlPaperEnvelope12.** Envelope #12 (4-1/2 in. x 11 in.)
**xlPaperEnvelope9.** Envelope #9 (3-7/8 in. x 8-7/8 in.)
**xlPaperEnvelopeB5.** Envelope B5 (176 mm x 250 mm)
**xlPaperEnvelopeC3.** Envelope C3 (324 mm x 458 mm)
**xlPaperEnvelopeC5.** Envelope C5 (162 mm x 229 mm)
**xlPaperEnvelopeC65.** Envelope C65 (114 mm x 229 mm)
**xlPaperEnvelopeItaly.** Envelope (110 mm x 230 mm)
**xlPaperEnvelopePersonal.** Envelope (3-5/8 in. x 6-1/2 in.)
**xlPaperExecutive.** Executive (7-1/2 in. x 10-1/2 in.)
**xlPaperFanfoldStdGerman.** German Legal Fanfold (8-1/2 in. x 13 in.)
**xlPaperFolio.** Folio (8-1/2 in. x 13 in.)
**xlPaperLegal.** Legal (8-1/2 in. x 14 in.)
**xlPaperLetterSmall.** Letter Small (8-1/2 in. x 11 in.)
**xlPaperQuarto.** Quarto (215 mm x 275 mm)
**xlPaperTabloid.** Tabloid (11 in. x 17 in.)

**Note**  Some printers may not support all of these paper sizes.

*expression.* **PaperSize**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the paper size to legal for Sheet1.

`Worksheets("Sheet1").PageSetup.PaperSize = xlPaperLegal`
Parameters Property

Returns a Parameters collection that represents the query table parameters. Read-only.

For more information about returning a single object from a collection, see Returning an Object from a Collection.
Example

This example returns the **Parameters** collection from an existing parameter query. If the first parameter uses the character data type, the user is instructed to enter characters only in the prompt dialog box.

```vba
With Sheets("sheet1").QueryTables(1).Parameters(1)
  If .DataType = xlParamTypeVarChar Then
    .SetParam xlPrompt, "Enter a character only"
  End If
End With
```
Parent Property

- Returns the parent object for the specified object.

*expression*.Parent

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the name of the chart that contains myAxis.

Set myAxis = Charts(1).Axes(xlValue)
MsgBox myAxis.Parent.Name
ParentField Property

Returns a PivotField object that represents the PivotTable field that’s the group parent of the specified object. The field must be grouped and must have a parent field. Read-only.
Remarks

This property isn’t available for OLAP data sources.
Example

This example displays the name of the field that’s the group parent of the field that contains the active cell.

`Worksheets("Sheet1").Activate
MsgBox "The active field is a child of the field " & _
    ActiveCell.PivotField.**ParentField**.Name`
ParentGroup Property

Returns a Shape object that represents the common parent shape of a child shape or a range of child shapes.

expression.ParentGroup

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel adds two shapes to the active worksheet and then removes both shapes by deleting the parent shape of the group.

Sub ParentGroup()

    Dim pgShape As Shape

    With ActiveSheet.Shapes
        .AddShape Type:=1, Left:=10, Top:=10, _
        Width:=100, Height:=100
        .AddShape Type:=2, Left:=110, Top:=120, _
        Width:=100, Height:=100
        .Range(Array(1, 2)).Group
    End With

    ' Using the child shape in the group get the Parent shape.
    Set pgShape = ActiveSheet.Shapes(1).GroupItems(1).ParentGroup

    MsgBox "The two shapes will now be deleted."

    ' Delete the parent shape.
    pgShape.Delete

End Sub
ParentItem Property

Returns a PivotItem object that represents the parent PivotTable item in the parent PivotField object (the field must be grouped so that it has a parent). Read-only.
Remarks

This property isn’t available for OLAP data sources.
**Example**

This example displays the name of the parent item for the item that contains the active cell.

```vba
Worksheets("Sheet1").Activate
MsgBox "This item is a subitem of " & _
    ActiveCell.PivotItem.ParentItem.Name
```
ParentItems Property

Returns an object that represents either a single PivotTable item (a PivotItem object) or a collection of all the items (a PivotItems object) that are group parents in the specified field. The specified field must be a group parent of another field. Read-only.

\[ expression.ParentItems(\text{Index}) \]

- \textit{expression} Required. An expression that returns a PivotField object.
- \textit{Index} Optional Variant. The number or name of the item to be returned (can be an array to specify more than one item).
Remarks

This property isn’t available for OLAP data sources.
**Example**

This example creates a list containing the names of all the items that are group parents in the field named "product".

```
Set nwSheet =Worksheets.Add
nwSheet.Activate
Set pvtTable =Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtItem In pvtTable.PivotFields("product").ParentItems
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtItem.Name
Next pvtItem
```
ParentShowDetail Property

True if the specified item is showing because one of its parents is showing detail. False if the specified item isn’t showing because one of its parents is hiding detail. This property is available only if the item is grouped. Read-only Boolean.
Remarks

This property isn’t available for OLAP data sources.
Example

This example displays a message if the item that contains the active cell is visible because its parent item is showing detail.

Worksheets("Sheet1").Activate
Set pvtItem = ActiveCell.PivotItem
If pvtItem.ParentShowDetail = True Then
    MsgBox "Parent item is showing detail"
End If
Password Property

Returns or sets the password that must be supplied to open the specified workbook. Read/write **String**.

*expression*.Password

*expression* Required. An expression that returns one of the objects in the Applies To list.
**Example**

In this example, Microsoft Excel opens a workbook named Password.xls, sets a password for it, and then closes the workbook. This example assumes a file named "Password.xls" exists on the C:\ drive.

```vba
Sub UsePassword()
    Dim wkbOne As Workbook
    Set wkbOne = Application.Workbooks.Open("C:\Password.xls")
    wkbOne.Password = "secret"
    wkbOne.Close
End Sub
```

**Note** The **Password** property is readable and returns "******".
PasswordEncryptionAlgorithm Property

Returns a String indicating the algorithm Microsoft Excel uses to encrypt passwords for the specified workbook. Read-only.

expression.PasswordEncryptionAlgorithm

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the `SetPasswordEncryptionOptions` method to specify whether Excel encrypts file properties for password-protected workbooks.
Example

This example sets the password encryption options for the active workbook.

Sub SetPasswordOptions()
    ActiveWorkbook.SetPasswordEncryptionOptions _
        PasswordEncryptionProvider:="Microsoft RSA SChannel Cryptogr
    
    PasswordEncryptionAlgorithm:="RC4", _
    
    PasswordEncryptionKeyLength:=56, _
    
    PasswordEncryptionFileProperties:=True
End Sub
PasswordEncryptionFileProperties Property

True if Microsoft Excel encrypts file properties for the specified password-protected workbook. Read-only Boolean.

expression.PasswordEncryptionFileProperties

expression    Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the `SetPasswordEncryptionOptions` method to specify whether Excel encrypts file properties for the specified password-protected workbook.
Example

This example sets the password encryption options if the file properties are not encrypted for password-protected workbooks.

Sub SetPasswordOptions()

    With ActiveWorkbook
        If .PasswordEncryptionFileProperties = False Then
            .SetPasswordEncryptionOptions _
                PasswordEncryptionProvider:="Microsoft RSA SChannel",
                PasswordEncryptionAlgorithm:="RC4",
                PasswordEncryptionKeyLength:=56,
                PasswordEncryptionFileProperties:=True
        End If
    End With

End Sub
PasswordEncryptionKeyLength Property

Returns a **Long** indicating the key length of the algorithm Microsoft Excel uses when encrypting passwords for the specified workbook. Read-only.

```
expression.PasswordEncryptionKeyLength
```

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the **SetPasswordEncryptionOptions** method to specify whether Excel encrypts file properties for the specified password-protected workbook.
Example

This example sets the password encryption options for the specified workbook, if the password encryption key length is less than 56.

Sub SetPasswordOptions()

    With ActiveWorkbook
        If .PasswordEncryptionKeyLength < 56 Then
            .SetPasswordEncryptionOptions _
                PasswordEncryptionProvider:="Microsoft RSA SChannel",
                PasswordEncryptionAlgorithm:="RC4",
                PasswordEncryptionKeyLength:=56,
                PasswordEncryptionFileProperties:=True
        End If
    End With

End Sub
PasswordEncryptionProvider Property

Returns a String specifying the name of the algorithm encryption provider that Microsoft Excel uses when encrypting passwords for the specified workbook. Read-only.

expression.PasswordEncryptionProvider

expression Required. An expression that returns one of the objects in the Applies To list.
**Example**

This example sets the password encryption options for the specified workbook, if the file properties are not encrypted for password-protected workbooks.

Sub SetPasswordOptions()

    With ActiveWorkbook
        If .PasswordEncryptionProvider <> "Microsoft RSA SChannel Cr"
           .SetPasswordEncryptionOptions _
               PasswordEncryptionProvider:="Microsoft RSA SChannel"
               PasswordEncryptionAlgorithm:="RC4", _
               PasswordEncryptionKeyLength:=56, _
               PasswordEncryptionFileProperties:=True
        End If
    End With

End Sub
Show All
Path Property

- Path property as it applies to the AutoRecover object.

Sets or returns the complete path to where Microsoft Excel will store the AutoRecover temporary files. Read/write String.

expression.Path

expression Required. An expression that returns an AutoRecover object.

- Path property as it applies to the AddIn, Application, RecentFile, and Workbook objects.

Returns the complete path to the application, excluding the final separator and name of the application. Read-only String.

expression.Path

expression Required. An expression that returns one of the above objects.
Example

- **As it applies to the AutoRecover object.**

This example sets the path of the AutoRecover file to drive C.

```vba
Sub SetPath()
    Application.AutoRecover.Path = "C:\"
End Sub
```

- **As it applies to the AddIn, Application, RecentFile, and Workbook objects.**

This example displays the complete path to Microsoft Excel.

```vba
Sub TotalPath()
    MsgBox "The path is " & Application.Path
End Sub
```
PathSeparator Property

Returns the path separator character ("\"). Read-only String.
Example

This example displays the current path separator.

MsgBox "The path separator character is " & _
        Application.PathSeparator
Show All
Pattern Property

- Pattern property as it applies to the LineFormat object.

Returns or sets the fill pattern. Read/write MsoPatternType.

MsoPatternType can be one of these MsoPatternType constants.

- msoPattern10Percent
- msoPattern20Percent
- msoPattern25Percent
- msoPattern30Percent
- msoPattern40Percent
- msoPattern50Percent
- msoPattern5Percent
- msoPattern60Percent
- msoPattern70Percent
- msoPattern75Percent
- msoPattern80Percent
- msoPattern90Percent
- msoPatternDarkDownwardDiagonal
- msoPatternDarkHorizontal
- msoPatternDarkUpwardDiagonal
- msoPatternDarkVertical
- msoPatternDashedDownwardDiagonal
- msoPatternDashedHorizontal
- msoPatternDashedUpwardDiagonal
- msoPatternDashedVertical
- msoPatternDiagonalBrick
- msoPatternDivot
- msoPatternDottedDiamond
Pattern object.

expression.Pattern

expression  Required. An expression that returns one of the above objects.

- Pattern property as it applies to the ChartFillFormat and FillFormat objects,
Returns or sets the fill pattern. Read-only **MsoPatternType**.

MsoPatternType can be one of these MsoPatternType constants.

- msoPattern10Percent
- msoPattern20Percent
- msoPattern25Percent
- msoPattern30Percent
- msoPattern40Percent
- msoPattern50Percent
- msoPattern5Percent
- msoPattern60Percent
- msoPattern70Percent
- msoPattern75Percent
- msoPattern80Percent
- msoPattern90Percent
- msoPatternDarkDownwardDiagonal
- msoPatternDarkHorizontal
- msoPatternDarkUpwardDiagonal
- msoPatternDarkVertical
- msoPatternDashedDownwardDiagonal
- msoPatternDashedHorizontal
- msoPatternDashedUpwardDiagonal
- msoPatternDashedVertical
- msoPatternDiagonalBrick
- msoPatternDivot
- msoPatternDottedDiamond
- msoPatternDottedGrid
- msoPatternHorizontalBrick
- msoPatternLargeCheckerBoard
- msoPatternLargeConfetti
- msoPatternLargeGrid
- msoPatternLightDownwardDiagonal
- msoPatternLightHorizontal
msoPatternLightUpwardDiagonal
msoPatternLightVertical
msoPatternMixed
msoPatternNarrowHorizontal
msoPatternNarrowVertical
msoPatternOutlinedDiamond
msoPatternPlaid
msoPatternShingle
msoPatternSmallCheckerBoard
msoPatternSmallConfetti
msoPatternSmallGrid
msoPatternSolidDiamond
msoPatternSphere
msoPatternTrellis
msoPatternWave
msoPatternWeave
msoPatternWideDownwardDiagonal
msoPatternWideUpwardDiagonal
msoPatternZigZag

expression.Pattern

expression Required. An expression that returns one of the above objects.

- Pattern property as it applies to the Interior object.

Returns or sets the interior pattern. Read/write Variant.

expression.Pattern

expression Required. An expression that returns one of the above objects.
Example

This example adds a crisscross pattern to the interior of cell A1 on Sheet1.

`Worksheets("Sheet1").Range("A1")._Interior.Pattern = xlPatternCrissCross`
PatternColor Property

Returns or sets the color of the interior pattern as an RGB value. Read/write Variant.
Example

This example sets the color of the interior pattern for rectangle one on Sheet1.

With Worksheets("Sheet1").Rectangles(1).Interior
    .Pattern = xlGrid
    .PatternColor = RGB(255,0,0)
End With
PatternColorIndex Property

Returns or sets the color of the interior pattern as an index into the current color palette, or as one of the following XlColorIndex constants: xlColorIndexAutomatic or xlColorIndexNone. Read/write Long.
Remarks

Set this property to `xlColorIndexAutomatic` to specify the automatic pattern for cells or the automatic fill style for drawing objects. Set this property to `xlColorIndexNone` to specify that you don't want a pattern (this is the same as setting the `Pattern` property of the `Interior` object to `xlPatternNone`).
Remarks

The following illustration shows the color-index values in the default color palette.
Example

This example sets the color of the interior pattern for rectangle one on Sheet1.

```
With Worksheets("Sheet1").Rectangles(1).Interior
    .Pattern = xlChecker
    .PatternColorIndex = 5
End With
```
Period Property

Returns or sets the period for the moving-average trendline. Read/write Long.
Example

This example sets the period for the moving-average trendline on Chart1. The example should be run on a 2-D column chart with a single series that contains 10 data points and a moving-average trendline.

With Charts("Chart1").SeriesCollection(1).Trendlines(1)  
  If .Type = xlMovingAvg Then .Period = 5
End With
**PersonalViewListSettings Property**

*True* if filter and sort settings for lists are included in the user's personal view of the shared workbook. Read/write **Boolean**.
Example

This example removes print settings and filter and sort settings from the user's personal view of workbook two.

With Workbooks(2)
    .PersonalViewListSettings = False
    .PersonalViewPrintSettings = False
End With
**PersonalViewPrintSettings Property**

*True* if print settings are included in the user's personal view of the shared workbook. Read-write *Boolean.*
Example

This example removes print settings and filter and sort settings from the user's personal view of workbook two.

With Workbooks(2)
    .PersonalViewListSettings = False
    .PersonalViewPrintSettings = False
End With
Perspective Property

- Perspective property as it applies to the ThreeDFormat object.

Determines whether the extrusion appears in perspective. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue Does not apply to this property.
- msoFalse The extrusion is a parallel, or orthographic, projection—that is, the walls don't narrow toward a vanishing point.
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The extrusion appears in perspective—that is, the walls of the extrusion narrow toward a vanishing point.

expression.Perspective

equation  Required. An expression that returns a ThreeDFormat object.

- Perspective property as it applies to the Chart object.

Returns or sets the perspective for the 3-D chart view. Must be between 0 and 100. This property is ignored if the RightAngleAxes property is True. Read/write Long.

equation  Required. An expression that returns a Chart object.
Example

- As it applies to the Chart object.

This example sets the perspective of Chart1 to 70. The example should be run on a 3-D chart.

Charts("Chart1").RightAngleAxes = False
Charts("Chart1").Perspective = 70
Phonetic Property

Returns the **Phonetic** object, which contains information about a specific phonetic text string in a cell.
Remarks

This property provides compatibility with earlier versions of Microsoft Excel. You should use `Phonetics(index)`, where `index` is the index number of the phonetic text, to return a single `Phonetic` object.

For information about using phonetic worksheet functions in Microsoft Visual Basic, see [Using Microsoft Excel Worksheet Functions in Visual Basic](#).
Example

This example sets the first phonetic text string in the active cell to "フリガナ".

ActiveCell.Phonetics(1).Text = "フリガナ"

To demonstrate compatibility with earlier versions of Microsoft Excel, this example hides the Furigana characters in cell C5.

Range("C5").Phonetic.Visible = False
PhoneticCharacters Property

Returns or sets the phonetic text in the specified Characters object. Read/write String.
Remarks

Instead of using this property, you should use the Add method of the Phonetics collection to add phonetic information to a cell, and use the Text property of the Phonetic object to return or set the phonetic text strings in a cell.

You can use this property only with Characters objects that are based on a single cell.
Example

This example replaces the fourth character from the beginning of the text in the active cell with Furigana characters.

ActiveCell.Characters(1,3).PhoneticCharacters = " GLFW"
Phonetics Property

Returns the **Phonetics** collection of the range. Read only **Phonetics**.
Example

This example displays all of the **Phonetic** objects in the active cell.

```vbnet
Set objPhon = ActiveCell.Phonetics
With objPhon
   For Each objPhonItem in objPhon
      MsgBox "Phonetic object: " & .Text
   Next
End With
```
PictureFormat Property

Returns a `PictureFormat` object that contains picture formatting properties for the specified shape. Applies to `Shape` or `ShapeRange` objects that represent pictures or OLE objects. Read-only.
Example

This example sets the brightness and contrast for shape one on `myDocument`. Shape one must be a picture or an OLE object.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1).PictureFormat
    .Brightness = 0.3
    .Contrast = .75
End With
```
PictureType Property

- PictureType property as it applies to the Point and Series objects.

Returns or sets the way pictures are displayed on a column or bar picture chart. Read/write XlChartPictureType.

XlChartPictureType can be one of these XlChartPictureType constants.

xlStack
xlStackScale
xlStretch

expression.PictureType

expression Required. An expression that returns one of the above objects.

- PictureType property as it applies to the LegendKey object.

Returns or sets the way pictures are displayed on a legend key. Read/write Long.

expression.PictureType

expression Required. An expression that returns one of the above objects.

- PictureType property as it applies to the Floor and Walls objects.

Returns or sets the way pictures are displayed on the walls and faces of a 3-D chart. Read/write Variant.

expression.PictureType
expression  Required. An expression that returns one of the above objects.
Example

This example sets series one in Chart1 to stretch pictures. The example should be run on a 2-D column chart with picture data markers.

Charts("Chart1").SeriesCollection(1).PictureType = xlStretch
PictureUnit Property

Returns or sets the unit for each picture on the chart if the PictureType property is set to xlScale (if not, this property is ignored). Read/write Long.
Example

This example sets series one in Chart1 to stack pictures and uses each picture to represent five units. The example should be run on a 2-D column chart with picture data markers.

With Charts("Chart1").SeriesCollection(1)
    .PictureType = xlScale
    .PictureUnit = 5
End With
Pie3DGroup Property

Returns a ChartGroup object that represents the pie chart group on a 3-D chart. Read-only.
Example

This example sets the 3-D pie group in Chart1 to use a different color for each data marker.

Charts("Chart1").Pie3DGroup.VaryByCategories = True
PivotCell Property

Returns a PivotCell object that represents a cell in a PivotTable report.

expression.PivotCell

expression  Required. An expression that returns a Range object.
Example

This example determines the name of the PivotTable the PivotCell object is located in and notifies the user. The example assumes that a PivotTable exists on the active worksheet and that cell A3 is located in the PivotTable.

Sub CheckPivotCell()
    'Determine the name of the PivotTable the PivotCell is located in
    MsgBox "Cell A3 is located in PivotTable: " & _
    _ Application.Range("A3").PivotCell.Parent
End Sub
PivotCellType Property

Returns one of the XlPivotCellType constants that identifies the PivotTable entity the cell corresponds to. Read-only.

XlPivotCellType can be one of these XlPivotCellType constants.
xlPivotCellBlankCell  A structural blank cell in the PivotTable.
xlPivotCellCustomSubtotal  A cell in the row or column area that is a custom subtotal.
xlPivotCellDataField  A data field label (not the Data button).
xlPivotCellDataPivotField  The Data button.
xlPivotCellGrandTotal  A cell in a row or column area which is a grand total.
xlPivotCellPageFieldItem  The cell that shows the selected item of a Page field.
xlPivotCellPivotField  The button for a field (not the Data button).
xlPivotCellPivotItem  A cell in the row or column area which is not a subtotal, grand total, custom subtotal, or blank line.
xlPivotCellSubtotal  A cell in the row or column area which is a subtotal.
xlPivotCellValue  Any cell in the data area (except a blank row).

expression.PivotCellType

expression  Required. An expression that returns a PivotCell object.
Example

This example determines if cell A5 in the PivotTable is a data item and notifies the user. The example assumes a PivotTable exists on the active worksheet and cell A5 is contained in the PivotTable. If cell A5 is not in the PivotTable, the example handles the run-time error.

Sub CheckPivotCellType()
    On Error GoTo Not_In_PivotTable

    ' Determine if cell A5 is a data item in the PivotTable.
    If Application.Range("A5").PivotCell.PivotCellType = xlPivotCell
        MsgBox "The cell at A5 is a data item."
    Else
        MsgBox "The cell at A5 is not a data item."
    End If
    Exit Sub

Not_In_PivotTable:
    MsgBox "The chosen cell is not in a PivotTable."

End Sub
PivotField Property

Returns a PivotField object that represents the PivotTable field containing the upper-left corner of the specified range.

expression.PivotField

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the name of the PivotTable field that contains the active cell.

`Worksheets("Sheet1").Activate`  
`MsgBox "The active cell is in the field " & _`  
`   ActiveCell.PivotField.Name`
PivotFields Property

Returns the **PivotFields** collection. This collection contains all PivotTable fields, including those that aren’t currently visible on-screen. Read-only **PivotFields** object.

*expression*.**PivotFields**

*expression*  Required. An expression that returns a **CubeField** object.
Remarks

For Online Analytical Processing (OLAP) data sources, there are no hidden fields, and the object or collection that’s returned reflects what’s currently visible.
Example

This example creates a list of all the PivotTable field names used in the first PivotChart report.

```vba
Set objNewSheet = Worksheets.Add
objNewSheet.Activate
intRow = 1
For Each objPF In Charts("Chart1").PivotLayout.PivotFields
    objNewSheet.Cells(intRow, 1).Value = objPF.Caption
    intRow = intRow + 1
Next objPF
```
Show All
PivotFormulas Property

Returns a **PivotFormulas** object that represents the collection of formulas for the specified PivotTable report. Read-only.

*expression*.PivotFormulas

*expression* Required. An expression that returns a **PivotTable** object.
Remarks

For **OLAP** data sources, this property returns an empty collection.
Example

This example creates a list of formulas for PivotTable one.

For Each pf in ActiveSheet.PivotTables(1).PivotFormulas
    r = r + 1
    Cells(r, 1).Value = pf.Formula
Next
PivotItem Property

-  

Returns a **PivotItem** object that represents the PivotTable item containing the upper-left corner of the specified range.

*expression*.**PivotItem**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the name of the PivotTable item that contains the active cell on Sheet1.

`Worksheets("Sheet1").Activate`  
`MsgBox "The active cell is in the item " & _  
  ActiveCell.PivotItem.Name`
Returns a PivotLayout object that represents the placement of fields in a PivotTable report and the placement of axes in a PivotChart report. Read-only.
Remarks

If the chart you specify isn’t a PivotChart report, the value of this property is Nothing.
Example

This example creates a list of all the PivotTable field names used in the first PivotChart report.

Set objNewSheet = Worksheets.Add
objNewSheet.Activate
intRow = 1
For Each objPF In Charts("Chart1").PivotLayout.PivotFields
    objNewSheet.Cells(intRow, 1).Value = objPF.Caption
    intRow = intRow + 1
Next objPF
PivotSelection Property

Returns or sets the PivotTable selection in standard PivotTable report selection format. Read/write String.

expression.PivotSelection

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting this property is equivalent to calling the **PivotSelect** method with the *Mode* argument set to **xlDataAndLabel**.
Example

This example selects the data and label for the salesperson named Bob in the first PivotTable report on worksheet one.

Worksheets(1).PivotTables(1).PivotSelection = "Salesman[Bob]"
PivotSelectionStandard Property

- Returns or sets a **String** indicating the PivotTable selection in standard PivotTable report format using English (United States) settings. Read/write.

**expression**.**PivotSelectionStandard**

**expression**  Required. An expression that returns a **PivotTable** object.
Remarks

The **PivotSelectionStandard** property is "international-friendly" whereas the **PivotSelection** method is not.
Example

This example selects a field titled "1.57" in the PivotTable and inserts a blank column field before it. The example assumes a PivotTable exists on the active worksheet that contains a column field titled "1.57".

Sub CheckPivotSelectionStandard()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    pvtTable.PivotSelectionStandard = "1.57"
    Selection.Insert
End Sub
**PivotTable Property**

Returns a `PivotTable` object that represents the PivotTable report containing the upper-left corner of the specified range, or the PivotTable report associated with the PivotChart report.

`expression.PivotTable`

**expression**  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the current page for the PivotTable report on Sheet1 to the page named "Canada."

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.PivotFields("Country").CurrentPage = "Canada"
```

This example determines the PivotTable report associated with the Sales chart on the active worksheet, and then it sets the page named "Oregon" as the current page for the PivotTable report.

```vba
Set objPT = _
    ActiveSheet.Charts("Sales").PivotLayout.PivotTable
objPT.PivotFields("State").CurrentPageName = "Oregon"
```
PivotTableSelection Property

True if PivotTable reports use structured selection. Read/write Boolean.
Example

This example enables structured selection mode and then sets the first PivotTable report on worksheet one to allow only data to be selected.

```vba
Application.PivotTableSelection = True
Worksheets(1).PivotTables(1).SelectionMode = xlDataOnly
```
PixelsPerInch Property

Returns or sets the density (pixels per inch) of graphics images and table cells on a Web page. The range of settings is usually from 19 to 480, and common settings for popular screen sizes are 72, 96, and 120. The default setting is 96. Read/write Long.
Remarks

This property determines the size of the images and cells on the specified Web page relative to the size of text whenever you view the saved document in a Web browser. The physical dimensions of the resulting image or cell are the result of the original dimensions (in inches) multiplied by the number of pixels per inch.

You use the **ScreenSize** property to set the optimum screen size for the targeted Web browsers.
**Example**

This example sets the pixel density depending on the target screen size of the browser. For 800x600 pixel screens, the density is 72 pixels per inch. For 1024x768 pixel screens, the density is 96 pixels per inch. For all other cases, use a density of 120 pixels per inch.

```vba
With Application.DefaultWebOptions
    Select Case .ScreenSize
        Case msoScreenSize800x600
            .PixelsPerInch = 72
        Case msoScreenSize1024x768
            .PixelsPerInch = 96
        Case Else
            .PixelsPerInch = 120
    End Select
End With
```
Placement Property

- **Placement property as it applies to the Shape object.**

Returns or sets the way the object is attached to the cells below it. Read/write **XlPlacement**.

XlPlacement can be one of these XlPlacement constants.
- **xlFreeFloating**
- **xlMove**
- **xlMoveAndSize**

`expression.Placement`

`expression`  Required. An expression that returns one of the above objects.

- **Placement property as it applies to the ChartObject, ChartObjects, OLEObject, and OLEObjects objects.**

Returns or sets the way the object is attached to the cells below it. Read/write **Variant**.

`expression.Placement`

`expression`  Required. An expression that returns one of the above objects.
Example

This example sets embedded chart one on Sheet1 to be free-floating (it neither moves nor is sized with its underlying cells).

`Worksheets("Sheet1").ChartObjects(1).Placement = xlFreeFloating`
PlotArea Property

Returns a PlotArea object that represents the plot area of a chart. Read-only.
Example

This example sets the color of the plot area interior of Chart1 to cyan.

Charts("Chart1").PlotArea.Interior.ColorIndex = 8
PlotBy Property

Returns or sets the way columns or rows are used as data series on the chart. Can be one of the following XlRowCol constants: xlColumns or xlRows. Read/write Long. For PivotChart reports, this property is read-only and always returns xlColumns.
**Example**

This example causes the embedded chart to plot data by columns.

```vba
Worksheets(1).ChartObjects(1).Chart.ChartPlotBy = xlColumns
```
PlotOrder Property

Returns or sets the plot order for the selected series within the chart group. Read/write Long.
Remarks

You can set plot order only within a chart group (you cannot set the plot order for the entire chart if you have more than one chart type). A chart group is a collection of series with the same chart type.

Changing the plot order of one series will cause the plot orders of the other series in the chart group to be adjusted, as necessary.
Example

This example makes series two in Chart1 appear third in the plot order. The example should be run on a 2-D column chart that contains three or more series.

Charts("Chart1").ChartGroups(1).SeriesCollection(2).PlotOrder = 3
PlotVisibleOnly Property

True if only visible cells are plotted. False if both visible and hidden cells are plotted. Read/write Boolean.
**Example**

This example causes Microsoft Excel to plot only visible cells in Chart1.

`Charts("Chart1").PlotVisibleOnly = True`
Show All
Points Property

Returns the position of the specified node as a coordinate pair. Each coordinate is expressed in points. Read-only Variant.
Remarks

This property is read-only. Use the SetPosition method to set the value of this property.
**Example**

This example moves node two in shape three on myDocument to the right 200 points and down 300 points. Shape three must be a freeform drawing.

```
Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    pointsArray = .Item(2).Points
    currXvalue = pointsArray(1, 1)
    currYvalue = pointsArray(1, 2)
    .SetPosition 2, currXvalue + 200, currYvalue + 300
End With
```
Position Property

Position property as it applies to the **DataLabel** and **DataLabels** objects.

Returns or sets the position of the data label. Read/write **XlDataLabelPosition**.

XlDataLabelPosition can be one of these XlDataLabelPosition constants.

- xlLabelPositionAbove
- xlLabelPositionBestFit
- xlLabelPositionCustom
- xlLabelPositionInsideEnd
- xlLabelPositionMixed
- xlLabelPositionRight
- xlLabelPositionBelow
- xlLabelPositionCenter
- xlLabelPositionInsideBase
- xlLabelPositionLeft
- xlLabelPositionOutsideEnd

`expression.Position`

`expression` Required. An expression that returns one of the above objects.

Position property as it applies to the **Legend** object.

Returns or sets the position of the legend on the chart. Read/write **XlLegendPosition**.

XlLegendPosition can be one of these XlLegendPosition constants.

- xlLegendPositionCorner
- xlLegendPositionRight
xlLegendPositionTop
xlLegendPositionBottom
xlLegendPositionLeft

expression.Position

expression Required. An expression that returns one of the above objects.

Position property as it applies to the CubeField and PivotItem objects.

Position of the item in its field, if the item is currently showing. For a CubeFields collection, this is the position of the hierarchy field on the PivotTable report when it’s dragged from the field well. Read/write Long.

expression.Position

expression Required. An expression that returns one of the above objects.

Position property as it applies to the PivotField object.

Position of the field (first, second, third, and so on) among all the fields in its orientation (Rows, Columns, Pages, Data). Read/write Variant.

expression.Position

expression Required. An expression that returns one of the above objects.
Example

This example moves the chart legend to the bottom of the chart.

Charts(1).Legend.Position = xlLegendPositionBottom

This example displays the position number of the PivotTable item that contains the active cell.

Worksheets("Sheet1").Activate
MsgBox "The active item is in position number " & _
   ActiveCell.PivotItem.Position
PostText Property

Some of the content in this topic may not be applicable to some languages.

Returns or sets the string used with the post method of inputting data into a Web server to return data from a Web query. Read/write **String**.
Remarks

Microsoft Excel includes sample Web queries that you can modify by changing the HTML code by using WordPad or another text editor. You can find these samples in the Queries folder where you installed Microsoft Office.
Returns a **Range** object that represents all the precedents of a cell. This can be a multiple selection (a union of **Range** objects) if there's more than one precedent. Read-only.
Example

This example selects the precedents of cell A1 on Sheet1.

Worksheets("Sheet1").Activate
Range("A1").Precedents.Select
PrecisionAsDisplayed Property

`True` if calculations in this workbook will be done using only the precision of
the numbers as they’re displayed. Read/write `Boolean`. 
Example

This example causes calculations in the active workbook to use only the precision of the numbers as they’re displayed.

ActiveWorkbook.PrecisionAsDisplayed = True
PrefixCharacter Property

Returns the prefix character for the cell. Read-only **Variant**.
Remarks

If the TransitionNavigKeys property is False, this prefix character will be ' for a text label, or blank. If the TransitionNavigKeys property is True, this character will be ' for a left-justified label, " for a right-justified label, ^ for a centered label, \ for a repeated label, or blank.
Example

This example displays the prefix character for cell A1 on Sheet1.

MsgBox "The prefix character is " & _
    Worksheets("Sheet1").Range("A1").PrefixCharacter
**PreserveColumnInfo Property**

*True* if column sorting, filtering, and layout information is preserved whenever a query table is refreshed. The default value is *False*. Read/write *Boolean*.
Remarks

This property has an effect only when the query table is using a database connection.

You can set this property to **False** for compatibility with earlier versions of Microsoft Excel.
Example

This example preserves column sorting, filtering, and layout information for compatibility with earlier versions of Microsoft Excel.

Dim cnnConnect As ADODB.Connection
Dim rstRecordset As ADODB.Recordset

Set cnnConnect = New ADODB.Connection
cnnConnect.Open "Provider=SQLOLEDB;" & _
"Data Source=srvdata;" & _
"User ID=wadet;Password=4me2no;"

Set rstRecordset = New ADODB.Recordset
rstRecordset.Open _
Source:="Select Name, Quantity, Price From Products", _
ActiveConnection:=cnnConnect, _
CursorType:=adOpenDynamic, _
LockType:=adLockReadOnly, _
Options:=adCmdText

With ActiveSheet.QueryTables.Add( _
    Connection:=rstRecordset, _
    Destination:=Range("A1"))
    .Name = "Contact List"
    .FieldNames = True
    .RowNumbers = False
    .FillAdjacentFormulas = False
    .PreserveFormatting = True
    .RefreshOnFileOpen = False
    .BackgroundQuery = True
    .RefreshStyle = xlInsertDeleteCells
    .SavePassword = True
    .SaveData = True
    .AdjustColumnWidth = True
    .RefreshPeriod = 0
    .PreserveColumnInfo = True
    .Refresh BackgroundQuery:=False
End With
**PreserveFormatting Property**

For PivotTable reports, this property is **True** if formatting is preserved when the report is refreshed or recalculated by operations such as pivoting, sorting, or changing page field items.

For query tables, this property is **True** if any formatting common to the first five rows of data are applied to new rows of data in the query table. Unused cells aren’t formatted. The property is **False** if the last AutoFormat applied to the query table is applied to new rows of data. The default value is **True** (unless the query table was created in Microsoft Excel 97 and the **HasAutoFormat** property is **True**, in which case **PreserveFormatting** is **False**).

Read/write **Boolean**.
Remarks

For database query tables, the default formatting setting is **xlSimple**.

The new AutoFormat style is applied to the query table when the table is refreshed. The AutoFormat is reset to **None** whenever **PreserveFormatting** is set to **False**. As a result, any AutoFormat that’s set before **PreserveFormatting** is set to **False** and before the query table is refreshed doesn’t take effect, and the resulting query table has no formatting applied to it.
Example

This example preserves the formatting of the first PivotTable report on worksheet one.

```vba
Worksheets(1).PivotTables("Pivot1").PreserveFormatting = True
```

This example demonstrates how setting `PreserveFormatting` to `False` causes the AutoFormat to be set to `xlRangeAutoFormatNone` instead of the specified `xlRangeAutoFormatColor1` format.

```vba
With Workbooks(1).Worksheets(1).QueryTables(1)
    .Range.AutoFormat = xlRangeAutoFormatColor1
    .PreserveFormatting = False
    .Refresh
End With
```
PresetExtrusionDirection Property

Returns the direction that the extrusion's sweep path takes away from the extruded shape (the front face of the extrusion). Read-only MsoPresetExtrusionDirection.

MsoPresetExtrusionDirection can be one of these MsoPresetExtrusionDirection constants.

- msoExtrusionTop
- msoExtrusionTopRight
- msoExtrusionBottom
- msoExtrusionBottomLeft
- msoExtrusionBottomRight
- msoExtrusionLeft
- msoExtrusionNone
- msoExtrusionRight
- msoExtrusionTopLeft
- msoPresetExtrusionDirectionMixed

expression.PresetExtrusionDirection

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property is read-only. To set the value of this property, use the **SetExtrusionDirection** method.
Example

This example changes each extrusion on myDocument that extends toward the upper-left corner of the extrusion’s front face to an extrusion that extends toward the lower-right corner of the front face.

Set myDocument =Worksheets(1)
For Each s In myDocument.Shapes
    With s.ThreeD
        If .PresetExtrusionDirection = msoExtrusionTopLeft Then
            .SetExtrusionDirection msoExtrusionBottomRight
        End If
    End With
Next
PresetGradientType Property

Returns the preset gradient type for the specified fill. Read-only **MsoPresetGradientType**.

MsoPresetGradientType can be one of these MsoPresetGradientType constants.

- `msoGradientBrass`
- `msoGradientChrome`
- `msoGradientDaybreak`
- `msoGradientEarlySunset`
- `msoGradientFog`
- `msoGradientGoldII`
- `msoGradientLateSunset`
- `msoGradientMoss`
- `msoGradientOcean`
- `msoGradientPeacock`
- `msoGradientRainbowII`
- `msoGradientSilver`
- `msoGradientWheat`
- `msoPresetGradientMixed`
- `msoGradientCalmWater`
- `msoGradientChromeII`
- `msoGradientDesert`
- `msoGradientFire`
- `msoGradientGold`
- `msoGradientHorizon`
- `msoGradientMahogany`
- `msoGradientNightfall`
- `msoGradientParchment`
- `msoGradientRainbow`
msoGradientSapphire

expression.PresetGradientType

expression  Required. An expression that returns one of the objects in the Applies To list.

Use the PresetGradient method to set the preset gradient type for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillGradient Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        .PresetGradient c1f.GradientStyle, _
            c1f.GradientVariant, c1f.PresetGradientType
    End With
End If
PresetLightingDirection Property

Returns or sets the position of the light source relative to the extrusion. Read/write **MsoPresetLightingDirection**.

MsoPresetLightingDirection can be one of these MsoPresetLightingDirection constants.

- **msoLightingBottom**
- **msoLightingBottomLeft**
- **msoLightingBottomRight**
- **msoLightingLeft**
- **msoLightingNone**
- **msoLightingRight**
- **msoLightingTop**
- **msoLightingTopLeft**
- **msoLightingTopRight**
- **msoPresetLightingDirectionMixed**

*expression*.PresetLightingDirection

*expression*  Required. An expression that returns one of the objects in the Applies To list.

**Note**  You won't see the lighting effects you set if the extrusion has a wire frame surface.
Example

This example specifies that the extrusion for shape one on myDocument extend toward the top of the shape and that the lighting for the extrusion come from the left.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
  .Visible = True
  .SetExtrusionDirection msoExtrusionTop
  .PresetLightingDirection = msoLightingLeft
End With
PresetLightingSoftness Property

Returns or sets the intensity of the extrusion lighting. Read/write MsoPresetLightingSoftness.

MsoPresetLightingSoftness can be one of these MsoPresetLightingSoftness constants:

- msoLightingBright
- msoLightingDim
- msoLightingNormal
- msoPresetLightingSoftnessMixed

expression.PresetLightingSoftness

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example specifies that the extrusion for shape one on myDocument be lit brightly from the left.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
  .Visible = True
  .PresetLightingSoftness = msoLightingBright
  .PresetLightingDirection = msoLightingLeft
End With
PresetMaterial Property

Returns or sets the extrusion surface material. Read/write MsoPresetMaterial.

MsoPresetMaterial can be one of these MsoPresetMaterial constants.

msoMaterialMatte
msoMaterialMetal
msoMaterialPlastic
msoMaterialWireFrame
msoPresetMaterialMixed

expression.PresetMaterial

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example specifies that the extrusion surface for shape one in myDocument be wire frame.

Set myDocument =Worksheets(1)
With myDocument.Shapes(1).ThreeD
  .Visible = True
  .PresetMaterial = msoMaterialWireFrame
End With
PresetShape Property

Returns or sets the shape of the specified WordArt. Read/write MsoPresetTextEffectShape.

MsoPresetTextEffectShape can be one of these MsoPresetTextEffectShape constants:

- msoTextEffectShapeArchDownCurve
- msoTextEffectShapeArchDownPour
- msoTextEffectShapeArchUpCurve
- msoTextEffectShapeArchUpPour
- msoTextEffectShapeButtonCurve
- msoTextEffectShapeButtonPour
- msoTextEffectShapeCanDown
- msoTextEffectShapeCanUp
- msoTextEffectShapeCascadeDown
- msoTextEffectShapeCascadeUp
- msoTextEffectShapeChevronDown
- msoTextEffectShapeChevronUp
- msoTextEffectShapeCircleCurve
- msoTextEffectShapeCirclePour
- msoTextEffectShapeCurveDown
- msoTextEffectShapeCurveUp
- msoTextEffectShapeDeflate
- msoTextEffectShapeDeflateBottom
- msoTextEffectShapeDeflateInflateDeflate
- msoTextEffectShapeDoubleWave1
- msoTextEffectShapeFadeDown
- msoTextEffectShapeFadeRight
- msoTextEffectShapeInflate
expression.PresetShape

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting the PresetTextEffect property automatically sets the PresetShape property.
Example

This example sets the shape of all WordArt on myDocument to a chevron whose center points down.

```vba
Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.Type = msoTextEffect Then
        s.TextEffect.PresetShape = msoTextEffectShapeChevronDown
    End If
Next
```
PresetTextEffect Property

Returns or sets the style of the specified WordArt. The values for this property correspond to the formats in the WordArt Gallery dialog box (numbered from left to right, top to bottom). Read/write MsoPresetTextEffect.

MsoPresetTextEffect can be one of these MsoPresetTextEffect constants.

msoTextEffect1
msoTextEffect10
msoTextEffect11
msoTextEffect12
msoTextEffect13
msoTextEffect14
msoTextEffect15
msoTextEffect16
msoTextEffect17
msoTextEffect18
msoTextEffect19
msoTextEffect2
msoTextEffect20
msoTextEffect21
msoTextEffect22
msoTextEffect23
msoTextEffect24
msoTextEffect25
msoTextEffect26
msoTextEffect27
msoTextEffect28
msoTextEffect29
msoTextEffect3
msoTextEffect30
msoTextEffect4
msoTextEffect5
msoTextEffect6
msoTextEffect7
msoTextEffect8
msoTextEffect9
msoTextEffectMixed

description. PresetTextEffect

description Required. An expression that returns one of the objects in the Applies To list.
Remarks

Setting the `PresetTextEffect` property automatically sets many other formatting properties of the specified shape.
**Example**

This example sets the style for all WordArt on myDocument to the first style listed in the **WordArt Gallery** dialog box.

```vba
Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.Type = msoTextEffect Then
        s.TextEffect.PresetTextEffect = msoTextEffect1
    End If
Next
```
PresetTexture Property

Returns the preset texture for the specified fill. Read-only MsoPresetTexture.

MsoPresetTexture can be one of these MsoPresetTexture constants.

- msoPresetTextureMixed
- msoTextureBouquet
- msoTextureCanvas
- msoTextureDenim
- msoTextureGranite
- msoTextureMediumWood
- msoTextureOak
- msoTexturePapyrus
- msoTexturePinkTissuePaper
- msoTextureRecycledPaper
- msoTextureStationery
- msoTextureWaterDroplets
- msoTextureWovenMat
- msoTextureBlueTissuePaper
- msoTextureBrownMarble
- msoTextureCork
- msoTextureFishFossil
- msoTextureGreenMarble
- msoTextureNewsprint
- msoTexturePaperBag
- msoTextureParchment
- msoTexturePurpleMesh
- msoTextureSand
- msoTextureWalnut
- msoTextureWhiteMarble
expression.PresetTexture

expression  Required. An expression that returns one of the objects in the Applies To list.

Use the PresetTextured method to set the preset texture for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

```vba
Set cif = Charts(1).ChartArea.Fill
If cif.Type = msoFillTextured Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        If cif.TextureType = msoTexturePreset Then
            .PresetTextured cif.PresetTexture
        Else
            .UserTextured cif.TextureName
        End If
    End With
End If
```
PresetThreeDFormat Property

Returns the preset extrusion format. Each preset extrusion format contains a set of preset values for the various properties of the extrusion. If the extrusion has a custom format rather than a preset format, this property returns msoPresetThreeDFormatMixed. The values for this property correspond to the options (numbered from left to right, top to bottom) displayed when you click the 3-D button on the Drawing toolbar. Read-only MsoPresetThreeDFormat.

MsoPresetThreeDFormat can be one of these MsoPresetThreeDFormat constants.

msoThreeD1
msoThreeD11
msoThreeD13
msoThreeD15
msoThreeD17
msoThreeD19
msoThreeD20
msoThreeD4
msoThreeD6
msoThreeD8
msoPresetThreeDFormatMixed
msoThreeD10
msoThreeD12
msoThreeD14
msoThreeD16
msoThreeD18
msoThreeD2
msoThreeD3
msoThreeD5
msoThreeD7
**msoThreeD9**

`expression.PresetThreeDFormat`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

This property is read-only. To set the preset extrusion format, use the `SetThreeDFormat` method.
Example

This example sets the extrusion format for shape one on myDocument to 3D Style 12 if the shape initially has a custom extrusion format.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
    If .PresetThreeDFormat = msoPresetThreeDFormatMixed Then
        .SetThreeDFormat msoThreeD12
    End If
End With
Previous Property

Returns a Chart, Range, or Worksheet object that represents the previous sheet or cell. Read-only.
Remarks

If the object is a range, this property emulates pressing SHIFT+TAB; unlike the key combination, however, the property returns the previous cell without selecting it.

On a protected sheet, this property returns the previous unlocked cell. On an unprotected sheet, this property always returns the cell immediately to the left of the specified cell.
Example

This example selects the previous unlocked cell on Sheet1. If Sheet1 is unprotected, this is the cell immediately to the left of the active cell.

Worksheets("Sheet1").Activate
ActiveCell.Previous.Select
PreviousSelections Property

Returns an array of the last four ranges or names selected. Each element in the array is a Range object. Read-only Variant.

expression.PreviousSelections(Index)

expression Optional. An expression that returns an Application object.

Index Optional Variant. The index number (from 1 to 4) of the previous range or name.
Remarks

Each time you go to a range or cell by using the Name box or the Go To command (Edit menu), or each time a macro calls the Goto method, the previous range is added to this array as element number 1, and the other items in the array are moved down.
Example

This example displays the cell addresses of all items in the array of previous selections. If there are no previous selections, the `LBound` function returns an error. This error is trapped, and a message box appears.

```vbnet
On Error GoTo noSelections
For i = LBound(Application.PreviousSelections) To _
    UBound(Application.PreviousSelections)
    MsgBox Application.PreviousSelections(i).Address
Next i
Exit Sub
On Error GoTo 0

noSelections:
    MsgBox "There are no previous selections"
```
PrintArea Property

Returns or sets the range to be printed, as a string using A1-style references in the language of the macro. Read/write String.
Remarks

Set this property to **False** or to the empty string (""") to set the print area to the entire sheet.

This property applies only to worksheet pages.
Example

This example sets the print area to cells A1:C5 on Sheet1.

`Worksheets("Sheet1").PageSetup.PrintArea = "$A$1:$C$5"

This example sets the print area to the current region on Sheet1. Note that you use the **Address** property to return an A1-style address.

`Worksheets("Sheet1").Activate
ActiveSheet.PageSetup.PrintArea = _
    ActiveCell.CurrentRegion.Address`
PrintComments Property

Returns or sets the way comments are printed with the sheet. Read/write XlPrintLocation.

XlPrintLocation can be one of these XlPrintLocation constants.
- xlPrintInPlace
- xlPrintNoComments
- xlPrintSheetEnd

expression.PrintComments

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example causes comments to be printed as end notes when worksheet one is printed.

`Worksheets(1).PageSetup.PrintComments = xlPrintSheetEnd`
PrintErrors Property

Sets or returns an **XlPrintErrors** constant specifying the type of print error displayed. This feature allows users to suppress the display of error values when printing a worksheet. Read/write.

XlPrintErrors can be one of these XlPrintErrors constants.

- **xlPrintErrorsBlank**
- **xlPrintErrorsDash**
- **xlPrintErrorsDisplayed**
- **xlPrintErrorsNA**

```
expression.PrintErrors
```

*expression*  Required. An expression that returns one of the objects in the Applies To list.
**Example**

In this example, Microsoft Excel uses a formula that returns an error in the active worksheet. The **PrintErrors** property is set to display dashes. A Print Preview window displays the dashes for the print error. This example assumes a printer driver has been installed.

Sub UsePrintErrors()

    Dim wksOne As Worksheet

    Set wksOne = Application.ActiveSheet

    ' Create a formula that returns an error value.
    Range("A1").Value = 1
    Range("A2").Value = 0
    Range("A3").Formula = "=A1/A2"

    ' Change print errors to display dashes.
    wksOne.PageSetup.PrintErrors = xlPrintErrorsDash

    ' Use the Print Preview window to see the dashes used for print
    ActiveWindow.SelectedSheets.PrintPreview

End Sub
PrintGridlines Property

True if cell gridlines are printed on the page. Applies only to worksheets. Read/write Boolean.
Example

This example prints cell gridlines when Sheet1 is printed.

`Worksheets("Sheet1").PageSetup.PrintGridlines = True`
PrintHeadings Property

True if row and column headings are printed with this page. Applies only to worksheets. Read/write Boolean.
Remarks

The `DisplayHeadings` property controls the on-screen display of headings.
Example

This example turns off the printing of headings for Sheet1.

Worksheets("Sheet1").PageSetup.PrintHeadings = False
PrintNotes Property

True if cell notes are printed as end notes with the sheet. Applies only to worksheets. Read/write Boolean.
Remarks

Use the **PrintComments** property to print comments as text boxes or end notes.
Example

This example turns off the printing of notes.

`Worksheets("Sheet1").PageSetup.PrintNotes = False`
PrintObject Property

True if the object will be printed when the document is printed. Read/write Boolean.
Example

This example sets embedded chart one on Sheet1 to be printed with the worksheet.

`Worksheets("Sheet1").ChartObjects(1).PrintObject = True`
PrintQuality Property

Returns or sets the print quality. Read/write Variant.

expression.PrintQuality(Index)

expression Required. An expression that returns a PageSetup object.

Index Optional Variant. Horizontal print quality (1) or vertical print quality (2). Some printers may not support vertical print quality. If you don’t specify this argument, the PrintQuality property returns (or can be set to) a two-element array that contains both horizontal and vertical print quality.
Example

This example sets the print quality on a printer with non-square pixels. The array specifies both horizontal and vertical print quality. This example may cause an error, depending on the printer driver you’re using.

`Worksheets("Sheet1").PageSetup.PrintQuality = Array(240, 140)`

This example displays the current setting for horizontal print quality.

`MsgBox "Horizontal Print Quality is " & _  
  Worksheets("Sheet1").PageSetup.PrintQuality(1)`
PrintSettings Property

True if print settings are included in the custom view. Read-only Boolean.
Example

This example creates a list of the custom views in the active workbook and their print settings and row and column settings.

```
With Worksheets(1)
    .Cells(1,1).Value = "Name"
    .Cells(1,2).Value = "Print Settings"
    .Cells(1,3).Value = "RowColSettings"
    rw = 0
    For Each v In ActiveWorkbook.CustomViews
        rw = rw + 1
        .Cells(rw, 1).Value = v.Name
        .Cells(rw, 2).Value = v.PrintSettings
        .Cells(rw, 3).Value = v.RowColSettings
    Next
End With
```
PrintTitleColumns Property

Returns or sets the columns that contain the cells to be repeated on the left side of each page, as a string in A1-style notation in the language of the macro. Read/write String.
Remarks

If you specify only part of a column or columns, Microsoft Excel expands the range to full columns.

Set this property to **False** or to the empty string (""") to turn off title columns.

This property applies only to worksheet pages.
Example

This example defines row three as the title row, and it defines columns one through three as the title columns.

`Worksheets("Sheet1").Activate`
`ActiveSheet.PageSetup.PrintTitleRows = ActiveSheet.Rows(3).Address`
`ActiveSheet.PageSetup.PrintTitleColumns = _
            ActiveSheet.Columns("A:C").Address`
PrintTitleRows Property

Returns or sets the rows that contain the cells to be repeated at the top of each page, as a string in A1-style notation in the language of the macro. Read/write String.
Remarks

If you specify only part of a row or rows, Microsoft Excel expands the range to full rows.

Set this property to **False** or to the empty string (""") to turn off title rows.

This property applies only to worksheet pages.
Example

This example defines row three as the title row, and it defines columns one through three as the title columns.

Worksheets("Sheet1").Activate
ActiveSheet.PageSetup.PrintTitleRows = ActiveSheet.Rows(3).Address
ActiveSheet.PageSetup.PrintTitleColumns = _
    ActiveSheet.Columns("A:C").Address
PrintTitles Property

True if the print titles for the worksheet are set based on the PivotTable report. The row print titles are set to the rows that contain the PivotTable report’s column field items. The column print titles are set to the columns that contain the row items. False if the print titles for the worksheet are used. The default value is False. Read/write Boolean.
Remarks

The PivotTable report must be the only one in the print area. To set an indented format for a PivotTable report, use the **Format** method.
Example

This example specifies that the print title set for the worksheet is printed when the fourth PivotTable report on the active worksheet is printed.

`ActiveSheet.PivotTables("PivotTable4").PrintTitles = True`
ProductCode Property

Returns the globally unique identifier (GUID) for Microsoft Excel. Read-only String.
Example

This example displays the globally unique identifier (GUID) for Microsoft Excel.

```vba
MsgBox Application.ProductCode
```
**ProgId Property**

Returns the programmatic identifiers for the object. Read-only **String**.

*expression.ProgId*

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Remarks

For more information about programmatic identifiers, see OLE Programmatic Identifiers.
Example

This example creates a list of the programmatic identifiers for the OLE objects on worksheet one.

```vba
rw = 0
For Each o in Worksheets(1).OLEObjects
   With Worksheets(2)
      rw = rw + 1
      .cells(rw, 1).Value = o.ProgId
   End With
Next
```
PromptForSummaryInfo Property

True if Microsoft Excel asks for summary information when files are first saved. Read/write Boolean.
Example

This example displays a prompt that asks for summary information when files are first saved.

Application.PromptForSummaryInfo = True
PromptString Property

Returns the phrase that prompts the user for a parameter value in a parameter query. Read-only String.
Example

This example modifies the parameter prompt string for query table one.

```vba
With Worksheets(1).QueryTables(1).Parameters(1)
  .SetParam xlPrompt, "Please " & .PromptString
End With
```
Properties Property

Returns a CustomProperties object representing the properties for a smart tag.

expression.Properties

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the **Add** Method with the **Properties** property to store extra metadata for a smart tag.
Example

This example adds a smart tag to cell A1, then adds extra metadata called "Market" with the value of "Nasdaq" to the SmartTag and then returns the value of the property to the user. This example assumes the host system is connected to the Internet.

Sub UseProperties()
    Dim strLink As String
    Dim strType As String

    ' Define smart tag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    ' Add a property for MSFT smart tag and define it's value.
    Range("A1").SmartTags.Add(strLink).Properties.Add _
        Name:="Market", Value:="Nasdaq"

    ' Notify the user of the smart tag's value.
    MsgBox Range("A1").SmartTags.Add(strLink).Properties("Market").V
End Sub
PropertyOrder Property

Valid only for PivotTable fields that are member property fields. Returns a Long indicating the display position of the member property within the cube field to which it belongs. Setting this property will rearrange the order of the properties for this cube field. This property is one-based. The allowable range is from one to the maximum number of member property fields being displayed for the hierarchy. Read/write.

expression.PropertyOrder

expression  Required. An expression that returns a PivotField object.
Remarks

If the `IsMemberProperty` property is False, using the `PropertyOrder` property will create a run-time error.
Example

This example determines if there are member properties in the fourth field and, if there are, displays the position of the member properties. Depending on the findings, Excel notifies the user. This example assumes that a PivotTable exists on the active worksheet and that it is based on an Online Analytical Processing (OLAP) data source.

Sub CheckPropertyOrder()
    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields(4)

    ' Check for member properties and notify user.
    If pvtField.IsMemberProperty = False Then
        MsgBox "No member properties present."
    Else
        MsgBox "The property order of the members is: " & pvtField.PropertyOrder
    End If
End Sub
PropertyParentField Property

Returns a **PivotField** object representing the field to which the properties in this field pertain.

\[ expression.\text{PropertyParentField} \]

*expression* Required. An expression that returns a **PivotField** object.
Remarks

Valid only for fields that are member property fields.

If the `IsMemberProperty` property is `False`, using the `PropertyParentField` property will return a run-time error.
Example

This example determines if there are member properties in the fourth field and, if there are, which fields the properties pertain to. Depending on the findings, Excel notifies the user. This example assumes that a PivotTable exists on the active worksheet and that it is based on an Online Analytical Processing (OLAP) data source.

Sub CheckParentField()
    Dim pvtTable As PivotTable
    Dim pvtField As PivotField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields(4)

    ' Check for member properties and notify user.
    If pvtField.IsMemberProperty = False Then
        MsgBox "No member properties present."
    Else
        MsgBox "The parent field of the members is: " & _
            pvtField.PropertyParentField
    End If
End Sub
ProtectChartObject Property

True if the embedded chart frame cannot be moved, resized, or deleted. Read/write Boolean.
Example

This example protects embedded chart one on worksheet one.

Worksheets(1).ChartObjects(1).ProtectChartObject = True
ProtectContents Property

True if the contents of the sheet are protected. For a chart, this protects the entire chart. For a worksheet, this protects the individual cells. Read-only Boolean.
Example

This example displays a message box if the contents of Sheet1 are protected.

If Worksheets("Sheet1").ProtectContents = True Then
    MsgBox "The contents of Sheet1 are protected."
End If
ProtectData Property

True if series formulas cannot be modified by the user. Read/write Boolean.
Example

This example protects the data on embedded chart one on worksheet one.

`Worksheets(1).ChartObjects(1).Chart.ProtectData = True`
ProtectDrawingObjects Property

True if shapes are protected. Read-only Boolean.
Example

This example displays a message box if the shapes on Sheet1 are protected.

If Worksheets("Sheet1").ProtectDrawingObjects = True Then
    MsgBox "The shapes on Sheet1 are protected."
End If
ProtectFormatting Property

True if chart formatting cannot be modified by the user. Read/write Boolean.
Remarks

When this property is True, the Object command on the Format menu is disabled and chart elements cannot be added, moved, resized, or deleted.
Example

This example protects the formatting of embedded chart one on worksheet one.

`Worksheets(1).ChartObjects(1).Chart.ProtectFormatting = True`
ProtectGoalSeek Property

*True* if the user cannot modify chart data points with mouse actions. Read/write Boolean.
Example

This example protects the data points on embedded chart one on worksheet one.

`Worksheets(1).ChartObjects(1).Chart.ProtectGoalSeek = True`
Protection Property

- Returns a Protection object that represents the protection options of the worksheet.

expression.Protection

expression  Required. An expression that returns a Worksheet object.
Example
This example protects the active worksheet and then determines if columns can be inserted on the protected worksheet, notifying the user of this status.

Sub CheckProtection()

    ActiveSheet.Protect

    ' Check the ability to insert columns on a protected sheet.
    ' Notify the user of this status.
    If ActiveSheet.Protection.AllowInsertingColumns = True Then
        MsgBox "The insertion of columns is allowed on this protected worksheet."
    Else
        MsgBox "The insertion of columns is not allowed on this protected worksheet."
    End If

End Sub
ProtectionMode Property

True if user-interface-only protection is turned on. To turn on user interface protection, use the Protect method with the UserInterfaceOnly argument set to True. Read-only Boolean.
**Example**

This example displays the status of the `ProtectionMode` property.

MsgBox ActiveSheet.ProtectionMode
ProtectScenarios Property

True if the worksheet scenarios are protected. Read-only Boolean.
Example

This example displays a message box if scenarios are protected on Sheet1.

If Worksheets("Sheet1").ProtectScenarios Then _
    MsgBox "Scenarios are protected on this worksheet."
ProtectSelection Property

True if chart elements cannot be selected. Read/write Boolean.
Remarks

When this property is True, shapes cannot be added to the chart, and the Click and DoubleClick events for chart elements don’t occur.
Example

This example prevents chart elements from being selected on embedded chart one on worksheet one.

`Worksheets(1).ChartObjects(1).Chart.ProtectSelection = True`
ProtectStructure Property

True if the order of the sheets in the workbook is protected. Read-only Boolean.
Example

This example displays a message if the order of the sheets in the active workbook is protected.

If ActiveWorkbook.ProtectStructure = True Then
    MsgBox "Remember, you cannot delete, add, or change " & _
    Chr(13) & _
    "the location of any sheets in this workbook."
End If
ProtectWindows Property

True if the windows of the workbook are protected. Read-only Boolean.
Example

This example displays a message if the windows in the active workbook are protected.

If ActiveWorkbook.ProtectWindows = True Then
    MsgBox "Remember, you cannot rearrange any" & _
        " window in this workbook."
End If
PublishObjects Property

Returns the PublishObjects collection. Read-only.
Example

This example publishes all static **PublishObject** objects in the active workbook to the Web page.

Set objPObj = ActiveWorkbook.PublishObjects
For Each objPO in objPObj
    If objPO.HtmlType = xlHTMLStatic Then
        objPO.Publish
    End If
Next objPO
QueryTable Property

Returns a `QueryTable` object that represents the query table that intersects the specified range. Read-only.
Example

This example refreshes the query table that intersects cell A10 on worksheet one.

Worksheets(1).Range("a10").QueryTable.Refresh
QueryTables Property

Returns the **QueryTables** collection that represents all the query tables on the specified worksheet. Read-only.

For more information about returning a single object from a collection, see [Returning an Object from a Collection](#).
Example

This example refreshes all query tables on worksheet one.

For Each qt in Worksheets(1).QueryTables
    qt.Refresh
Next

This example sets query table one so that formulas to the right of it are automatically updated whenever it's refreshed.

Sheets("sheet1").QueryTables(1).FillAdjacentFormulas = True
QueryType Property

Indicates the type of query used by Microsoft Excel to populate the query table or PivotTable cache. Read-only `XlQueryType`.

`XlQueryType` can be one of these `XlQueryType` constants.
- `xlTextImport`. Based on a text file, for query tables only
- `xlOLEDBQuery`. Based on an OLE DB query, including OLAP data sources
- `xlWebQuery`. Based on a Web page, for query tables only
- `xlADORecordset`. Based on an ADO recordset query
- `xlDAORecordSet`. Based on a DAO recordset query, for query tables only
- `xlODBCQuery`. Based on an ODBC data source

`expression.QueryType`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Remarks

You specify the data source in the prefix for the Connection property’s value.
**Example**

This example refreshes the first query table on the first worksheet if the table is based on a Web page.

```vba
Set qtQtrResults = _
    Workbooks(1).Worksheets(1).QueryTables(1)
With qtQtrResults
    If .QueryType = xlWebQuery Then
        .Refresh
    End If
End With
```
RadarAxisLabels Property

Returns a TickLabels object that represents the radar axis labels for the specified chart group. Read-only.
Example

This example turns on radar axis labels for chart group one in Chart1 and then sets the color for the labels. The example should be run on a radar chart.

```
With Charts("Chart1").ChartGroups(1)
    .HasRadarAxisLabels = True
End With
```
Range Property

- Range property as it applies to the AllowEditRange object.

Returns a Range object that represents a subset of the ranges that can be edited on a protected worksheet.

expression.Range

expression  Required. An expression that returns an AllowEditRange object.

- Range property as it applies to the Application, Range, and Worksheet objects.

Returns a Range object that represents a cell or a range of cells.

expression.Range(Cell1, Cell2)

expression  Required. An expression that returns one of the above objects.

Cell1  Required Variant. The name of the range. This must be an A1-style reference in the language of the macro. It can include the range operator (a colon), the intersection operator (a space), or the union operator (a comma). It can also include dollar signs, but they’re ignored. You can use a local defined name in any part of the range. If you use a name, the name is assumed to be in the language of the macro.

Cell2  Optional Variant. The cell in the upper-left and lower-right corner of the range. Can be a Range object that contains a single cell, an entire column, or entire row, or it can be a string that names a single cell in the language of the macro.
Remarks

When used without an object qualifier, this property is a shortcut for 
ActiveSheet.Range (it returns a range from the active sheet; if the active sheet 
isn’t a worksheet, the property fails).

When applied to a Range object, the property is relative to the Range object. 
For example, if the selection is cell C3, then Selection.Range("B1") returns 
cell D3 because it’s relative to the Range object returned by the Selection 
property. On the other hand, the code ActiveSheet.Range("B1") always returns 
cell B1.

- Range property as it applies to the AutoFilter, Hyperlink, PivotCell, and 
  SmartTag objects.

For an AutoFilter object, returns a Range object that represents the range to 
which the specified AutoFilter applies. For a Hyperlink object, returns a Range 
object that represents the range the specified hyperlink is attached to. For a 
PivotCell object, returns a Range object that represents the range the specified 
PivotCell applies to. For a SmartTag object, returns a Range object that 
represents the range the specified smart tag applies to.

expression.Range

expression Required. An expression that returns one of the above objects.

- Range property as it applies to the GroupShapes and Shapes objects.

Returns a ShapeRange object that represents a subset of the shapes in a Shapes 
collection.

expression.Range(Index)

expression Required. An expression that returns one of the above objects.

Index Required Variant. The individual shapes to be included in the range. Can 
be an integer that specifies the index number of the shape, a string that specifies 
the name of the shape, or an array that contains either integers or strings.
Remarks

Although you can use the **Range** property to return any number of shapes, it's simpler to use the **Item** method if you only want to return a single member of the collection. For example, `Shapes(1)` is simpler than `Shapes.Range(1)`.

To specify an array of integers or strings for **Index**, you can use the **Array** function. For example, the following instruction returns two shapes specified by name.

```vba
Dim arShapes() As Variant
Dim objRange As Object
arShapes = Array("Oval 4", "Rectangle 5")
Set objRange = ActiveSheet.Shapes.Range(arShapes)
```

In Microsoft Excel, you cannot use this property to return a **ShapeRange** object containing all the **Shape** objects on a worksheet. Instead, use the following code:

```vba
Worksheets(1).Shapes.Select    ' select all shapes
set sr = Selection.ShapeRange    ' create ShapeRange
```
Example

- As it applies to the `Application`, `Range`, and `Worksheet` objects.

This example sets the value of cell A1 on Sheet1 to 3.14159.

```vba
Worksheets("Sheet1").Range("A1").Value = 3.14159
```

This example creates a formula in cell A1 on Sheet1.

```vba
Worksheets("Sheet1").Range("A1").Formula = "=10*RAND()"
```

This example loops on cells A1:D10 on Sheet1. If one of the cells has a value less than 0.001, the code replaces that value with 0 (zero).

```vba
For Each c In Worksheets("Sheet1").Range("A1:D10")
    If c.Value < .001 Then
        c.Value = 0
    End If
Next c
```

This example loops on the range named "TestRange" and displays the number of empty cells in the range.

```vba
numBlanks = 0
For Each c In Range("TestRange")
    If c.Value = "" Then
        numBlanks = numBlanks + 1
    End If
Next c
MsgBox "There are " & numBlanks & " empty cells in this range"
```

This example sets the font style in cells A1:C5 on Sheet1 to italic. The example uses Syntax 2 of the `Range` property.

```vba
Worksheets("Sheet1").Range(Cells(1, 1), Cells(5, 3))._Font.Italic = True
```

- As it applies to the `AutoFilter`, `Hyperlink`, `PivotCell`, and `SmartTag` objects.

The following example stores in a variable the address for the AutoFilter applied...
to the Crew worksheet.

rAddress = Worksheets("Crew").AutoFilter.Range.Address

This example scrolls through the workbook window until the hyperlink range is in the upper-left corner of the active window.

Workbooks(1).Activate
Set hr = ActiveSheet.Hyperlinks(1).Range
ActiveWindow.ScrollRow = hr.Row
ActiveWindow.ScrollColumn = hr.Column

▶ As it applies to the GroupShapes and Shapes objects.

This example sets the fill pattern for shapes one and three on myDocument.

Set myDocument = Worksheets(1)
myDocument.Shapes.Range(Array(1, 3))_.Fill.Patterned msoPatternHorizontalBrick

This example sets the fill pattern for the shapes named "Oval 4" and "Rectangle 5" on myDocument.

Dim arShapes() As Variant
Dim objRange As Object
Set myDocument = Worksheets(1)
arShapes = Array("Oval 4", "Rectangle 5")
Set objRange = myDocument.Shapes.Range(arShapes)
objRange.Fill.Patterned msoPatternHorizontalBrick

This example sets the fill pattern for shape one on myDocument.

Set myDocument = Worksheets(1)
Set myRange = myDocument.Shapes.Range(1)
myRange.Fill.Patterned msoPatternHorizontalBrick

This example creates an array that contains all the AutoShapes on myDocument, uses that array to define a shape range, and then distributes all the shapes in that range horizontally.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    numShapes = .Count
    If numShapes > 1 Then
numAutoShapes = 1
ReDim autoShpArray(1 To numShapes)
For i = 1 To numShapes
    If .Item(i).Type = msoAutoShape Then
        autoShpArray(numAutoShapes) = .Item(i).Name
        numAutoShapes = numAutoShapes + 1
    End If
Next
If numAutoShapes > 1 Then
    ReDim Preserve autoShpArray(1 To numAutoShapes)
    Set asRange = .Range(autoShpArray)
    asRange.Distribute msoDistributeHorizontally, False
End If
End If
End With
RangeSelection Property

- Returns a Range object that represents the selected cells on the worksheet in the specified window even if a graphic object is active or selected on the worksheet. Read-only.
Remarks

When a graphic object is selected on a worksheet, the Selection property returns the graphic object instead of a Range object; the RangeSelection property returns the range of cells that was selected before the graphic object was selected.

This property and the Selection property return identical values when a range (not a graphic object) is selected on the worksheet.

If the active sheet in the specified window isn’t a worksheet, this property fails.
Example

This example displays the address of the selected cells on the worksheet in the active window.

MsgBox ActiveWindow.RangeSelection.Address
ReadingOrder Property

Returns or sets the reading order for the specified object. Can be one of the following constants: xlRTL (right-to-left), xlLTR (left-to-right), or xlContext. Read/write Long.
Remarks

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you've selected or installed.
Example

This example sets the reading order to right-to-left for the chart title of Chart1.

Charts("Chart1").ChartTitle.**ReadingOrder** = xlRTL
ReadOnly Property

True if the workbook has been opened as read-only. Read-only Boolean.
Example

If the active workbook is read-only, this example saves it as Newfile.xls.

If ActiveWorkbook.ReadOnly Then
    ActiveWorkbook.SaveAs fileName:="NEWFILE.XLS"
End If
ReadOnlyRecommended Property

True if the workbook was saved as read-only recommended. Read-only Boolean.
Remarks

When you open a workbook that was saved as read-only recommended, Microsoft Excel displays a message recommending that you open the workbook as read-only.

Use the **SaveAs** method to change this property.
**Example**

This example displays a message if the active workbook is saved as read-only recommended.

```vba
If ActiveWorkbook.ReadOnlyRecommended = True Then
    MsgBox "This workbook is saved as read-only recommended"
End If
```
Ready Property

Returns **True** when the Microsoft Excel application is ready; **False** when the Excel application is not ready. Read-only **Boolean**.

`expression.Ready`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks to see if the **Ready** property is set to **True**, and if so, a message displays "Application is ready." Otherwise, Excel displays the message "Application is not ready."

Sub UseReady()
    If Application.**Ready** = True Then
        MsgBox "Application is ready."
    Else
        MsgBox "Application is not ready."
    End If
End Sub
RecentFiles Property

Returns a RecentFiles collection that represents the list of recently used files.

For information about returning a single object from a collection, see Returning an Object from a Collection.
**Example**

This example sets the maximum number of files in the list of recently used files to 6.

`Application.RecentFiles.Maximum = 6`
Recipients Property

- Returns or sets the recipients on the routing slip.

expression.Recipients(Index)

expression Required. An expression that returns a **RoutingSlip** object.

**Index** Optional **Variant**. The recipient. If this argument isn’t specified, the **Recipients** property returns (or can be set to) an array that contains all recipients.
Remarks

The order of the recipient list defines the delivery order if the routing delivery option is ` xlOneAfterAnother`. 

If a routing slip is in progress, only those recipients who haven’t already received and routed the document are returned or set.
Example

This example sends the open workbook to three recipients, one after the other.

With ThisWorkbook
    .HasRoutingSlip = True
    With .RoutingSlip
        .Delivery = xlOneAfterAnother
        .Recipients = Array("Adam Bendel", "Jean Selva", "Bernard Gabor")
        .Subject = "Here is the workbook"
        .Message = "Here is the workbook. What do you think?"
        .ReturnWhenDone = True
    End With
End With
    .Route
End With
Recognize Property

Returns True when data can be labeled as a smart tag. Read/write Boolean.

expression.Recognize

expression Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the ability to label data as smart tags is enabled and notifies the user.

Sub CheckSmartTagRecognition()
    ' Determine if data can be labeled as SmartTags.
    If Application.SmartTagRecognizers.Regnize = True Then
        MsgBox "Background smart tag recognition is turned on."
    Else
        MsgBox "Background smart tag recognition is turned off."
    End If
End Sub
RecordCount Property

Returns the number of records in the PivotTable cache or the number of cache records that contain the specified item. Read-only **Long**.
Remarks

This property reflects the transient state of the cache at the time that it’s queried. The cache can change between queries.
Example

This example displays the number of cache records that contain "Kiwi" in the "Products" field.

MsgBox Worksheets(1).PivotTables("Pivot1") _.PivotFields("Product").PivotItems("Kiwi").RecordCount
RecordRelative Property

True if macros are recorded using relative references; False if recording is absolute. Read-only Boolean.
Example

This example displays the address of the active cell on Sheet1 in A1 style if `RecordRelative` is `False`; otherwise, it displays the address in R1C1 style.

```vba
Worksheets("Sheet1").Activate
If Application.RecordRelative = False Then
    MsgBox ActiveCell.Address(ReferenceStyle:=xlA1)
Else
    MsgBox ActiveCell.Address(ReferenceStyle:=xlR1C1)
End If
```
Recordset Property

Returns or sets a **Recordset** object that’s used as the data source for the specified query table or PivotTable cache. Read/write.
Remarks

If this property is used to overwrite an existing recordset, the change takes effect when the Refresh method is run.
Example

This example changes the **Recordset** object used with the first query table on the first worksheet and then refreshes the query table.

```vba
With Worksheets(1).QueryTables(1)
    .Recordset = _
        OpenDatabase("c:\Nwind.mdb") _
        .OpenRecordset("employees")
    .Refresh
End With
```

This example creates a new PivotTable cache using an ADO connection to Microsoft Jet, and then it creates a new PivotTable report based on the cache, at cell A3 on the active worksheet.

```vba
Dim cnnConn As ADODB.Connection
Dim rstRecordset As ADODB.Recordset
Dim cmdCommand As ADODB.Command

' Open the connection.
Set cnnConn = New ADODB.Connection
With cnnConn
    .ConnectionString = _
        "Provider=Microsoft.Jet.OLEDB.4.0"
    .Open "C:\perfdate\record.mdb"
End With

' Set the command text.
Set cmdCommand = New ADODB.Command
Set cmdCommand.ActiveConnection = cnnConn
With cmdCommand
    .CommandText = "Select Speed, Pressure, Time From DynoRun"
    .CommandType = adCmdText
    .Execute
End With

' Open the recordset.
Set rstRecordset = New ADODB.Recordset
Set rstRecordset.ActiveConnection = cnnConn
rstRecordset.Open cmdCommand

' Create a PivotTable cache and report.
```
Set objPivotCache = ActiveWorkbook.PivotCaches.Add(_
    SourceType:=xlExternal)
Set objPivotCache.Recordset = rstRecordset
With objPivotCache
    .CreatePivotTable TableDestination:=Range("A3"), _
        TableName:="Performance"
End With
With ActiveSheet.PivotTables("Performance")
    .SmallGrid = False
    With .PivotFields("Pressure")
        .Orientation = xlRowField
        .Position = 1
    End With
    With .PivotFields("Speed")
        .Orientation = xlColumnField
        .Position = 1
    End With
    With .PivotFields("Time")
        .Orientation = xlDataField
        .Position = 1
    End With
End With
' Close the connections and clean up.
cnnConn.Close
Set cmdCommand = Nothing
Set rstRecordSet = Nothing
Set cnnConn = Nothing
ReferenceStyle Property

- Returns or sets how Microsoft Excel displays cell references and row and column headings in either A1 or R1C1 reference style. Read/write XlReferenceStyle.

XlReferenceStyle can be one of these XlReferenceStyle constants.

- xlA1
- xlR1C1

expression.Referencestyle

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the current reference style.

If Application.**ReferenceStyle** = xlR1C1 Then
    MsgBox ("Microsoft Excel is using R1C1 references")
Else
    MsgBox ("Microsoft Excel is using A1 references")
End If
RefersTo Property

Returns or sets the formula that the name is defined to refer to, in the language of the macro and in A1-style notation, beginning with an equal sign. Read/write String.
Example

This example creates a list of all the names in the active workbook, and it shows their formulas in A1-style notation in the language of the macro. The list appears on a new worksheet created by the example.

Set newSheet =Worksheets.Add
i = 1
For Each nm In ActiveWorkbook.Names
    newSheet.Cells(i, 1).Value = nm.Name
    newSheet.Cells(i, 2).Value = "" & nm.Refersto
    i = i + 1
Next
newSheet.Columns("A:B").AutoFit
RefersToLocal Property

Returns or sets the formula that the name refers to. The formula is in the language of the user, and it's in A1-style notation, beginning with an equal sign. Read/write String.
Example

This example creates a new worksheet and then inserts a list of all the names in the active workbook, including their formulas (in A1-style notation and in the language of the user).

Set newSheet = ActiveWorkbook.Worksheets.Add
i = 1
For Each nm In ActiveWorkbook.Names
  newSheet.Cells(i, 1).Value = nm.NameLocal
  newSheet.Cells(i, 2).Value = "" & nm.ReferstoLocal
  i = i + 1
Next
RefersToR1C1 Property

Returns or sets the formula that the name refers to. The formula is in the language of the macro, and it's in R1C1-style notation, beginning with an equal sign. Read/write String.
Example

This example creates a new worksheet and then inserts a list of all the names in the active workbook, including their formulas (in R1C1-style notation and in the language of the macro).

```vba
Set newSheet = ActiveWorkbook.Worksheets.Add
i = 1
For Each nm In ActiveWorkbook.Names
    newSheet.Cells(i, 1).Value = nm.Name
    newSheet.Cells(i, 2).Value = "'" & nm.ReferstoR1C1
    i = i + 1
Next
```
RefersToR1C1Local Property

Returns or sets the formula that the name refers to. This formula is in the language of the user, and it's in R1C1-style notation, beginning with an equal sign. Read/write String.
Example

This example creates a new worksheet and then inserts a list of all the names in the active workbook, including their formulas (in R1C1-style notation and in the language of the user).

```
Set newSheet = ActiveWorkbook.Worksheets.Add
i = 1
For Each nm In ActiveWorkbook.Names
    newSheet.Cells(i, 1).Value = nm.NameLocal
    newSheet.Cells(i, 2).Value = "'" & nm.ReferstoR1C1Local
    i = i + 1
Next
```
RefersToRange Property

Returns the **Range** object referred to by a **Name** object. Read-only.
Remarks

If the Name object doesn't refer to a range (for example, if it refers to a constant or a formula), this property fails.

To change the range that a name refers to, use the RefersTo property.
Example

This example displays the number of rows and columns in the print area on the active worksheet.

\[ p = \text{Names("Print\_Area").RefersToRange.Value} \]

\[ \text{MsgBox "Print\_Area: "} \& \text{UBound}(p, 1) \& \text{" rows, "} \& \_
\quad \text{UBound}(p, 2) \& \text{" columns"} \]
RefreshDate Property

Returns the date on which the PivotTable report or cache was last refreshed. Read-only Date.
Remarks

For **PivotCache** objects, the cache must have at least one PivotTable report associated with it.

For **OLAP** data sources, this property is updated after each query.
Example

This example displays the date on which the PivotTable report was last refreshed.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
dateString = Format(pvtTable.RefreshDate, "Long Date")
MsgBox "The data was last refreshed on " & dateString
```
Refreshing Property

True if there’s a background query in progress for the specified query table. Read/write Boolean.
Remarks

Use the `CancelRefresh` method to cancel background queries.
Example

This example displays a message box if there’s a background query in progress for query table one.

With Worksheets(1).QueryTables(1)
  If .Refreshing Then
    MsgBox "Query is currently refreshing: please wait"
  Else
    .Refresh BackgroundQuery := False
    .ResultRange.Select
  End If
End With
RefreshName Property

Returns the name of the person who last refreshed the PivotTable report data or the PivotTable cache. Read-only String.
Remarks

For OLAP data sources, this property is updated after each query.
Example

This example displays the name of the person who last refreshed the PivotTable report.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
MsgBox "The data was last refreshed by " & pvtTable.RefreshName
```
RefreshOnChange Property

True if the specified query table is refreshed whenever you change the parameter value of a parameter query. Read/write Boolean.
Remarks

You can set this property to True only if you use parameters of type xlRange and if the referenced parameter value is in a single cell. The refresh occurs when you change the value of the cell.
**Example**

This example changes the SQL statement for the first query table on Sheet1. The clause "(ContactTitle=?)" indicates that the query is a parameter query, and the value of the title is set to the value of cell D4. The query table will be automatically refreshed whenever the value of this cell changes.

```vbnet
Set objQT = Worksheets("Sheet1").QueryTables(1)
objQT.CommandText = "Select * From Customers Where (ContactTitle=?)"
Set objParam1 = objQT.Parameters _
    .Add("Contact Title", xlParamTypeVarChar)
objParam1.RefreshOnChange = True
objParam1.SetParam xlRange, Range("D4")
```
RefreshOnFileOpen Property

True if the PivotTable cache or query table is automatically updated each time the workbook is opened. The default value is False. Read/write Boolean.
Remarks

Query tables and PivotTable reports are not automatically refreshed when you open the workbook by using the Open method in Visual Basic. Use the Refresh method to refresh the data after the workbook is open.
Example

This example causes the PivotTable cache to automatically update each time the workbook is opened.

`ActiveWorkbook.PivotCaches(1).RefreshOnFileOpen = True`
RefreshPeriod Property

Returns or sets the number of minutes between refreshes. Read/write Long.
Remarks

Setting the period to 0 (zero) disables automatic timed refreshes and is equivalent to setting this property to **Null**.

The value of the **RefreshPeriod** property can be an integer from 0 through 32767.
Example

This example sets the refresh period for the PivotTable cache (PivotTable3) to 15 minutes.

Set objPC = Worksheets("Sheet1").PivotTables("PivotTable3").PivotCache
objPC.RefreshPeriod = 15
RefreshStyle Property

Returns or sets the way rows on the specified worksheet are added or deleted to accommodate the number of rows in a recordset returned by a query. Read/write XlCellInsertionMode.

XlCellInsertionMode can be one of these XlCellInsertionMode constants.

xlInsertDeleteCells. Partial rows are inserted or deleted to match the exact number of rows required for the new recordset.

xlOverwriteCells. No new cells or rows are added to the worksheet. Data in surrounding cells is overwritten to accommodate any overflow.

xlInsertEntireRows. Entire rows are inserted, if necessary, to accommodate any overflow. No cells or rows are deleted from the worksheet.

expression.RefreshStyle

expression  Required. An expression that returns one of the objects in the Applies To list.
**Example**

This example adds a query table to Sheet1. The `RefreshStyle` property adds rows to the worksheet as needed, to hold the data results.

```vba
Dim qt As QueryTable
Set qt = Sheets("sheet1").QueryTables
    .Add(Connection:="Finder;c:\myfile.dqy", _
        Destination:=Range("sheet1!a1"))
With qt
    .RefreshStyle = xlInsertEntireRows
    Refresh
End With
```
RegisteredFunctions Property

Returns information about functions in either dynamic-link libraries (DLLs) or code resources that were registered with the REGISTER or REGISTER.ID macro functions. Read-only Variant.

expression.RegisteredFunctions(Index1, Index2)

expression Required. An expression that returns an Application object.

Index1 Optional Variant. The name of the DLL or code resource.

Index2 Optional Variant. The name of the function.
Remarks

If you don’t specify the index arguments, this property returns an array that contains a list of all registered functions. Each row in the array contains information about a single function, as shown in the following table.

<table>
<thead>
<tr>
<th>Column</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The name of the DLL or code resource</td>
</tr>
<tr>
<td>2</td>
<td>The name of the procedure in the DLL or code resource</td>
</tr>
<tr>
<td>3</td>
<td>Strings specifying the data types of the return values, and the number and data types of the arguments</td>
</tr>
</tbody>
</table>

If there are no registered functions, this property returns **Null**.
Example

This example creates a list of registered functions, placing one registered function in each row on Sheet1. Column A contains the full path and file name of the DLL or code resource, column B contains the function name, and column C contains the argument data type code.

```
theArray = Application.RegisteredFunctions
If IsNull(theArray) Then
    MsgBox "No registered functions"
Else
    For i = LBound(theArray) To UBound(theArray)
        For j = 1 To 3
            Worksheets("Sheet1").Cells(i, j).Formula = theArray(i, j)
        Next j
    Next i
End If
```
RelyOnCSS Property

**True** if cascading style sheets (CSS) are used for font formatting when you view a saved document in a Web browser. Microsoft Excel creates a cascading style sheet file and saves it either to the specified folder or to the same folder as your Web page, depending on the value of the [OrganizeInFolder](#) property. **False** if HTML `<FONT>` tags and cascading style sheets are used. The default value is **True**. Read/write [Boolean](#).
Remarks

You should set this property to True if your Web browser supports cascading style sheets, as this will give you more precise layout and formatting control on your Web page and make it look more like your document (as it appears in Microsoft Excel).
Example

This example enables the use of cascading style sheets as the global default for the application.

Application.DefaultWebOptions.ReplyOnCSS = True
RelyOnVML Property

True if image files are not generated from drawing objects when you save a document as a Web page. False if images are generated. The default value is False. Read/write Boolean.
Remarks

You can reduce file sizes by not generating images for drawing objects, if your Web browser supports Vector Markup Language (VML). For example, Microsoft Internet Explorer 5 supports this feature, and you should set the `RelyOnVML` property to `True` if you are targeting this browser. For browsers that do not support VML, the image will not appear when you view a Web page saved with this property enabled.

For example, you should not generate images if your Web page uses image files that you have generated earlier, and if the location where you save the document is different from the final location of the page on the Web server.
Example

This example specifies that images are generated when saving the worksheet to a Web page.

Workbooks(1).WebOptions.\texttt{RelyOnVML} = False
RemovePersonalInformation Property

**True** if personal information can be removed from the specified workbook. The default value is **False**. Read/write **Boolean**.

**expression.RemovePersonalInformation**

**expression**  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if personal information can be removed from the specified workbook and notifies the user.

Sub UsePersonalInformation()
    Dim wkbOne As Workbook
    Set wkbOne = Application.Workboo
    ' Determine settings and notify user.
    If wkbOne.RemovePersonalInformation = True Then
        MsgBox "Personal information can be removed."
    Else
        MsgBox "Personal information cannot be removed."
    End If
End Sub
RepeatItemsOnEachPrintedPage Property

*True* if row, column, and item labels appear on the first row of each page when the specified PivotTable report is printed. *False* if labels are printed only on the first page. The default value is *True*. Read/write *Boolean*. 
Remarks

The PivotTable report must be the only one in the print area. To set an indented format for a PivotTable report, use the **Format** method.

Microsoft Excel prints row and column labels in place of any print titles set for the worksheet. Use the **PrintTitles** property to determine whether print titles are set for the PivotTable report.
Example

This example sets Microsoft Excel to repeat the labels on each page when the fourth PivotTable report on the active worksheet is printed.

ActiveSheet.PivotTables("PivotTable4") .RepeatItemsOnEachPrintedPage = True
ReplaceFormat Property

Sets the replacement criteria to use in replacing cell formats.

expression.ReplaceFormat

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

The following example sets the search criteria to find cells containing Arial, Regular, Size 10 font, replaces their formats with Arial, Bold, Size 8 font, and then notifies the user.

Sub MakeBold()

    ' Establish search criteria.
    With Application.FindFormat.Font
        .Name = "Arial"
        .FontStyle = "Regular"
        .Size = 10
    End With

    ' Establish replacement criteria.
    With Application.ReplaceFormat.Font
        .Name = "Arial"
        .FontStyle = "Bold"
        .Size = 8
    End With

    ' Notify user.
    With Application.ReplaceFormat.Font
        MsgBox .Name & "," & .FontStyle & "," & .Size & "," "font is what the search criteria will replace cell for"
    End With

End Sub
ReplacementList Property

Returns the array of AutoCorrect replacements.

\( \text{expression} . \text{ReplacementList}(\text{Index}) \)

\textit{expression}  Required. An expression that returns an \texttt{AutoCorrect} object.

\textit{Index}  Optional \texttt{Variant}. The row index of the array of AutoCorrect replacements to be returned. The row is returned as a one-dimensional array with two elements: The first element is the text in column 1, and the second element is the text in column 2.
Remarks

If *Index* is not specified, this method returns a two-dimensional array. Each row in the array contains one replacement, as shown in the following table.

<table>
<thead>
<tr>
<th>Column</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The text to be replaced</td>
</tr>
<tr>
<td>2</td>
<td>The replacement text</td>
</tr>
</tbody>
</table>

Use the `AddReplacement` method to add an entry to the replacement list.
Example

This example searches the replacement list for "Temperature" and displays the replacement entry if it exists.

repl = Application.AutoCorrect.ReplacementList
For x = 1 To UBound(repl)
    If repl(x, 1) = "Temperature" Then MsgBox repl(x, 2)
Next
ReplaceText Property

True if text in the list of AutoCorrect replacements is replaced automatically. Read/write Boolean.
Example

This example turns off automatic text replacement.

With Application.AutoCorrect
    .CapitalizeNamesOfDays = True
    .ReplaceText = False
End With
Resize Property

Resizes the specified range. Returns a **Range** object that represents the resized range.

```plaintext
expression.Resize(RowSize, ColumnSize)
```

- `expression` Required. An expression that returns a **Range** object to be resized.
- **RowSize** Optional **Variant**. The number of rows in the new range. If this argument is omitted, the number of rows in the range remains the same.
- **ColumnSize** Optional **Variant**. The number of columns in the new range. If this argument is omitted, the number of columns in the range remains the same.
Example

This example resizes the selection on Sheet1 to extend it by one row and one column.

```vbscript
Worksheets("Sheet1").Activate
numRows = Selection.Rows.Count
numColumns = Selection.Columns.Count
Selection.Resize(numRows + 1, numColumns + 1).Select
```

This example assumes that you have a table on Sheet1 that has a header row. The example selects the table, without selecting the header row. The active cell must be somewhere in the table before you run the example.

```vbscript
Set tbl = ActiveCell.CurrentRegion
tbl.Offset(1, 0).Resize(tbl.Rows.Count - 1, _
```
ResultRange Property

Returns a **Range** object that represents the area of the worksheet occupied by the specified query table. Read-only.
Remarks

The range doesn’t include the field name row or the row number column.
Example

This example sums the data in the first column of query table one. The sum of the first column is displayed below the data range.

Set c1 = Sheets("sheet1").QueryTables(1).ResultRange.Columns(1)
c1.Name = "Column1"
c1.End(xlDown).Offset(2, 0).Formula = "=sum(Column1)"
ReturnWhenDone Property

- True if the workbook is returned to the sender when routing is finished. Read/write Boolean.
Remarks

You cannot set this property if routing is in progress
Example

This example sends Book1.xls to three recipients, one after another, and then it returns the workbook to the sender when routing has been completed.

```
Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", _
                         "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
    .ReturnWhenDone = True
End With
Workbooks("BOOK1.XLS").Route
```
Reverse Property

`MsoTrue` reverses the nodes in a diagram. Read/write `MsoTriState`.

MsoTriState can be one of these MsoTriState constants.
- `msoCTrue` Not used with this property.
- `msoFalse` Leaves the diagram nodes as they are.
- `msoTriStateMixed` Not used with this property.
- `msoTriStateToggle` Not used with this property.
- `msoTrue` Reverses the nodes in a diagram.

`expression.Reverse`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

The following example creates a pyramid diagram, and reverses the nodes so that the node that was on the bottom of the pyramid is on the top, and the node that was on the top is on the bottom.

Sub CreatePyramidDiagram()

    Dim shpDiagram As Shape
    Dim dgnNode As DiagramNode
    Dim intCount As Integer

    'Add pyramid diagram to the current document
    Set shpDiagram = ActiveSheet.Shapes.AddDiagram( _
        Type:=msoDiagramPyramid, Left:=10, _
        Top:=15, Width:=400, Height:=475)

    'Add first child node to the diagram

    'Add three child nodes
    For intCount = 1 To 3
        dgnNode.AddNode
    Next intCount

    With dgnNode.Diagram

        'Enable automatic formatting
        .AutoFormat = msoTrue

        'Reverse the order of the nodes
        .Reverse = msoTrue
    End With

End Sub
ReversePlotOrder Property

**True** if Microsoft Excel plots data points from last to first. Read/write **Boolean**.
Remarks

This property cannot be used on radar charts.
Example

This example plots data points from last to first on the value axis on Chart1.

Charts("Chart1").Axes(xlValue).ReversePlotOrder = True
RevisionNumber Property

Returns the number of times the workbook has been saved while open as a shared list. If the workbook is open in exclusive mode, this property returns 0 (zero). Read-only Long.
Remarks

The RevisionNumber property is updated only when the local copy of the workbook is saved, not when remote copies are saved.
**Example**

This example uses the revision number to determine whether the active workbook is open in exclusive mode. If it is, the example saves the workbook as a shared list.

```vbnet
If ActiveWorkbook.RevisionNumber = 0 Then
    ActiveWorkbook.SaveAs _
        filename:=ActiveWorkbook.FullName, _
        accessMode:=xlShared, _
        conflictResolution:= _
            xlOtherSessionChanges
End If
```
RGB Property

- RGB property as it applies to the ChartColorFormat object.
  Returns the red-green-blue value of the specified color. Read-only Long.
  
  \textit{expression}.RGB

\textit{expression}  Required. An expression that returns one of the above objects.

- RGB property as it applies to the ColorFormat object.
  Returns or sets the red-green-blue value of the specified color. Read/write Long.
  
  \textit{expression}.RGB

\textit{expression}  Required. An expression that returns one of the above objects.
Example

This example sets the interior color of the range A1:A10 to the chart area foreground fill color on chart one.

RightAngleAxes Property

True if the chart axes are at right angles, independent of chart rotation or elevation. Applies only to 3-D line, column, and bar charts. Read/write Boolean.
Remarks

If this property is True, the Perspective property is ignored.
Example

This example sets the axes in Chart1 to intersect at right angles. The example should be run on a 3-D chart.

`Charts("Chart1").RightAngleAxes = True`
RightFooter Property

- Returns or sets the right part of the footer. Read/write **String**.
Remarks

Special format codes can be used in the footer text.
Example

This example prints the page number in the lower-right corner of every page.

Worksheets("Sheet1").PageSetup.RightFooter = "&P"
RightFooterPicture Property

Returns a Graphic object that represents the picture for the right section of the footer. Used to set attributes about the picture.

\textit{expression}.RightFooterPicture

\textit{expression}  Required. An expression that returns a PageSetup object.
Remarks

The **RighFooterPicture** property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the right section of the footer. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()
    With ActiveSheet.PageSetup.RightFooterPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With
    ' Enable the image to show up in the right footer.
    ActiveSheet.PageSetup.RightFooter = "&G"
End Sub

Note  It is required that "&G" is a part of the RightFooter property string in order for the image to show up in the right footer.
RightHeader Property

Returns or sets the right part of the header. Read/write String.
Remarks

Special format codes can be used in the header text.
Example

This example prints the filename in the upper-right corner of every page.

\texttt{Worksheets("Sheet1").PageSetup.\texttt{RightHeader} = "&F"}
RightHeaderPicture Property

Returns a **Graphic** object that represents the picture for the right section of the header. Used to set attributes about the picture.

`expression.RightHeaderPicture`

*expression*  Required. An expression that returns a **PageSetup** object.
Remarks

The **RightHeaderPicture** property is read-only, but the properties on it are not all read-only.
Example

The following example adds a picture titled: Sample.jpg from the C:\ drive to the right section of the header. This example assumes that a file called Sample.jpg exists on the C:\ drive.

Sub InsertPicture()

    With ActiveSheet.PageSetup.RightHeaderPicture
        .FileName = "C:\Sample.jpg"
        .Height = 275.25
        .Width = 463.5
        .Brightness = 0.36
        .ColorType = msoPictureGrayscale
        .Contrast = 0.39
        .CropBottom = -14.4
        .CropLeft = -28.8
        .CropRight = -14.4
        .CropTop = 21.6
    End With

    ' Enable the image to show up in the right header.
   ActiveSheet.PageSetup.RightHeader = "&G"

End Sub

Note  It is required that "&G" is a part of the RightHeader property string in order for the image to show up in the right header.
RightMargin Property

Returns or sets the size of the right margin, in points. Read/write Double.
Remarks

Margins are set or returned in points. Use the `InchesToPoints` method or the `CentimetersToPoints` method to convert measurements from inches or centimeters.
**Example**

This example sets the right margin of Sheet1 to 1.5 inches.

```vba
Worksheets("Sheet1").PageSetup.RightMargin = _
    Application.InchesToPoints(1.5)
```

This example sets the right margin of Sheet1 to 2 centimeters.

```vba
Worksheets("Sheet1").PageSetup.RightMargin = _
    Application.CentimetersToPoints(2)
```

This example displays the current right-margin setting for Sheet1.

```vba
marginInches = Worksheets("Sheet1").PageSetup.RightMargin / _
    Application.InchesToPoints(1)
MsgBox "The current right margin is " & marginInches & " inches"
```
RobustConnect Property

Returns or sets how the PivotTable cache connects to its data source. Read/write XlRobustConnect.

XlRobustConnect can be one of these XlRobustConnect constants.

- **xlAlways** The cache always uses external source information (as defined by the [SourceConnectionFile](#) or [SourceDataFile](#) property) to reconnect.
- **xlAsRequired** The cache uses external source info to reconnect using the [Connection](#) property.
- **xlNever** The cache never uses source info to reconnect.

*expression*.RobustConnect

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

The following example determines the setting for the cache connection and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub CheckRobustConnect()
    Dim pvtCache As PivotCache
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)
    ' Determine the connection robustness and notify user.
    Select Case pvtCache.RobustConnect
        Case xlAlways
            MsgBox "The PivotTable cache is always connected to its source.
        Case xlAsRequired
            MsgBox "The PivotTable cache is connected to its source as required.
        Case xlNever
            MsgBox "The PivotTable cache is never connected to its source.
    End Select
End Sub
RollZoom Property

True if the IntelliMouse zooms instead of scrolling. Read/write Boolean.
Example

This example enables the IntelliMouse to zoom instead of scroll.

Application.RollZoom = True
Root Property

- Returns the root `DiagramNode` object which the root diagram node belongs.

`expression.Root`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
**Example**

The following example creates an organization chart and adds child nodes to the root diagram node.

Sub AddChildNodesToRoot()
    Dim nodDiagram As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer

    Set shDiagram = ActiveSheet.Shapes.AddDiagram _
        (Type:=msoDiagramOrgChart, Left:=10, Top:=15, _
         Width:=400, Height:=475)

    ' Add the first node to the diagram.

    ' Establish the first node as the root.
    Set nodDiagram = shDiagram.DiagramNode.Root

    ' Add three modes to the diagram.
    For intCount = 1 To 3
        nodDiagram.Children.AddNode
    Next intCount
End Sub
RotatedChars Property

- **True** if characters in the specified WordArt are rotated 90 degrees relative to the WordArt's bounding shape. **False** if characters in the specified WordArt retain their original orientation relative to the bounding shape. Read/write **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**
- **msoFalse** Characters in the specified WordArt retain their original orientation relative to the bounding shape.
- **msoTriStateMixed**
- **msoTriStateToggle**
- **msoTrue** Characters in the specified WordArt are rotated 90 degrees relative to the WordArt's bounding shape.

*expression*.RotatedChars

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

If the WordArt has horizontal text, setting the `RotatedChars` property to `msoTrue` rotates the characters 90 degrees counterclockwise. If the WordArt has vertical text, setting the `RotatedChars` property to `msoFalse` rotates the characters 90 degrees clockwise. Use the `ToggleVerticalText` method to switch between horizontal and vertical text flow.

The `Flip` method and `Rotation` property of the `Shape` object and the `RotatedChars` property and `ToggleVerticalText` method of the `TextEffectFormat` object all affect the character orientation and direction of text flow in a `Shape` object that represents WordArt. You may have to experiment to find out how to combine the effects of these properties and methods to get the result you want.
Example

This example adds WordArt that contains the text "Test" to myDocument and rotates the characters 90 degrees counterclockwise.

Set myDocument = Worksheets(1)
Set newWordArt = myDocument.Shapes.AddTextEffect(_
  PresetTextEffect:=msoTextEffect1, Text:="Test", _
  FontName:="Arial Black", FontSize:=36, _
  FontBold:=False, FontItalic:=False, Left:=10, _
  Top:=10)
newWordArt.TextEffect.RotatedChars = msoTrue
Rotation Property

**Chart** object: Returns or sets the rotation of the 3-D chart view (the rotation of the plot area around the z-axis, in degrees). The value of this property must be from 0 to 360, except for 3-D bar charts, where the value must be from 0 to 44. The default value is 20. Applies only to 3-D charts. Read/write **Variant**.

**Shape** or **ShapeRange** object: Returns or sets the rotation of the shape, in degrees. Read/write **Single**.
Example

This example sets the rotation of Chart1 to 30 degrees. The example should be run on a 3-D chart.

Charts("Chart1").Rotation = 30
RotationY Property

Returns or sets the rotation of the extruded shape around the y-axis in degrees. Can be a value from – 90 through 90. A positive value indicates rotation to the left; a negative value indicates rotation to the right. Read/write Single.

expression.RotationY

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

To set the rotation of the extruded shape around the x-axis, use the `RotationX` property of the `ThreeDFormat` object. To set the rotation of the extruded shape around the z-axis, use the `Rotation` property of the `Shape` object. To change the direction of the extrusion’s sweep path without rotating the front face of the extrusion, use the `SetExtrusionDirection` method.
Example

This example adds three identical extruded ovals to myDocument and sets their rotation around the y-axis to $-30$, $0$, and $30$ degrees, respectively.

```vbnet
Set myDocument = Worksheets(1)
With myDocument.Shapes
    With .AddShape(msoShapeOval, 30, 30, 50, 25).ThreeD.
        .Visible = True
        .RotationY = -30
    End With
    With .AddShape(msoShapeOval, 30, 70, 50, 25).ThreeD.
        .Visible = True
        .RotationY = 0
    End With
    With .AddShape(msoShapeOval, 30, 110, 50, 25).ThreeD.
        .Visible = True
        .RotationY = 30
    End With
End With
```
RoundedCorners Property

True if the embedded chart has rounded corners. Read/write Boolean.
Example

This example adds rounded corners to embedded chart one on Sheet1.

`Worksheets("Sheet1").ChartObjects(1).RoundedCorners = True`
Routed Property

True if the workbook has been routed to the next recipient. False if the workbook needs to be routed. Read-only Boolean.
Remarks

If the workbook wasn't routed to the current recipient, this property is always False (for example, if the document has no routing slip, or if a routing slip was just created).
Example

This example sends the workbook to the next recipient.

If ActiveWorkbook.HasRoutingSlip And Not ActiveWorkbook.Routed Then
    ActiveWorkbook.Route
End If
RoutingSlip Property

Returns a RoutingSlip object that represents the routing slip for the workbook. Reading this property if there's no routing slip causes an error (check the HasRoutingSlip property first). Read-only.
Example

This example creates a routing slip for Book1.xls and then sends the workbook to three recipients, one after another.

```vba
Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", 
                      "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
End With
Workbooks("BOOK1.XLS").Route
```
Row Property

Returns the number of the first row of the first area in the range. Read-only Long.
Example

This example sets the row height of every other row on Sheet1 to 4 points.

For Each rw In Worksheets("Sheet1").Rows
    If rw.Row Mod 2 = 0 Then
        rw.RowHeight = 4
    End If
Next rw
RowColSettings Property

True if the custom view includes settings for hidden rows and columns (including filter information). Read-only Boolean.
Example

This example creates a list of the custom views in the active workbook and their print settings and row and column settings.

With Worksheets(1)
  .Cells(1,1).Value = "Name"
  .Cells(1,2).Value = "Print Settings"
  .Cells(1,3).Value = "RowColSettings"
  rw = 0
  For Each v In ActiveWorkbook.CustomViews
    rw = rw + 1
    .Cells(rw, 1).Value = v.Name
    .Cells(rw, 2).Value = v.PrintSettings
    .Cells(rw, 3).Value = v.RowColSettings
  Next
End With
RowFields Property

Returns an object that represents either a single field in a PivotTable report (a PivotField object) or a collection of all the fields (a PivotFields object) that are currently showing as row fields. Read-only.

`expression.RowFields(Index)`

`expression` Required. An expression that returns a PivotTable object.

`Index` Optional Variant. The name or number of the field to be returned (can be an array to specify more than one field).
Example

This example adds the PivotTable report’s row field names to a list on a new worksheet.

```vba
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.RowFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
```
RowGrand Property

True if the PivotTable report shows grand totals for rows. Read/write Boolean.
Example

This example sets the PivotTable report to show grand totals for rows.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.RowGrand = True
```
RowHeight Property

Returns the height of all the rows in the range specified, measured in points. Returns Null if the rows in the specified range aren’t all the same height. Read/write Variant.
Remarks

For a single row, the value of the **Height** property is equal to the value of the **RowHeight** property. However, you can also use the **Height** property to return the total height of a range of cells.

Other differences between **RowHeight** and **Height** include the following:

- **Height** is read-only.
- If you return the **RowHeight** property of several rows, you will either get the row height of each of the rows (if all the rows are the same height) or **Null** (if they’re different heights). If you return the **Height** property of several rows, you will get the total height of all the rows.
**Example**

This example doubles the height of row one on Sheet1.

```vba
With Worksheets("Sheet1").Rows(1)
  .RowHeight = .RowHeight * 2
End With
```
RowItems Property

Returns a PivotItemList collection that correspond to the items on the category axis that represent the selected cell.

expression.RowItems

expression Required. An expression that returns a PivotCell object.
**Example**

This example determines if the data item in cell B5 is under the Inventory item in the first row field and notifies the user. The example assumes a PivotTable exists on the active worksheet and that column B of the worksheet contains a row item of the PivotTable.

Sub CheckRowItems()
    ' Determine if there is a match between the item and row field.
    If Application.Range("B5").PivotCell.RowItems.Item(1) = "Inventory"
        MsgBox "Cell B5 is a member of the 'Inventory' row field.
    Else
        MsgBox "Cell B5 is not a member of the 'Inventory' row field"
    End If
End Sub
RowNumbers Property

True if row numbers are added as the first column of the specified query table. Read/write Boolean.
Remarks

Setting this property to **True** doesn’t immediately cause row numbers to appear. The row numbers appear the next time the query table is refreshed, and they’re reconfigured every time the query table is refreshed.
Example

This example adds row numbers and field names to the query table.

With Worksheets(1).QueryTables("ExternalData1")
    .RowNumbers = True
    .FieldNames = True
    .Refresh
End With
RowRange Property

Returns a **Range** object that represents the range including the row area on the PivotTable report. Read-only.
Example

This example selects the row headers on the PivotTable report.

`Worksheets("Sheet1").Activate`  
`Range("A3").Select`  
`ActiveCell.PivotTable.RowRange.Select`
Rows Property

For an Application object, returns a Range object that represents all the rows on the active worksheet. If the active document isn’t a worksheet, the Rows property fails. For a Range object, returns a Range object that represents the rows in the specified range. For a Worksheet object, returns a Range object that represents all the rows on the specified worksheet. Read-only Range object.
Remarks

For information about returning a single member of a collection, see Returning an Object from a Collection.

Using this property without an object qualifier is equivalent to using `ActiveSheet.Rows`.

When applied to a `Range` object that’s a multiple selection, this property returns rows from only the first area of the range. For example, if the `Range` object has two areas — A1:B2 and C3:D4 — `Selection.Rows.Count` returns 2, not 4. To use this property on a range that may contain a multiple selection, test `Areas.Count` to determine whether the range is a multiple selection. If it is, loop over each area in the range, as shown in the third example.
**Example**

This example deletes row three on Sheet1.

`Worksheets("Sheet1").Rows(3).Delete`

This example deletes rows in the current region on worksheet one where the value of cell one in the row is the same as the value in cell one in the previous row.

```vba
For Each rw In Worksheets(1).Cells(1, 1).CurrentRegion.Rows
    this = rw.Cells(1, 1).Value
    If this = last Then rw.Delete
    last = this
Next
```

This example displays the number of rows in the selection on Sheet1. If more than one area is selected, the example loops through each area.

```vba
Worksheets("Sheet1").Activate
areaCount = Selection.Areas.Count
If areaCount <= 1 Then
    MsgBox "The selection contains " & _
    Selection.Rows.Count & " rows."
Else
    i = 1
    For Each a In Selection.Areas
        MsgBox "Area " & i & " of the selection contains " & _
        a.Rows.Count & " rows."
        i = i + 1
    Next a
End If
```
RTD Property

- Returns an RTD object.

expression.RTD

expression  Required. An expression that returns an Application object.
Saved Property

True if no changes have been made to the specified workbook since it was last saved. Read/write Boolean.
Remarks

If a workbook has never been saved, its Path property returns an empty string (""').

You can set this property to True if you want to close a modified workbook without either saving it or being prompted to save it.
Example

This example displays a message if the active workbook contains unsaved changes.

If Not ActiveWorkbook.Saved Then
    MsgBox "This workbook contains unsaved changes."
End If

This example closes the workbook that contains the example code and discards any changes to the workbook by setting the Saved property to True.

ThisWorkbook.Saved = True
ThisWorkbook.Close
SaveData Property

True if data for the PivotTable report is saved with the workbook. False if only the report definition is saved. Read/write Boolean.
Remarks

For OLAP data sources, this property is always set to False.
Example

This example sets the PivotTable report to save data with the workbook.

```vba
Set pvtTable = Worksheets("Sheet1").Range("A3").PivotTable
pvtTable.SaveData = True
```
SaveHiddenData Property

**True** if data outside of the specified range is saved when you save the document as a Web page. This data may be necessary for maintaining formulas. **False** if data outside of the specified range is not saved with the Web page. The default value is **True**. Read/write **Boolean**.
Remarks

If you choose not to save data outside of the specified range, references to that data in the formula are converted to static values. If the data is in another sheet or workbook, the result of the formula is saved as a static value.
Example

This example prevents hidden data from being saved with Web pages.

Application.DefaultWebOptions.SaveHiddenData = False
SaveLinkValues Property

True if Microsoft Excel saves external link values with the workbook. Read/write Boolean.
Example

This example causes Microsoft Excel to save external link values with the active workbook.

`ActiveWorkbook.SaveLinkValues = True`
SaveNewWebPagesAsWebArchives

**Property**

*True* if new Web pages can be saved as Web archives. Read/write *Boolean*.

*expression*.SaveNewWebPagesAsWebArchives

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the settings for saving new Web pages as Web archives and notifies the user.

Sub DetermineSettings()
    ' Determine settings and notify user.
    If Application.DefaultWebOptions.SaveNewWebPagesAsWebArchives = True Then
        MsgBox "New Web pages will be saved as Web archives."
    Else
        MsgBox "New Web pages will not be saved as Web archives."
    End If
End Sub
**SavePassword Property**

- **True** if password information in an ODBC connection string is saved with the specified query. **False** if the password is removed. Read/write **Boolean**.
Remarks

This property affects only ODBC queries.
Example

This example causes password information to be removed from the ODBC connection string whenever query table one is saved.

`Worksheets(1).QueryTables(1).SavePassword = False`
**ScaleType Property**

Returns or sets the value axis scale type. Read/write `XlScaleType`.

`XlScaleType` can be one of these `XlScaleType` constants.

- `xlScaleLinear`
- `xlScaleLogarithmic`

`expression.ScaleType`

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

A logarithmic scale uses base 10 logarithms.
Example

This example sets the value axis in Chart1 to use a logarithmic scale.

Charts("Chart1").Axes(xlValue).ScaleType = xlScaleLogarithmic
SchemeColor Property

- **SchemeColor property as it applies to the ColorFormat object.**

  Returns or sets the color of a Color object as an index in the current color scheme. Read/write Integer.

  \[ \text{expression}.\text{SchemeColor} \]

  \[ expression \text{ Required. An expression that returns one of the above objects.} \]

- **SchemeColor property as it applies to the ChartColorFormat object.**

  Returns or sets the color of a Color object as an index in the current color scheme. Read/write Long.

  \[ \text{expression}.\text{SchemeColor} \]

  \[ expression \text{ Required. An expression that returns one of the above objects.} \]
Example

This example sets the foreground color, background color, and gradient for the chart area fill on chart one.

With Charts(1).ChartArea.Fill
   .Visible = True
   .ForeColor.SchemeColor = 15
   .BackColor.SchemeColor = 17
   .TwoColorGradient msoGradientHorizontal, 1
End With
ScreenSize Property

Returns or sets the ideal minimum screen size (width by height, in pixels) that you should use when viewing the saved document in a Web browser. Can be one of the MsoScreenSize constants listed below. The default constant is msoScreenSize800x600. Read/write MsoScreenSize.

MsoScreenSize can be one of these MsoScreenSize constants.

- msoScreenSize1152x882
- msoScreenSize1280x1024
- msoScreenSize1800x1440
- msoScreenSize544x376
- msoScreenSize720x512
- msoScreenSize1024x768
- msoScreenSize1152x900
- msoScreenSize1600x1200
- msoScreenSize1920x1200
- msoScreenSize640x480
- msoScreenSize800x600

expression.ScreenSize

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the target screen size at 800x600 pixels.

Application.DefaultWebOptions.ScreenSize = _
    msoScreenSize800x600
**ScreenTip Property**

Returns or sets the ScreenTip text for the specified hyperlink. Read/write **String**.
**Remarks**

After the document has been saved to a Web page, the ScreenTip text may appear (for example) when the mouse pointer is positioned over the hyperlink while the document is being viewed in a Web browser. Some Web browsers may not support ScreenTips.
Example

This example sets the screen tip for the first hyperlink on the active worksheet.

```
ActiveSheet.Hyperlinks(1).ScreenTip = "Return to the home page"
```
ScreenUpdating Property

True if screen updating is turned on. Read/write Boolean.
Remarks

Turn screen updating off to speed up your macro code. You won't be able to see what the macro is doing, but it will run faster.

Remember to set the ScreenUpdating property back to True when your macro ends.
Example

This example demonstrates how turning off screen updating can make your code run faster. The example hides every other column on Sheet1, while keeping track of the time it takes to do so. The first time the example hides the columns, screen updating is turned on; the second time, screen updating is turned off. When you run this example, you can compare the respective running times, which are displayed in the message box.

```
Dim elapsedTime(2)
Application.ScreenUpdating = True
For i = 1 To 2
    If i = 2 Then Application.ScreenUpdating = False
    startTime = Time
   Worksheets("Sheet1").Activate
    For Each c In ActiveSheet.Columns
        If c.Column Mod 2 = 0 Then
            c.Hidden = True
        End If
    Next c
    stopTime = Time
    elapsedTime(i) = (stopTime - startTime) * 24 * 60 * 60
Next i
Application.ScreenUpdating = True
MsgBox "Elapsed time, screen updating on: " & elapsedTime(1) & 
         " sec." & Chr(13) & _
         "Elapsed time, screen updating off: " & elapsedTime(2) & _
         " sec."
```
**Script Property**

- Returns the **Script** object, which represents a block of script or code on the specified Web page. If the page contains no script, nothing is returned.

`expression.Script`

- `expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example displays the type of scripting language used in the first shape on the active worksheet.

Set objScr = ActiveSheet.Shapes(1).Script
If Not (objScr Is Nothing) Then
    Select Case objScr.Language
        Case msoScriptLanguageVisualBasic
            MsgBox "VBScript"
        Case msoScriptLanguageJava
            MsgBox "JavaScript"
        Case msoScriptLanguageASP
            MsgBox "Active Server Pages"
        Case Else
            MsgBox "Other scripting language"
    End Select
End If
Scripts Property

Returns the Scripts collection, which contains Script objects representing blocks of script or code in the specified document when it’s saved as a Web page.

expression.Scripts

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a new VBScript block to the Scripts collection on the active worksheet.

Set objScrs = ActiveSheet.Scripts
Set objNewScr = objScrs.Add
objNewScr.Language = msoScriptLanguageVisualBasic
ScrollArea Property

Returns or sets the range where scrolling is allowed, as an A1-style range reference. Cells outside the scroll area cannot be selected. Read/write String.
Remarks

Set this property to the empty string (""") to enable cell selection for the entire sheet.
Example

This example sets the scroll area for worksheet one.

Worksheets(1).ScrollArea = "a1:f10"
ScrollColumn Property

Returns or sets the number of the leftmost column in the pane or window. Read/write Long.
Remarks

If the window is split, the ScrollColumn property of the Window object refers to the upper-left pane. If the panes are frozen, the ScrollColumn property of the Window object excludes the frozen areas.
Example

This example moves column three so that it's the leftmost column in the window.

Worksheets("Sheet1").Activate
ActiveWindow.ScrollColumn = 3
ScrollRow Property

Returns or sets the number of the row that appears at the top of the pane or window. Read/write Long.
Remarks

If the window is split, the ScrollRow property of the Window object refers to the upper-left pane. If the panes are frozen, the ScrollRow property of the Window object excludes the frozen areas.
Example

This example moves row ten to the top of the window.

Worksheets("Sheet1").Activate
ActiveWindow.ScrollRow = 10
SecondaryPlot Property

True if the point is in the secondary section of either a pie of pie chart or a bar of pie chart. Applies only to points on pie of pie charts or bar of pie charts. Read/write Boolean.
Example

This example must be run on either a pie of pie chart or a bar of pie chart. The example moves point four to the secondary section of the chart.

End With
SecondPlotSize Property

Returns or sets the size of the secondary section of either a pie of pie chart or a bar of pie chart, as a percentage of the size of the primary pie. Can be a value from 5 to 200. Read/write Long.
Example

This example must be run on either a pie of pie chart or a bar of pie chart. The example splits the two sections of the chart by value, combining all values under 10 in the primary pie and displaying them in the secondary section. The secondary section is 50 percent of the size of the primary pie.

```vbnet
With Worksheets(1).ChartObjects(1).Chart.ChartGroups(1)
    .SplitType = xlSplitByValue
    .SplitValue = 10
    .VaryByCategories = True
    .SecondPlotSize = 50
End With
```
SegmentType Property

Returns a value that indicates whether the segment associated with the specified node is straight or curved. If the specified node is a control point for a curved segment, this property returns msoSegmentCurve. Read-only MsoSegmentType.

MsoSegmentType can be one of these MsoSegmentType constants.

msoSegmentCurve
msoSegmentLine

expression.SegmentType

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use the SetSegmentType method to set the value of this property.
Example

This example changes all straight segments to curved segments in shape three on myDocument. Shape three must be a freeform drawing.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3).Nodes
    n = 1
    While n <= .Count
        If .Item(n).SegmentType = msoSegmentLine Then
            .SetSegmentType n, msoSegmentCurve
        End If
        n = n + 1
    Wend
End With
SelectedSheets Property

Returns a Sheets collection that represents all the selected sheets in the specified window. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example displays a message if Sheet1 is selected in Book1.xls.

For Each sh In Workbooks("BOOK1.XLS").Windows(1).SelectedSheets
    If sh.Name = "Sheet1" Then
        MsgBox "Sheet1 is selected"
        Exit For
    End If
Next
Selection Property

Returns the selected object in the active window, for an Application object, and a specified window, for a Windows object.
Remarks

The returned object type depends on the current selection (for example, if a cell is selected, this property returns a Range object). The Selection property returns Nothing if nothing is selected.

Using this property with no object qualifier is equivalent to using Application.Selection.
Example

This example clears the selection on Sheet1 (assuming that the selection is a range of cells).

`Worksheets("Sheet1").Activate`  
`Selection.Clear`

This example displays the Visual Basic object type of the selection.

`Worksheets("Sheet1").Activate`  
`MsgBox "The selection object type is " & TypeName(Selection)`
SelectionMode Property

Returns or sets the PivotTable report structured selection mode. Read/write [XlPTSelectionMode].

XlPTSelectionMode can be one of these XlPTSelectionMode constants.
- xlBlanks
- xlButton
- xlDataAndLabel
- xlDataOnly
- xlFirstRow
- xlLabelOnly
- xlOrigin

(expression).SelectionMode

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

If the PivotTable field isn’t in outline form, specifying the sum of any of the constants and `xlFirstRow` is equivalent to specifying the constant alone.
Example

This example enables structured selection mode and then sets the first PivotTable report on worksheet one to allow only data to be selected.

Application.PivotTableSelection = True
Worksheets(1).PivotTables(1).SelectionMode = xlDataOnly

In this example, the PivotTable report is in outline form.

Application.PivotTableSelection = True
Worksheets(1).PivotTables(1).SelectionMode = _
  xlDataOnly + xlFirstRow
Separator Property

- Sets or returns a **Variant** representing the separator used for the data labels on a chart. Read/write.

*expression*.Separator

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

The chart must first be active before you can access the data labels programmatically otherwise a run-time error occurs.
Example

This example sets the data label separator for the first series on the first chart to a semicolon. This example assumes a chart exists on the active worksheet.

Sub ChangeSeparator()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1)_
        .DataLabels.Separator = ";"
End Sub
SeriesLines Property

Returns a **SeriesLines** object that represents the series lines for a stacked bar chart or a stacked column chart. Applies only to stacked bar and stacked column charts. Read-only.
Example

This example turns on series lines for chart group one in Chart1 and then sets their line style, weight, and color. The example should be run on a 2-D stacked column chart that has two or more series.

```vba
With Charts("Chart1").ChartGroups(1)
    .HasSeriesLines = True
    With .SeriesLines.Border
        .LineStyle = xlThin
        .Weight = xlMedium
        .ColorIndex = 3
    End With
End With
```
**ServerBased Property**

*True* if the data source for the specified PivotTable report is external and only the items matching the page field selection are retrieved. Read/write *Boolean*.

This property doesn’t apply to *OLAP* data sources and is always *False*.

When this property is *True*, only records in the database that match the selected page field item are retrieved. From then on, whenever the user changes the page field selection, the newly selected page field item is passed to the query as a parameter, and the cache is refreshed.

This property cannot be set if any of the following conditions are true:

- The field is grouped.
- The data source isn’t external.
- The cache is shared by two or more PivotTable reports.
- The field is a data type that cannot be server based (a memo field or an OLE object).
Example

This example lists all the server-based page fields.

For Each fld in ActiveSheet.PivotTables(1).PageFields
    If fld.ServerBased = True Then
        r = r + 1
        Worksheets(2).Cells(r, 1).Value = fld.Name
    End If
Next
Shadow Property

*True* if the font is a shadow font or if the object has a shadow. Read/write Boolean.
Remarks

For the **Font** object, this property has no effect in Microsoft Windows, but its value is retained (it can be set and returned).
Example

This example adds a shadow to the title of myChart.

Charts("Chart1").ChartTitle.Shadow = True
Shape Property

Returns a **Shape** object that represents the shape attached to the specified comment, diagram node, or hyperlink.

*expression.Shape*

*expression* Required. An expression that returns one of the objects in the Applies To list.
Example

This example selects comment two on the active sheet.

ActiveSheet.Comments(2).Shape.Select
ShapeRange Property

Returns a ShapeRange object that represents the specified object or objects. Read-only.
Example

This example creates a shape range that represents the embedded charts on worksheet one.

Set sr = Worksheets(1).ChartObjects.ShapeRange
Shapes Property

Returns a Shapes object that represents all the shapes on the worksheet or chart sheet. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example adds a blue dashed line to worksheet one.

With Worksheets(1).Shapes.AddLine(10, 10, 250, 250).Line
    .DashStyle = msoLineDashDotDot
    .ForeColor.RGB = RGB(50, 0, 128)
End With
Sheet Property

- Returns the sheet name for the specified PublishObject object. Read-only String.
Example

This example determines the name of the worksheet that contains the first `PublishObject` object that is saved as static HTML in the Web page. The example then sets the `Boolean` variable `blnSheetFound` to `True`. If no items in the document have been saved as static HTML, `blnSheetFound` is `False`.

```vba
blnSheetFound = False
For Each objPO In Workbooks(1).PublishObjects
    If objPO.HtmlType = xlHTMLStatic Then
        strFirstPO = objPO.Sheet
        blnSheetFound = True
        Exit For
    End If
Next objPO
```
Sheets Property

- Returns a **Sheets** collection that represents all the sheets in the active workbook, for an **Application** object. Returns a **Sheets** collection that represents all the sheets in the specified workbook, for a **Workbook** object. Read-only **Sheets** object.
Remarks

For information about returning a single member of a collection, see Returning an Object from a Collection.

Using this property without an object qualifier is equivalent to using ActiveWorkbook.Sheets.
Example

This example creates a new worksheet and then places a list of the active workbook’s sheet names in the first column.

```vba
Set newSheet = Sheets.Add(Type:=xlWorksheet)
For i = 1 To Sheets.Count
    newSheet.Cells(i, 1).Value = Sheets(i).Name
Next i
```
SheetsInNewWorkbook Property

Returns or sets the number of sheets that Microsoft Excel automatically inserts into new workbooks. Read/write Long.
**Example**

This example displays the number of sheets automatically inserted into new workbooks.

MsgBox "Microsoft Excel inserts " & _
   Application.SheetsInNewWorkbook & _
   " sheet(s) in each new workbook"
ShortcutKey Property

Returns or sets the shortcut key for a name defined as a custom Microsoft Excel 4.0 macro command. Read/write String.
Example

This example sets the shortcut key for name one in the active workbook. The example should be run on a workbook in which name one refers to a Microsoft Excel 4.0 command macro.

`ActiveWorkbook.Names(1).ShortcutKey = "K"`
**ShowAllItems Property**

*True* if all items in the PivotTable report are displayed, even if they don’t contain summary data. The default value is *False*. Read/write *Boolean*. 
Remarks

For OLAP data sources, the value is always False.
Example

This example displays all rows for the Month field in the first PivotTable report on worksheet one, including months for which there’s no data.

Worksheets(1).PivotTables("Pivot1")
  .PivotFields("Month").ShowAllItems = True
ShowBubbleSize Property

**True** to show the bubble size for the data labels on a chart. **False** to hide. Read/write **Boolean**.

`expression.ShowBubbleSize`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

The chart must first be active before you can access the data labels programmatically or a run-time error will occur.
Example

This example shows the bubble size for the data labels of the first series on the first chart. This example assumes a chart exists on the active worksheet.

Sub UseBubbleSize()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1).DataLabels.ShowBubbleSize = True
End Sub
ShowCategoryName Property

True to display the category name for the data labels on a chart. False to hide. Read/write Boolean.

expression.ShowCategoryName

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

The chart must first be active before you can access the data labels programmatically or a run-time error will occur.
Example

This example shows the category name for the data labels of the first series on the first chart. This example assumes a chart exists on the active worksheet.

Sub UseCategoryName()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1)_.
        .DataLabels.ShowCategoryName = True
End Sub
ShowChartTipNames Property

True if charts show chart tip names. The default value is True. Read/write Boolean.
Example

This example turns off chart tip names and values.

With Application
    .ShowChartTipNames = False
    .ShowChartTipValue = False
End With
ShowChartTipValues Property

True if charts show chart tip values. The default value is True. Read/write Boolean.
Example

This example turns off chart tip names and values.

With Application
    .ShowChartTipNames = False
    .ShowChartTipValue = False
End With
ShowConflictHistory Property

True if the Conflict History worksheet is visible in the workbook that's open as a shared list. Read/write Boolean.
Remarks

If the specified workbook isn't open as a shared list, this property fails. To determine whether a workbook is open as a shared list, use the `MultiUserEditing` property.
Example

This example determines whether the active workbook is open as a shared list. If it is, the example displays the Conflict History worksheet.

If ActiveWorkbook.MultiUserEditing Then
    ActiveWorkbook.ShowConflictHistory = True
End If
ShowDetail Property

- **True** if the outline is expanded for the specified range (so that the detail of the column or row is visible). The specified range must be a single summary column or row in an outline. Read/write **Variant**.

For the **PivotItem** object (or the **Range** object if the range is in a PivotTable report), this property is set to **True** if the item is showing detail.
Remarks

This property isn’t available for OLAP data sources.

If the specified range isn’t in a PivotTable report, the following statements are true:

- The range must be in a single summary row or column.
- This property returns False if any of the children of the row or column are hidden.
- Setting this property to True is equivalent to unhiding all the children of the summary row or column.
- Setting this property to False is equivalent to hiding all the children of the summary row or column.

If the specified range is in a PivotTable report, it’s possible to set this property for more than one cell at a time if the range is contiguous. This property can be returned only if the range is a single cell.
Example

This example shows detail for the summary row of an outline on Sheet1. Before running this example, create a simple outline that contains a single summary row, and then collapse the outline so that only the summary row is showing. Select one of the cells in the summary row, and then run the example.

```vbnet
Worksheets("Sheet1").Activate
Set myRange = ActiveCell.CurrentRegion
lastRow = myRange.Rows.Count
myRange.Rows(lastRow).ShowDetail = True
```
ShowError Property

*True* if the data validation error message will be displayed whenever the user enters invalid data. Read/write *Boolean*. 
Example

This example adds data validation to cell A10 on worksheet one. The input value must be from 5 through 10; if the user types invalid data, an error message is displayed but no input message is displayed.

With Worksheets(1).Range("A10").Validation
    Add Type:=xlValidateWholeNumber, _
        AlertStyle:=xlValidAlertStop, _
        Operator:=xlBetween, Formula1:="5", _
        Formula2:="10"
        ErrorMessage = "value must be between 5 and 10"
        ShowInput = False
        ShowError = True
End With
ShowInFieldList Property

When set to True (default), a CubeField object will be shown in the field list. Read/write Boolean.

expression.ShowInFieldList

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if a **CubeField** object can be shown in the Field list and notifies the user. This example assumes a PivotTable report exists on the active worksheet and a **CubeField** object exists.

```vbnet
Sub IsCubeFieldInList()
    Dim pvtTable As PivotTable
    Dim cbeField As CubeField

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set cbeField = pvtTable.CubeFields("[Country]"

    ' Determine if a CubeField can be seen.
    If cbeField.ShowInFieldList = True Then
        MsgBox "The CubeField object can be seen in the field list."
    Else
        MsgBox "The CubeField object cannot be seen in the field list."
    End If
End Sub
```
ShowInput Property

True if the data validation input message will be displayed whenever the user selects a cell in the data validation range. Read/write Boolean.
**Example**

This example adds data validation to cell A10. The input value must be from 5 through 10; if the user types invalid data, an error message is displayed but no input message is displayed.

```vba
With Worksheets(1).Range("A10").Validation
    .Add _Type:=xlValidateWholeNumber, _
        AlertStyle:=xlValidAlertStop, _
        Operator:=xlBetween, Formula1:="5", _
        Formula2:="10"
    .ErrorMessage = "value must be between 5 and 10"
    .ShowInput = False
    .ShowError = True
End With
```
ShowLegendKey Property

True if the data label legend key is visible. Read/write Boolean.
Example

This example sets the data labels for series one in Chart1 to show values and the legend key.

```
With Charts("Chart1").SeriesCollection(1).DataLabels
    .ShowLegendKey = True
    .Type = xlShowValue
End With
```
ShowNegativeBubbles Property

True if negative bubbles are shown for the chart group. Valid only for bubble charts. Read/write Boolean.
Example

This example makes negative bubbles visible for chart group one.

`Worksheets(1).ChartObjects(1).Chart.ChartGroups(1).ShowNegativeBubbles = True`
ShowPageMultipleItemLabel Property

When set to True (default), "(Multiple Items)" will appear in the PivotTable cell on the worksheet whenever items are hidden and an aggregate of non-hidden items is shown in the PivotTable view. Read/write Boolean.

expression.ShowPageMultipleItemLabel

expression  Required. An expression that returns a PivotTable object.
Example

This example determines if "(Multiple Items)" will be displayed in the PivotTable cell and notifies the user. The example assumes that a PivotTable exists on the active worksheet.

Sub UseShowPageMultipleItemLabel()

    Dim pvtTable As PivotTable

    Set pvtTable = ActiveSheet.PivotTables(1)

    ' Determine if multiple items are allowed.
    If pvtTable.ShowPageMultipleItemLabel = True Then
        MsgBox "The words 'Multiple Items' can be displayed."
    Else
        MsgBox "The words 'Multiple Items' cannot be displayed."
    End If

End Sub
ShowPercentage Property

**True** to display the percentage value for the data labels on a chart. **False** to hide. Read/write **Boolean**.

*expression*.ShowPercentage

*expression* Required. An expression that returns one of the objects in the Applies To list.
Remarks

The chart must first be active before you can access the data labels programmatically or a run-time error will occur.
Example

This example enables the percentage value to be shown for the data labels of the first series on the first chart. This example assumes a chart exists on the active worksheet.

Sub UsePercentage()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1).DataLabels.ShowPercentage = True
End Sub
ShowPivotTableFieldList Property

True (default) if the PivotTable field list can be shown. Read/write Boolean.

expression.ShowPivotTableFieldList

expression  Required. An expression that returns one of the objects in the Applies To list.
**Example**

In this example, Microsoft Excel determines if the PivotTable field list can be shown and notifies the user.

Sub UseShowPivotTableFieldList()
    Dim wkbOne As Workbook
    Set wkbOne = Application.ActiveWorkbook

    'Determine PivotTable field list setting.
    If wkbOne.ShowPivotTableFieldList = True Then
        MsgBox "The PivotTable field list can be viewed."
    Else
        MsgBox "The PivotTable field list cannot be viewed."
    End If
End Sub
ShowSeriesName Property

- Returns or sets a **Boolean** to indicate the series name display behavior for the data labels on a chart. **True** to show the series name. **False** to hide. Read/write.

\[expression.ShowSeriesName\]

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Remarks

The chart must first be active before you can access the data labels programmatically or a run-time error will occur.
Example

This example enables the series name to be shown for the data labels of the first series on the first chart. This example assumes a chart exists on the active worksheet.

Sub UseSeriesName()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1).DataLabels.ShowSeriesName = True
End Sub
ShowStartupDialog Property

Returns True (default) when the New Workbook task pane appears for a Microsoft Excel application. Read/write Boolean.

expression.ShowStartupDialog

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the New Workbook task pane appears and notifies the user.

Sub CheckStartupDialog()
    ' Determine if the New Workbook task pane is enabled.
    If Application.ShowStartupDialog = False Then
        MsgBox "ShowStartupDialog is set to False."
    Else
        MsgBox "ShowStartupDialog is set to True."
    End If
End Sub
ShowToolTips Property

True if ToolTips are turned on. Read/write Boolean.
Example

This example causes Microsoft Excel to display ToolTips.

Application.ShowToolTips = True
ShowValue Property

Returns or sets a **Boolean** corresponding to a specified chart's data label values display behavior. **True** displays the values. **False** to hide. Read/write.

`expression.ShowValue`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

The specified chart must first be active before you can access the data labels programmatically or a run-time error will occur.
Example

This example enables the value to be shown for the data labels of the first series, on the first chart. This example assumes a chart exists on the active worksheet.

Sub UseValue()
    ActiveSheet.ChartObjects(1).Activate
    ActiveChart.SeriesCollection(1).DataLabels.ShowValue = True
End Sub
ShowWindow Property

**True** if the embedded chart is displayed in a separate window. The **Chart** object used with this property must refer to an embedded chart. Read/write **Boolean**.
Example

This example causes the embedded chart to be displayed in a separate window.

Worksheets(1).ChartObjects(1).Chart.ShowWindow = True
ShowWindowsInTaskbar Property

- True if there’s a separate Windows taskbar button for each open workbook. The default value is True. Read/write Boolean.

expression.ShowWindowsInTaskbar

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

When set to **True**, this property simulates the look of a single-document interface (SDI), which makes it easier to navigate among open workbooks. However, if you work with multiple workbooks while other applications are open, you may want to set this property to **False** to avoid filling your taskbar with unnecessary buttons.
Example

This example specifies that each open workbook won’t have a separate Windows taskbar button.

Application.ShowWindowsInTaskbar = False
Show All
ShrinkToFit Property

- ShrinkToFit property as it applies to the Style object.

**True** if text automatically shrinks to fit in the available column width. Read/write **Boolean**.

**expression**.ShrinkToFit

**expression** Required. An expression that returns a **Style** object.

- ShrinkToFit property as it applies to the CellFormat and Range objects.

**True** if text automatically shrinks to fit in the available column width. Returns **Null** if this property isn’t set to the same value for all cells in the specified range. Read/write **Variant**.

**expression**.ShrinkToFit

**expression** Required. An expression that returns one of the above objects.
Example

This example causes text in row one to automatically shrink to fit in the available column width.

\texttt{Rows(1).ShrinkToFit = True}
Size Property

Returns or sets the size of the font. Read/write Variant.
Example

This example sets the font size for cells A1:D10 on Sheet1 to 12 points.

With Worksheets("Sheet1").Range("A1:D10")
    .Value = "Test"
    .Font.Size = 12
End With
SizeRepresents Property

Returns or sets what the bubble size represents on a bubble chart. Can be either of the following XLSizeRepresents constants: xlSizeIsArea or xlSizeIsWidth. Read/write Long.
Example

This example sets what the bubble size represents for chart group one.

Charts(1).ChartGroups(1).SizeRepresents = xlSizeIsWidth
SizeWithWindow Property

True if Microsoft Excel resizes the chart to match the size of the chart sheet window. False if the chart size isn't attached to the window size. Applies only to chart sheets (doesn't apply to embedded charts). Read/write Boolean.
Example

This example sets Chart1 to be sized to its window.

Charts("Chart1").SizeWithWindow = True
SmallChange Property

Returns or sets the amount that the scroll bar or spinner is incremented or decremented for a line scroll (when the user clicks an arrow). Read/write Long.
Example

This example creates a scroll bar and sets its linked cell, minimum, maximum, large change, and small change values.

Set sb = Worksheets(1).Shapes.AddFormControl(xlScrollBar, _
    Left:=10, Top:=10, Width:=10, Height:=200)
With sb.ControlFormat
    .LinkedCell = "D1"
    .Max = 100
    .Min = 0
    .LargeChange = 10
    .SmallChange = 2
End With
SmallGrid Property

True if Microsoft Excel uses a grid that’s two cells wide and two cells deep for a newly created PivotTable report. False if Excel uses a blank stencil outline. Read/write Boolean.
Remarks

You should use the stencil outline. The grid is provided only because it enables compatibility with earlier versions of Excel.
This example creates a new PivotTable cache based on an OLAP provider, and then it creates a new PivotTable report based on this cache, at cell A3 on the active worksheet. The example uses the stencil outline instead of the cell grid.

```vbnet
With ActiveWorkbook.PivotCaches.Add(SourceType:=xlExternal)
    .Connection = _
        "OLEDB;Provider=MSOLAP;Location=srvdata;Initial Catalog=Nati
    .MaintainConnection = True
    .CreatePivotTable TableDestination:=Range("A3"), _
        TableName:= "PivotTable1"
End With
With ActiveSheet.PivotTables("PivotTable1")
    .SmallGrid = False
    .PivotCache.RefreshPeriod = 0
With .CubeFields("[state]")
    .Orientation = xlColumnField
    .Position = 0
End With
With .CubeFields("[Measures].[Count Of au_id]")
    .Orientation = xlDataField
    .Position = 0
End With
End With
End With
```
SmartTagActions Property

Returns a SmartTagActions object the type of action for a selected smart tag.

expression.SmartTagActions

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

An unrecognized smart tag action item will return a run-time error.
Example

This example, Microsoft Excel places a smart tag titled "MSFT" in cell A1 and then notifies the user the smart tag action related to that smart tag. This example assumes the host system is connected to the Internet.

Sub UseSmartTagActions()
    Dim strLink As String
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True
    Range("A1").Formula = "MSFT"
    MsgBox Range("A1").SmartTags.Add(strLink).SmartTagActions.Item("
SmartTagOptions Property

Returns a `SmartTagOptions` object representing the options that can be performed with a smart tag.

`expression.SmartTagOptions`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel notifies the user of the display settings for the smart tag options.

Sub CheckSmartTagOptions()

    ' Check the display options for smart tags.
    Select Case ActiveWorkbook.SmartTagOptions.DisplaySmartTags
    Case xlButtonOnly
        MsgBox "The button for smart tags will only be displayed"
    Case xlDisplayNone
        MsgBox "Nothing will be displayed for smart tags."
    Case xlIndicatorAndButton
        MsgBox "The button and indicator will be displayed for s"
    End Select

End Sub
SmartTagRecognizers Property

`SmartTagRecognizers` collection for an application.

**expression**.`SmartTagRecognizers`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel displays the first smart tag recognizer item available for the application, or displays a message that none exist.

Sub CheckforSmartTagRecognizers()

    ' Handle run-time error if no smart tag recognizers exist.
    On Error Goto No_SmartTag_Recognizers_In_List

    ' Notify the user of the first smart tag recognizer item.
    MsgBox "The first smart tag recognizer is: " & _
        Application.SmartTagRecognizers.Item(1)
    Exit Sub

No_SmartTag_Recognizers_In_List:
    MsgBox "No smart tag recognizers exist in list."

End Sub
SmartTags Property

Returns a `SmartTags` object representing the identifier for the specified cell.

`expression.SmartTags`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

This example places a smart tag in cell A1 then notifies the user the parent of the identifier for cell A1, which is "MSFT". This example assumes the host system is connected to the Internet.

Sub ReturnSmartTag()
    Dim strLink As String
    Dim strType As String

    ' Define SmartTag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    Range("A1").Formula = "MSFT"
    MsgBox Range("A1").SmartTags.Parent
End Sub
Smooth Property

True if curve smoothing is turned on for the line chart or scatter chart. Applies only to line and scatter charts. Read/write.
Example

This example turns on curve smoothing for series one in Chart1. The example should be run on a 2-D line chart.

Charts("Chart1").SeriesCollection(1).Smooth = True
SolveOrder Property

Returns a Long specifying the value of the calculated member's solve order MDX (Multidimensional Expression) argument. The default value is zero. Read-only.

expression.SolveOrder

expression  Required. An expression that returns a CalculatedMember object.
Example

This example determines the solve order for a calculated member and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub CheckSolveOrder()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine solve order and notify user.
    If pvtTable.CalculatedMembers.Item(1).SolveOrder = 0 Then
        MsgBox "The solve order is set to the default value."
    Else
        MsgBox "The solve order is not set to the default value."
    End If
End Sub
SoundNote Property

This property should not be used. Sound notes have been removed from Microsoft Excel.
Show All
Source Property

Source property as it applies to the PublishObject object.

Returns the unique name that identifies items that have a SourceType property value of xlSourceRange, xlSourceChart, xlSourcePrintArea, xlSourceAutoFilter, xlSourcePivotTable, or xlSourceQuery. If the SourceType property is set to xlSourceRange, this property returns a range, which can be a defined name. If the SourceType property is set to xlSourceChart, xlSourcePivotTable, or xlSourceQuery, this property returns the name of the object, such as a chart name, a PivotTable report name, or a query table name. Read-only String.

expression.Source

expression Required. An expression that returns a PublishObject object.

Source property as it applies to the Watch object.

Returns the unique name that identifies items that have a SourceType property value of xlSourceRange, xlSourceChart, xlSourcePrintArea, xlSourceAutoFilter, xlSourcePivotTable, or xlSourceQuery. If the SourceType property is set to xlSourceRange, this property returns a range, which can be a defined name. If the SourceType property is set to xlSourceChart, xlSourcePivotTable, or xlSourceQuery, this property returns the name of the object, such as a chart name, a PivotTable report name, or a query table name. Read-only Variant.

expression.Source

expression Required. An expression that returns a Watch object.
Example

This example determines the unique name of the first chart (in the first workbook) saved as a Web page, and then it sets the **Boolean** variable `blnChartFound` to **True**. If no items in the document have been saved as Chart components, `blnChartFound` is **False**.

```vba
blnChartFound = False
For Each objPO In Workbooks(1).PublishObjects
    If objPO.SourceType = xlSourceChart Then
        strFirstPO = objPO.Source
        blnChartFound = True
        Exit For
    End If
Next objPO
```
SourceConnectionFile Property

- Returns or sets a String indicating the Microsoft Office Data Connection file or similar file that was used to create the PivotTable. Read/write.

expression.SourceConnectionFile

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example determines if a connection exists for the PivotTable cache and, if there is a connection, displays the file name. If no connection exists, the code handles the run-time error and notifies the user. This example assumes a PivotTable exists on the active worksheet.

Sub CheckSourceConnection()
    Dim pvtCache As PivotCache
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)
    On Error GoTo No_Connection
    MsgBox "The source connection is: " & pvtCache.SourceConnectionFile
    Exit Sub
No_Connection:
    MsgBox "PivotCache source can not be determined."
End Sub
SourceData Property

Returns the data source for the PivotTable report, as shown in the following table. Read-write **Variant**.

<table>
<thead>
<tr>
<th>Data source</th>
<th>Return value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Excel list or database</td>
<td>The cell reference, as text.</td>
</tr>
<tr>
<td>External data source</td>
<td>An array. Each row consists of an SQL connection string with the remaining elements as the query string, broken down into 255-character segments.</td>
</tr>
<tr>
<td>Multiple consolidation ranges</td>
<td>A two-dimensional array. Each row consists of a reference and its associated page field items.</td>
</tr>
<tr>
<td>Another PivotTable report</td>
<td>One of the above three kinds of information.</td>
</tr>
</tbody>
</table>
Remarks

This property is not available for OLE DB data sources.
Example

Assume that you used an external data source to create a PivotTable report on Sheet1. This example inserts the SQL connection string and query string into a new worksheet.

```vba
Set newSheet = ActiveWorkbook.Worksheets.Add
sdArray = Worksheets("Sheet1").UsedRange.PivotTable.SourceData
For i = LBound(sdArray) To UBound(sdArray)
    newSheet.Cells(i, 1) = sdArray(i)
Next i
```
**SourceDataFile Property**

- SourceDataFile property as it applies to the **PivotCache** object.

Returns a **String** indicating the source data file for the cache of the PivotTable.

```
expression.SourceDataFile
```

*expression* Required. An expression that returns a **PivotCache** object.

- SourceDataFile property as it applies to the **QueryTable** object.

Returns or sets a **String** indicating the source data file for a query table.

```
expression.SourceDataFile
```

*expression* Required. An expression that returns a **QueryTable** object.
Remarks

For file-based data sources (e.g. Access) the **SourceDataFile** property contains a fully qualified path to the source data file. It is null for server-based data sources (e.g. SQL Server). The **SourceDataFile** property is set to null if the **Connection** property is changed programmatically.
Example

This example determines if a connection exists for the cache and, if there is a connection, displays the data source file name. If no connection exists, the code handles the run-time error and notifies the user. This example assumes a PivotTable exists on the active worksheet.

Sub CheckSourceConnection()
    Dim pvtCache As PivotCache
    Set pvtCache = Application.ActiveWorkbook.PivotCaches.Item(1)
    On Error GoTo No_Connection
    MsgBox "The data source connection is: " & _
        pvtCache.SourceDataFile
    Exit Sub
    No_Connection:
        MsgBox "PivotCache source cannot be determined."
End Sub
SourceName Property

- SourceName property as it applies to the OLEObject and OLEObjects objects.

Returns or sets the specified object's link source name. Read/write String.

expression.SourceName

eexpression Required. An expression that returns one of the above objects.

- SourceName property as it applies to the CalculatedMember and PivotField objects.

Returns the specified object’s name as it appears in the original source data for the specified PivotTable report. This might be different from the current item name if the user renamed the item after creating the PivotTable report. Read-only String.

expression.SourceName

eexpression Required. An expression that returns one of the above objects.

- SourceName property as it applies to the PivotItem object.

Returns the specified object’s name as it appears in the original source data for the specified PivotTable report. This might be different from the current item name if the user renamed the item after creating the PivotTable report. Read-only Variant.

expression.SourceName

eexpression Required. An expression that returns a PivotItem object.
Remarks

The following table shows example values of the **SourceName** property and related properties, given an **OLAP** data source with the unique name "[Europe].[France].[Paris]" and a non-OLAP data source with the item name "Paris".

<table>
<thead>
<tr>
<th>Property</th>
<th>Value (OLAP data source)</th>
<th>Value (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caption</strong></td>
<td>Paris</td>
<td>Paris</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
<tr>
<td><strong>SourceName</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>(same as SQL property value, read-only)</td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td>[Europe].[France].[Paris] (read-only)</td>
<td>Paris</td>
</tr>
</tbody>
</table>

When specifying an index into the **PivotItems** collection, you can use the syntax shown in the following table.

<table>
<thead>
<tr>
<th>Syntax (OLAP data source)</th>
<th>Syntax (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression.PivotItems(&quot;[Europe].[France].[Paris]&quot;)</td>
<td>expression.PivotItems(&quot;Paris&quot;)</td>
</tr>
</tbody>
</table>

When using the **Item** property to reference a specific member of a collection, you can use the text index names, as shown in the following table.

<table>
<thead>
<tr>
<th>Name (OLAP data source)</th>
<th>Name (non-OLAP data source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Europe].[France].[Paris]</td>
<td>Paris</td>
</tr>
</tbody>
</table>
Example

As it applies to the **PivotItem** object.

This example displays the original name (the name from the source database) of the item that contains the active cell.

```vba
Worksheets("Sheet1").Activate
ActiveSheet.PivotTables(1).PivotSelect "1998", xlDataAndLabel
MsgBox "The original item name is " & _
    ActiveCell.PivotItem.SourceName
```
**SourceNameStandard Property**

Returns a **String** that represents the PivotTable items' source name in standard English (United States) format settings. Read-only.

*expression*.**SourceNameStandard**

*expression*  Required. An expression that returns one a [PivotItem](#) object.
Remarks

This property is used when an item has a localized version and its SourceNameStandard property value differs from the SourceName property value, such as with date formatting.
Example

This example displays the source name for the sixth item on the fifth field of the active PivotTable. The example assumes that a PivotTable exists on the active worksheet and that the data source contains at least five fields and six items per field.

Sub CheckSourceNameStandard()

    Dim pvtTable As PivotTable
    Dim pvtField As PivotField
    Dim pvtItem As PivotItem

    Set pvtTable = ActiveSheet.PivotTables(1)
    Set pvtField = pvtTable.PivotFields(5)
    Set pvtItem = pvtField.PivotItems(6)

    ' Display source name.
    MsgBox "The source name is: " & pvtItem.SourceNameStandard

End Sub
SourceRange Property

Returns a Range object that represents the cell that contains the value of the specified query parameter. Read-only.
Example

This example changes the value of the cell used as the source range for the query.

```vba
Set qt = Sheets("sheet1").QueryTables(1)
Set param1 = qt.Parameters(1)
Set r = param1. SourceRange
r.Value = "New York"
qt.Refresh
```
SourceType Property

- **SourceType property as it applies to the PivotCache object.**

Returns a value that identifies the type of item being published. Read-only **XLPivotTableSourceType**.

XLPivotTableSourceType can be one of these XLPivotTableSourceType constants.

- xlConsolidation
- xlDatabase
- xlExternal
- xlPivotTable
- xlScenario

(expression).SourceType

**expression**  Required. An expression that returns a PivotCache object.

- **SourceType property as it applies to the PublishObject object.**

Returns a value that identifies the type of item being published. Read-only **XlSourceType**.

XlSourceType can be one of these XlSourceType constants.

- xlSourceChart
- xlSourcePrintArea
- xlSourceRange
- xlSourceWorkbook
- xlSourceAutoFilter
- xlSourcePivotTable
- xlSourceQuery
- xlSourceSheet
expression.SourceType

expression Required. An expression that returns a PublishObject object.
Example

This example determines the unique name of the first chart (in the first workbook) saved as a Web page, and then it sets the **Boolean** variable `blnChartFound` to **True**. If no items in the document have been saved as Chart components, `blnChartFound` is **False**.

```vba
blnChartFound = False
For Each objPO In Workbooks(1).PublishObjects
    If objPO.SourceType = xlSourceChart Then
        strFirstPO = objPO.Source
        blnChartFound = True
        Exit For
    End If
Next objPO
```
SpeakCellOnEnter Property

Microsoft Excel supports a mode where the active cell will be spoken when the ENTER key is pressed or when the active cell is finished being edited. Setting the **SpeakCellOnEnter** property to **True** will turn this mode on. **False** turns this mode off. Read/write **Boolean**.

*expression*.SpeakCellOnEnter

*expression* Required. An expression that returns a **Speech** object.
Example

This example determines if the active cell will be spoken when the ENTER key is pressed or the active cell is done being edited, and notifies the user.

Sub SpeechCheck()

    ' Determine mode setting and notify user.
    If Application.Speech.SpeakCellOnEnter = True Then
        MsgBox "The Speak On Enter mode is turned on. " & _
        "The active cell will be spoken when the ENTER "& _
        "key is pressed or it is done being edited."
    Else
        MsgBox "The Speaker On Enter mode is turned off."
    EndIf

End Sub
Speech Property

- Returns a **Speech** object.

```vba
expression.Speech
```

*expression*  Required. An expression that returns an **Application** object.
**Example**

In the following example, Microsoft Excel plays back "Hello". This example assumes speech features have been installed on the host system.

```vba
Sub UseSpeech()
    Application.Speech.Speak "Hello"
End Sub
```

**Note** There is a speech feature in the setup tree that pertains to Dictation and Command & Control that does not have to be installed.
SpellingOptions Property

Returns a `SpellingOptions` object that represents the spelling options of the application.

`expression.SpellingOptions`  

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks the setting on the spelling options for ignoring mixed digits, and notifies the user of its status.

Sub MixedDigitCheck()
    ' Determine the setting on spell checking for mixed digits.
    If Application.SpellingsOptions.IgnoreMixedDigits = True Then
        MsgBox "The spelling options are set to ignore mixed digits."
    Else
        MsgBox "The spelling options are set to check for mixed digits."
    End If
End Sub
Split Property

True if the window is split. Read/write Boolean.
Remarks

It’s possible for FreezePanes to be True and Split to be False, or vice versa.

This property applies only to worksheets and macro sheets.
Example

This example splits the active window in Book1.xls at cell B2, without freezing panes. This causes the Split property to return True.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate` `{With ActiveWindow
  .SplitColumn = 2
  .SplitRow = 2
End With}`

This example illustrates two ways of removing the split added by the preceding example.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate` `{ActiveWindow.Split = False 'method one
Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.SplitColumn = 0 'method two
ActiveWindow.SplitRow = 0}`

This example removes the window split. Before you can remove the split, you must set FreezePanes to False to remove frozen panes.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate` `{With ActiveWindow
  .FreezePanes = False
  .Split = False
End With}`
SplitColumn Property

Returns or sets the column number where the window is split into panes (the number of columns to the left of the split line). Read/write Long.
Example

This example splits the window and leaves 1.5 columns to the left of the split line.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.SplitColumn = 1.5`
Show All
SplitHorizontal Property

Returns or sets the location of the horizontal window split, in points. Read/write Double.
Example

This example sets the horizontal split for the active window to 216 points (3 inches).

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.SplitHorizontal = 216`
SplitRow Property

Returns or sets the row number where the window is split into panes (the number of rows above the split). Read/write **Long**.
Example

This example splits the active window so that there are 10 rows above the split line.

`Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.SplitRow = 10`
SplitType Property

Returns or sets the way the two sections of either a pie of pie chart or a bar of pie chart are split. Read/write XlChartSplitType.

XlChartSplitType can be one of these XlChartSplitType constants.
- xlSplitByCustomSplit
- xlSplitByPercentValue
- xlSplitByPosition
- xlSplitByValue

expression.SplitType

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example must be run on either a pie of pie chart or a bar of pie chart. The example splits the two sections of the chart by value, combining all values under 10 in the primary pie and displaying them in the secondary section.

```vba
With Worksheets(1).ChartObjects(1).Chart.ChartGroups(1)
  .SplitType = xlSplitByValue
  .SplitValue = 10
  .VaryByCategories = True
End With
```
SplitValue Property

Returns or sets the threshold value separating the two sections of either a pie of pie chart or a bar of pie chart. Read/write **Variant.**
Example

This example must be run on either a pie of pie chart or a bar of pie chart. The example splits the two sections of the chart by value, combining all values under 10 in the primary pie and displaying them in the secondary section.

WithWorksheets(1).ChartObjects(1).Chart.ChartGroups(1)
    .SplitType = xlSplitByValue
    .SplitValue = 10
    .VaryByCategories = True
End With
SplitVertical Property

Returns or sets the location of the vertical window split, in points. Read/write Double.
**Example**

This example sets the vertical split for the active window to 216 points (3 inches).

```vba
Workbooks("BOOK1.XLS").Worksheets("Sheet1").Activate
ActiveWindow.SplitVertical = 216
```
SqlState Property

Returns the SQL state error. Read-only String.
Remarks

For an explanation of the specific error, see your SQL documentation.
Example

This example refreshes query table one and displays any ODBC errors that occur.

With Worksheets(1).QueryTables(1)
    .Refresh
    Set errs = Application.ODBCErrors
    If errs.Count > 0 Then
        Set r = .Destination.Cells(1)
        r.Value = "The following errors occurred:"
        c = 0
        For Each er In errs
            c = c + 1
            r.offset(c, 0).Value = er.ErrorString
            r.offset(c, 1).Value = er.SqlState
        Next
    Else
        MsgBox "Query complete: all records returned."
    End If
End With
Stage Property

Returns a numeric value specifying the stage of an error that resulted after the most recent OLE DB query. Read-only Long.
Example

This example displays the error numbers, stage, and other error information returned by the most recent OLE DB query.

```vba
Set objEr = Application.OLEDBErrors(1)
MsgBox "The following error occurred:" & _
    objEr.Number & ", " & objEr.Native & ", " & _
    objEr.Stage & ", " & _
    objEr.ErrorString & ": " & objEr.SqlState
```
StandardFont Property

Returns or sets the name of the standard font. Read/write String.
Remarks

If you change the standard font by using this property, the change doesn't take effect until you restart Microsoft Excel.
Example

This example sets the standard font to Geneva (on the Macintosh) or Arial (in Windows).

If Application.OperatingSystem Like "*Macintosh*" Then
   Application.StandardFont = "Geneva"
Else
   Application.StandardFont = "Arial"
End If
StandardFontSize Property

Returns or sets the standard font size, in points. Read/write Long.
Remarks

If you change the standard font size by using this property, the change doesn't take effect until you restart Microsoft Excel.
Example

This example sets the standard font size to 12 points.

Application. **StandardFontSize = 12**
StandardFormula Property

- Returns or sets a String specifying formulas with standard English (United States) formatting. Read/write.

expression.StandardFormula

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

The **StandardFormula** property primarily affects item names with date or number formatting. It provides a way to specify or query a formula for a given calculated item.

The **StandardFormula** property is "international-friendly" whereas the **Formula** property is not.
Example

This example adds 10 to the Decimals field and displays it as a calculated item in the data field. The example assumes that a PivotTable exists on the active worksheet and that a field titled "Decimals" exists in the data table.

Sub UseStandardFormula()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)

    ' Change calculated field of decimals by adding '10'.
    pvtTable.CalculatedFields.Item(1).StandardFormula = "Decimals + 10"
End Sub
Show All
StandardHeight Property

Returns the standard (default) height of all the rows in the worksheet, in points. Read-only Double.
Example

This example sets the height of row one on Sheet1 to the standard height.

```vba
Worksheets("Sheet1").Rows(1).RowHeight = _
    Worksheets("Sheet1").StandardHeight
```
StandardWidth Property

Returns or sets the standard (default) width of all the columns in the worksheet. Read/write **Double**.
Remarks

One unit of column width is equal to the width of one character in the Normal style. For proportional fonts, the width of the character 0 (zero) is used.
Example

This example sets the width of column one on Sheet1 to the standard width.

```vba
Worksheets("Sheet1").Columns(1).ColumnWidth = _
    Worksheets("Sheet1").StandardWidth
```
Start Property

Returns the position that represents the first character of a phonetic text string in the specified cell. Read-only **Long**.
Example

This example returns the starting position of the second phonetic text string in the active cell.

ActiveCell.FormulaR1C1 = "東京都渋谷区代々木"
ActiveCell.Phonetics.Add Start:=1, Length:=3, Text:="トウキョウト"
ActiveCell.Phonetics.Add Start:=4, Length:=3, Text:="シブヤク"
MsgBox ActiveCell.Phonetics(2).Start
StartupPath Property

Returns the complete path of the startup folder, excluding the final separator. Read-only String.
Example

This example displays the full path to the Microsoft Excel startup folder.

MsgBox Application.StartupPath
**Status Property**

Indicates the status of the routing slip. Read-only `XlRoutingSlipStatus`.

`XlRoutingSlipStatus` can be one of these `XlRoutingSlipStatus` constants.
- `xlNotYetRouted`
- `xlRoutingComplete`
- `xlRoutingInProgress`

`expression.Status`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example resets the routing slip for Book1.xls if routing has been completed.

```vba
With Workbooks("BOOK1.XLS").RoutingSlip
    If .Status = xlRoutingComplete Then
        .Reset
    Else
        MsgBox "Cannot reset routing; not yet complete."
    End If
End With
```
StatusBar Property

Returns or sets the text in the status bar. Read/write String.
Remarks

This property returns **False** if Microsoft Excel has control of the status bar. To restore the default status bar text, set the property to **False**; this works even if the status bar is hidden.
Example

This example sets the status bar text to "Please be patient..." before it opens the workbook Large.xls, and then it restores the default text.

oldStatusBar = Application.DisplayStatusBar
Application.DisplayStatusBar = True
Application.StatusBar = "Please be patient..."
Workbooks.Open filename:="LARGE.XLS"
Application.StatusBar = False
Application.DisplayStatusBar = oldStatusBar
Strikethrough Property

True if the font is struck through with a horizontal line. Read/write Boolean.
Example

This example sets the font in the active cell on Sheet1 to strikethrough.

Worksheets("Sheet1").Activate
ActiveCell.Font.Strikethrough = True
Style Property

- Style property as it applies to the LineFormat object.

Returns a Style object that represents the style of the specified range. Read/write MsoLineStyle.

MsoLineStyle can be one of these MsoLineStyle constants.

- msoLineSingle
- msoLineThickBetweenThin
- msoLineThinThick
- msoLineStyleMixed
- msoLineThickThin
- msoLineThinThin

expression.Style

expression Required. An expression that returns one of the above objects.

- Style property as it applies to the Range object.

Returns a Style object that represents the style of the specified range. Read/write Variant.

expression.Style

expression Required. An expression that returns one of the above objects.
Example

- As it applies to the **Range** object.

This example applies the Normal style to cell A1 on Sheet1.

```vba
Worksheets("Sheet1").Range("A1").Style.Name = "Normal"
```

If cell B4 on Sheet1 currently has the Normal style applied, this example applies the Percent style.

```vba
If Worksheets("Sheet1").Range("B4").Style.Name = "Normal" Then
    Worksheets("Sheet1").Range("B4").Style.Name = "Percent"
End If
```
Styles Property

Returns a Styles collection that represents all the styles in the specified workbook. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
**Example**

This example deletes the user-defined style "Stock Quote Style" from the active workbook.

`ActiveWorkbook.Styles("Stock Quote Style").Delete`
SubAddress Property

Returns or sets the location within the document associated with the hyperlink. Read/write String.
Example

This example topic adds a range location to the hyperlink for shape one.

`Worksheets(1).Shapes(1).Hyperlink.SubAddress = "A1:B10"`
Subject Property

Returns or sets the subject for the mailer or routing slip. Read/write String.
Remarks

The subject for the **RoutingSlip** object is used as the subject for mail messages used to route the workbook.
**Example**

This example sets the subject for a routing slip for the open workbook. To run this example, you must have Microsoft Exchange installed.

```vba
With ThisWorkbook
    .HasRoutingSlip = True
    With .RoutingSlip
        .Delivery = xlOneAfterAnother
        .Recipients = Array("Adam Bendel", "Jean Selva", "Bernard Gabor")
        .Subject = "Here is the workbook"
        .Message = "Here is the workbook. What do you think?"
        .ReturnWhenDone = True
    End With
End With
```

```vba
.Route
End With
```
Subscript Property

True if the font is formatted as subscript. False by default. Read/write Variant.
Example

This example makes the second character in cell A1 a subscript character.

`Worksheets("Sheet1").Range("A1")._
  .Characters(2, 1).Font.Subscript = True`
**SubtotalHiddenPageItems Property**

**True** if hidden page field items in the PivotTable report are included in row and column subtotals, block totals, and grand totals. The default value is **False**. Read/write **Boolean**.
Remarks

For OLAP data sources, the value is always True.
Example

This example sets the first PivotTable report on worksheet one to exclude hidden page field items in subtotals.

Worksheets(1).PivotTables("Pivot1").SubtotalHiddenPageItems = True
SubtotalName Property

Returns or sets the text string label displayed in the subtotal column or row heading in the specified PivotTable report. The default value is the string "Subtotal". Read/write **String**.
Example

This example sets the subtotal label to "Regional Subtotal" (instead of the default string "Subtotal") in the state field in the second PivotTable report on the active worksheet.

ActiveSheet.PivotTables("PivotTable2")
  .PivotFields("state").**SubtotalName** = "Regional Subtotal"
Show All
Subtotals Property

Returns or sets subtotals displayed with the specified field. Valid only for nondata fields. Read/write Variant.

`expression.Subtotals(Index)`

`expression`  Required. An expression that returns a PivotField object.

`Index`  Optional Variant. A subtotal index, as shown in the following table. If this argument is omitted, the Subtotals method returns an array that contains a Boolean value for each subtotal.

<table>
<thead>
<tr>
<th>Index</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Automatic</td>
</tr>
<tr>
<td>2</td>
<td>Sum</td>
</tr>
<tr>
<td>3</td>
<td>Count</td>
</tr>
<tr>
<td>4</td>
<td>Average</td>
</tr>
<tr>
<td>5</td>
<td>Max</td>
</tr>
<tr>
<td>6</td>
<td>Min</td>
</tr>
<tr>
<td>7</td>
<td>Product</td>
</tr>
<tr>
<td>8</td>
<td>Count Nums</td>
</tr>
<tr>
<td>9</td>
<td>StdDev</td>
</tr>
<tr>
<td>10</td>
<td>StdDevp</td>
</tr>
<tr>
<td>11</td>
<td>Var</td>
</tr>
<tr>
<td>12</td>
<td>Varp</td>
</tr>
</tbody>
</table>

If an index is True, the field shows that subtotal. If index 1 (Automatic) is True, all other values are set to False.
Remarks

For OLAP data sources, Index can only return or be set to 1 (Automatic). The returned array always contains True or False for the first array element, and it contains False for all other elements. An array of element values that are all False indicates that there are no subtotals.
Example

This example sets the field that contains the active cell to show Sum subtotals.

`Worksheets("Sheet1").Activate
ActiveCell.PivotField.Subtotals(2) = True`
**SuggestMainOnly Property**

When set to **True**, instructs Microsoft Excel to suggest words from only the main dictionary, for using the spelling checker. **False** removes the limits of suggesting words from only the main dictionary, for using the spelling checker. Read/write **Boolean**.

*expression*.**SuggestMainOnly**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel checks the spell checking options for suggesting words only from the main dictionary and reports the status to the user.

Sub UsingMainDictionary()

    ' Check the setting of suggesting words only from the main dictionary
    If Application.SpellingOptions.SuggestMainOnly = True Then
        MsgBox "Spell checking option suggestions will only come from the main dictionary."
    Else
        MsgBox "Spell checking option suggestions are not limited to the main dictionary."
    End If

End Sub
Summary Property

True if the range is an outlining summary row or column. The range should be a row or a column. Read-only Variant.
**Example**

This example formats row four on Sheet1 as bold and italic if it’s an outlining summary column.

```vba
With Worksheets("Sheet1").Rows(4)
    If .Summary = True Then
        .Font.Bold = True
        .Font.Italic = True
    End If
End With
```
SummaryColumn Property

Returns or sets the location of the summary columns in the outline. Read/write XlSummaryColumn.

XlSummaryColumn can be one of these XlSummaryColumn constants.

xlSummaryOnRight. The summary column will be positioned to the right of the detail columns in the outline.
xlSummaryOnLeft. The summary column will be positioned to the left of the detail columns in the outline.

expression.SummaryColumn

gives access to the SummaryColumn property. See also the OnRow event for a cell in the outline.
Example

This example creates an outline with automatic styles, with the summary row above the detail rows, and with the summary column to the right of the detail columns.

Worksheets("Sheet1").Activate
Selection.AutoOutline
With ActiveSheet.Outline
    .SummaryRow = xlAbove
    .SummaryColumn = xlRight
    .AutomaticStyles = True
End With
SummaryRow Property

Returns or sets the location of the summary rows in the outline. Read/write XlSummaryRow.

XlSummaryRow can be one of these XlSummaryRow constants:
- xlSummaryBelow. The summary row will be positioned below the detail rows in the outline.
- xlSummaryAbove. The summary row will be positioned above the detail rows in the outline.

expression.SummaryRow

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Set **SummaryRow** to **xlAbove** for Microsoft Word-style outlines, where category headers are above the detailed information. Set **SummaryRow** to **xlBelow** for accounting-style outlines, where summations are below the detailed information.
Example

This example creates an outline with automatic styles, with the summary row above the detail rows, and with the summary column to the right of the detail columns.

Worksheets("Sheet1").Activate
Selection.AutoOutline
With ActiveSheet.Outline
    .SummaryRow = xlAbove
    .SummaryColumn = xlRight
    .AutomaticStyles = True
End With
Superscript Property

True if the font is formatted as superscript; False by default. Read/write Variant.
Example

This example makes the last character in cell A1 a superscript character.

```
n = Worksheets("Sheet1").Range("A1").Characters.Count
Worksheets("Sheet1").Range("A1")
    .Characters(n, 1).Font.Superscript = True
```
SurfaceGroup Property

Returns a ChartGroup object that represents the surface chart group of a 3-D chart. Read-only.
**Example**

This example sets the 3-D surface group in Chart1 to use a different color for each data marker. The example should be run on a 3-D chart.

Charts("Chart1").**SurfaceGroup**.VaryByCategories = True
Tab Property

Returns a Tab object for a chart or a worksheet.

expression.Tab

tab

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the worksheet's first tab color index is set to none and notifies the user.

Sub CheckTab()
    ' Determine if color index of 1st tab is set to none.
    If Worksheets(1).Tab.ColorIndex = xlColorIndexNone Then
        MsgBox "The color index is set to none for the 1st " & _
        "worksheet tab."
    Else
        MsgBox "The color index for the tab of the 1st worksheet " & _
        "is not set none."
    End If
End Sub
TableRange1 Property

Returns a Range object that represents the range containing the entire PivotTable report, but doesn’t include page fields. Read-only.
Remarks

The TableRange2 property includes page fields.
Example

This example selects all of the PivotTable report except its page fields.

Worksheets("Sheet1").Activate
Range("A3").PivotTable.Range1.Select
**TableRange2 Property**

Returns a [Range](#) object that represents the range containing the entire PivotTable report, including page fields. Read-only.
Remarks

The TableRange1 property doesn’t include page fields.
Example

This example selects the entire PivotTable report, including its page fields.

`Worksheets("Sheet1").Activate`  
`Range("A3").PivotTable.TableRange2.Select`
TableStyle Property

Returns or sets the style used in the body of the PivotTable report. The default value is a null string (no style is applied by default). Read/write String.
Remarks

This style is used as the default style for the background area, and it’s applied before any user formatting.
Example

This example sets the body of the PivotTable report to the PurpleAndGold style.

`Worksheets(1).PivotTables("Pivot1").TableStyle = "PurpleAndGold"`
TabRatio Property

Returns or sets the ratio of the width of the workbook's tab area to the width of the window's horizontal scroll bar (as a number between 0 (zero) and 1; the default value is 0.6). Read/write Double.
Remarks

This property has no effect when `DisplayWorkbookTabs` is set to False (its value is retained, but it has no effect on the display).
Example

This example makes the workbook tabs half the width of the horizontal scroll bar.

`ActiveWindow.TabRatio = 0.5`
Tag Property

Returns or sets a string saved with the PivotTable report. Read/write **String**.
Example

This example sets the PivotTable report’s Tag property.

Worksheets(1).PivotTables("Pivot1").Tag = "Product Sales by Region"
Show All
TargetBrowser Property

Returns or sets an **MsoTargetBrowser** constant indicating the browser version. Read/write.

MsoTargetBrowser can be one of these MsoTargetBrowser constants.

- **msoTargetBrowserIE4**  Microsoft Internet Explorer 4.0 or later.
- **msoTargetBrowserIE5**  Microsoft Internet Explorer 5.0 or later.
- **msoTargetBrowserIE6**  Microsoft Internet Explorer 6.0 or later.
- **msoTargetBrowserV3**  Microsoft Internet Explorer 3.0, Netscape Navigator 3.0, or later.
- **msoTargetBrowserV4**  Microsoft Internet Explorer 4.0, Netscape Navigator 4.0, or later.

**expression**.TargetBrowser

**expression**  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines if the browser version for Web options is IE5 and notifies the user.

Sub CheckWebOptions()
    Dim wkbOne As Workbook
    Set wkbOne = Application.Workbooks(1)
    ' Determine if IE5 is the target browser.
    If wkbOne.WebOptions.TargetBrowser = msoTargetBrowserIE5 Then
        MsgBox "The target browser is IE5 or later."
    Else
        MsgBox "The target browser is not IE5 or later."
    End If
End Sub
TemplateRemoveExtData Property

*True* if external data references are removed when the workbook is saved as a template. Read/write *Boolean*.
**Example**

This example saves the workbook as a template that contains no external data.

```
With ThisWorkbook
    .TemplateRemoveExtData = True
    .SaveAs "current", xlTemplate
    .TemplateRemoveExtData = False
End With
```
TemplatesPath Property

- Returns the local path where templates are stored. Read-only String.
Example

This example returns the local path where templates are stored.

Msgbox Application.TemplatesPath
Text Property

Returns or sets the text for the specified object. Read-only \texttt{String} for the \texttt{Range} object, read/write \texttt{String} for all other objects.

For information about using the \texttt{Text} worksheet function in Visual Basic, see \texttt{Using Worksheet Functions in Visual Basic}. 
Remarks

For the **Phonetic** object, this property returns or sets its phonetic text. You cannot set this property to **Null**.
Example

This example sets the text for the chart title of Chart1.

With Charts("Chart1")
    .HasTitle = True
    .ChartTitle.Text = "First Quarter Sales"
End With

This example sets the axis title text for the category axis in Chart1.

With Charts("Chart1").Axes(xlCategory)
    .HasTitle = True
    .AxisTitle.Text = "Month"
End With

This example illustrates the difference between the Text and Value properties of cells that contain formatted numbers.

Set c =Worksheets("Sheet1").Range("B14")
c.Value = 1198.3
c.NumberFormat = "$#,##0_);($#,##0)"
MsgBox c.Value
MsgBox c.Text
TextDate Property

When set to **True** (default), Microsoft Excel identifies, with an **AutoCorrect Options** button, cells that contain a text date with a two-digit year. **False** disables error checking for cells containing a text date with a two-digit year. Read/write **Boolean**.

`expression.TextDate`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, the AutoCorrect Options button appears for cell A1, which contains a text date with a two-digit year.

Sub CheckTextDate()

    ' Simulate an error by referencing a text date with a two-digit
    Application.ErrorCheckingOptions.TextDate = True
    Range("A1").Formula = "'April 23, 00"

End Sub
TextEffect Property

Returns a TextEffectFormat object that contains text-effect formatting properties for the specified shape. Applies to Shape or ShapeRange objects that represent WordArt. Read-only.
Example

This example sets the font style to bold for shape three on myDocument if the shape is WordArt.

Set myDocument = Worksheets(1)
With myDocument.Shapes(3)
    If .Type = msoTextEffect Then
        .TextEffect.FontBold = True
    End If
End With
TextFileColumnDataTypes Property

Returns or sets an ordered array of constants that specify the data types applied to the corresponding columns in the text file that you’re importing into a query table. The default constant for each column is **xlGeneral**. Read/write **Variant**.

You can use the **xlColumnDataType** constants listed in the following table to specify the column data types used or the actions taken during the data import.

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlGeneralFormat</td>
<td>General</td>
</tr>
<tr>
<td>xlTextFormat</td>
<td>Text</td>
</tr>
<tr>
<td>xlSkipColumn</td>
<td>Skip column</td>
</tr>
<tr>
<td>xlDMYFormat</td>
<td>Day-Month-Year date format</td>
</tr>
<tr>
<td>xlDYMFormat</td>
<td>Day-Year-Month date format</td>
</tr>
<tr>
<td>xlEMDFormat</td>
<td>EMD date</td>
</tr>
<tr>
<td>xlMDYFormat</td>
<td>Month-Day-Year date format</td>
</tr>
<tr>
<td>xlMYDFormat</td>
<td>Month-Year-Day date format</td>
</tr>
<tr>
<td>xlYDMFormat</td>
<td>Year-Day-Month date format</td>
</tr>
<tr>
<td>xlYMDFormat</td>
<td>Year-Month-Day date format</td>
</tr>
</tbody>
</table>
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport).

If you specify more elements in the array that there are columns, those values are ignored.

You can use xlEMDFormat only if Taiwanese language support is installed and selected. The xlEMDFormat constant specifies that Taiwanese era dates are being used.
Example

This example imports a fixed-width text file into a new query table on the first worksheet in the first workbook. The first column in the text file is five characters wide and is imported as text. The second column is four characters wide and is skipped. The remainder of the text file is imported into the third column and has the General format applied to it.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables _
  .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
    Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
  .TextFileParseType = xlFixedWidth
  .TextFileFixedColumnWidths = Array(5, 4)
  .TextFileColumnDataTypes = _
    Array(xlTextFormat, xlSkipColumn, xlGeneralFormat)
  .Refresh
End With
```
TextFileCommaDelimiter Property

- 

True if the comma is the delimiter when you import a text file into a query table. False if you want to use some other character as the delimiter. The default value is False. Read/write Boolean.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport), and only if the value of the TextFileParseType property is xlDelimited.
Example

This example sets the comma to be the delimiter in the query table on the first worksheet in the first workbook, and then it refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
  .Add(Connection := "TEXT;C:\My Documents\19980331.txt", Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
  .TextFileParseType = xlDelimited
  .TextFileCommaDelimiter = True
  .Refresh
End With
TextFileConsecutiveDelimiter Property

True if consecutive delimiters are treated as a single delimiter when you import a text file into a query table. The default value is False. Read/write Boolean.
Remarks

Use this property is only when your query table is based on data from a text file (with the `QueryType` property set to `xlTextImport`), and only if the value of the `TextFileParseType` property is `xlDelimited`. 
Example

This example sets the space character to be the delimiter in the query table on the first worksheet in the first workbook, and then it refreshes the query table. Consecutive spaces are treated as a single delimiter.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", 
         Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFileSpaceDelimiter = True
    .TextFileConsecutiveDelimiter = True
    .Refresh
End With
```
TextFileDecimalSeparator Property

Returns or sets the decimal separator character that Microsoft Excel uses when you import a text file into a query table. The default is the system decimal separator character. Read/write String.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport), when the file contains decimal and thousands separators that are different from those used on the computer, due to a different language setting being used.

The following table shows the results when you import text into Microsoft Excel using various separators. Numeric results are displayed in the rightmost column.

<table>
<thead>
<tr>
<th>System decimal separator</th>
<th>System thousands separator</th>
<th>TextFileDecimalSeparator value</th>
<th>TextFileThousandsSeparator value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Period</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Comma</td>
</tr>
<tr>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Space</td>
</tr>
</tbody>
</table>
Example

This example saves the original decimal separator and sets it to a comma for the first query table on Sheet1, in preparation for importing a French text file (for example) into the U.S. English version of Microsoft Excel.

```vba
strDecSep = Worksheets("Sheet1").QueryTables(1) _
    .TextFileDecimalSeparator
Worksheets("Sheet1").QueryTables(1) _
    .TextFileDecimalSeparator = ","
```
TextFileFixedColumnWidths Property

Returns or sets an array of integers that correspond to the widths of the columns (in characters) in the text file that you’re importing into a query table. Valid widths are from 1 through 32767 characters. Read/write **Variant**.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport), and only if the value of the TextFileParseType property is xlFixedWidth.

You must specify a valid, nonnegative column width. If you specify columns that exceed the width of the text file, those values are ignored. If the width of the text file is greater than the total width of columns you specify, the balance of the text file is imported into an additional column.
Example

This example imports a fixed-width text file into a new query table on the first worksheet in the first workbook. The first column in the text file is five characters wide and is imported as text. The second column is four characters wide and is skipped. The remainder of the text file is imported into the third column and has the General format applied to it.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables._
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
        Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
    .TextFileParseType = xlFixedWidth
    .TextFileFixedColumnWidths = Array(5, 4)
    .TextFileColumnDataTypes = _
        Array(xlTextFormat, xlSkipColumn, xlGeneralFormat)
    .Refresh
End With
```
TextFileOtherDelimiter Property

Returns or sets the character used as the delimiter when you import a text file into a query table. The default value is Null. Read/write String.
Remarks

Use this property only when your query table is based on data from a text file (with the `QueryType` property set to `xlTextImport`), and only if the value of the `TextFileParseType` property is `xlDelimited`.

If you specify more than one character in the string, only the first character is used.
Example

This example sets the pound character (#) to be the delimiter for the query table on the first worksheet in the first workbook, and then it refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
   .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
       Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
   .TextFileParseType = xlDelimited
   .TextFileOtherDelimiter = "#"
   .Refresh
End With
TextFileParseType Property

Returns or sets the column format for the data in the text file that you’re importing into a query table. Read/write \texttt{XLTextParsingType}.

\texttt{XLTextParsingType} can be one of these \texttt{XLTextParsingType} constants.

- \texttt{xlFixedWidth}. Indicates that the data in the file is arranged in columns of fixed widths.
- \texttt{xlDelimited default}. Indicates the file is delimited by delimiter characters

\textit{expression}.TextFileParseType

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport).
Example

This example imports a fixed-width text file into a new query table on the first worksheet in the first workbook. The first column in the text file is five characters wide and is imported as text. The second column is four characters wide and is skipped. The remainder of the text file is imported into the third column and has the General format applied to it.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables _
  .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
    Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
  .TextFileParseType = xlFixedWidth
  .TextFileFixedColumnWidths = Array(5, 4)
  .TextFileColumnDataTypes = _
    Array(xlTextFormat, xlSkipColumn, xlGeneralFormat)
  .Refresh
End With
TextFilePlatform Property

Returns or sets the origin of the text file you’re importing into the query table. This property determines which code page is used during the data import. The default value is the current setting of the **File Origin** option in the Text File Import Wizard. Read/write **XlPlatform**.

XlPlatform can be one of these XlPlatform constants.

- xlMacintosh
- xlMSDOS
- xlWindows

`expression.TextFilePlatform`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport).
Example

This example imports an MS-DOS text file into the query table on the first worksheet in the first workbook, and then it refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables 
   .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
       Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
   .TextFilePlatform = xlMSDOS
   .TextFileParseType = xlDelimited
   .TextFileTabDelimiter = True
   .Refresh
End With
**TextFilePromptOnRefresh Property**

*True* if you want to specify the name of the imported text file each time the query table is refreshed. The **Import Text File** dialog box allows you to specify the path and file name. The default value is **False**. Read/write **Boolean**.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport).

If the value of this property is True, the dialog box doesn’t appear the first time a query table is refreshed.

The default value is True in the user interface.
**Example**

This example prompts the user for the name of the text file whenever the query table on the first worksheet in the first workbook is refreshed.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
          Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFilePromptOnRefresh = True
    .TextFileTabDelimiter = True
    Refresh
End With
```
TextFileSemicolonDelimiter Property

**True** if the semicolon is the delimiter when you import a text file into a query table, and if the value of the *TextFileParseType* property is *xlDelimited*. The default value is **False**. Read/write **Boolean**.
Remarks

Use this property only when your query table is based on data from a text file (with the `QueryType` property set to `xlTextImport`).
Example

This example sets the semicolon to be the delimiter in the query table on the first worksheet in the first workbook and then refreshes the query table.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
  .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
       Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFileSemicolonDelimiter = True
    .Refresh
End With
```
TextFileSpaceDelimiter Property

True if the space character is the delimiter when you import a text file into a query table. The default value is False. Read/write Boolean.
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport), and only if the value of the TextFileParseType property is xlDelimited.
Example

This example sets the space character to be the delimiter in the query table on the first worksheet in the first workbook and then refreshes the query table.

```
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
        Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFileSpaceDelimiter = True
    .Refresh
End With
```
TextFileStartRow Property

Returns or sets the row number at which text parsing will begin when you import a text file into a query table. Valid values are integers from 1 through 32767. The default value is 1. Read/write Long.
Remarks

Use this property only when your query table is based on data from a text file (with the `QueryType` property set to `xlTextImport`).
Example

This example sets row 5 as the starting row for text parsing in the query table on the first worksheet in the first workbook, and then it refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
	.Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
					Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
	.TextFileParseType = xlDelimited
	.TextFileStartRow = 5
	.TextFileTabDelimiter = True
	.Refresh
End With
**TextFileTabDelimiter Property**

*True* if the tab character is the delimiter when you import a text file into a query table. The default value is *False*. Read/write *Boolean*. 
Remarks

Use this property only when your query table is based on data from a text file (with the QueryType property set to xlTextImport), and only if the value of the TextFileParseType property is xlDelimited.
Example

This example sets the tab character to be the delimiter in the query table on the first worksheet in the first workbook, and then it refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", _
        Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFileTabDelimiter = True
    .Refresh
End With
TextFileTextQualifier Property

Returns or sets the text qualifier when you import a text file into a query table. The text qualifier specifies that the enclosed data is in text format. Read/write XlTextQualifier.

XlTextQualifier can be one of these XlTextQualifier constants.
- xlTextQualifierNone
- xlTextQualifierDoubleQuote default.
- xlTextQualifierSingleQuote

expression.TextFileTextQualifier

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property only when your query table is based on data from a text file (with the `QueryType` property set to `xlTextImport`).
Example

This example sets the single quotation mark character as the text qualifier for the query table on the first worksheet in the first workbook.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "TEXT;C:\My Documents\19980331.txt", 
        Destination := shFirstQtr.Cells(1, 1))
With qtQtrResults
    .TextFileParseType = xlDelimited
    .TextFileTextQualifier = xlTextQualifierSingleQuote
    .Refresh
End With
```
TextFileThousandsSeparator Property

Returns or sets the thousands separator character that Microsoft Excel uses when you import a text file into a query table. The default is the system thousands separator character. Read/write String.
**Remarks**

Use this property only when your query table is based on data from a text file (with the **QueryType** property set to **xlTextImport**), especially when the file contains decimal and thousands separators that are different from those used on the computer, due to a different language setting being used.

The following table shows the results when you import text into Microsoft Excel using various separators. Numeric results are displayed in the rightmost column.

<table>
<thead>
<tr>
<th>System decimal separator</th>
<th>System thousands separator</th>
<th>TextFileDecimalSeparator value</th>
<th>TextFileThousandsSeparator value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Period</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Comma</td>
<td>Comma</td>
</tr>
<tr>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Comma</td>
</tr>
<tr>
<td>Period</td>
<td>Comma</td>
<td>Period</td>
<td>Space</td>
</tr>
</tbody>
</table>
Example

This example saves the original thousands separator and sets it to a period for the first query table on Sheet1, in preparation for importing a French text file (for example) into the U.S. English version of Microsoft Excel.

strDecSep = Worksheets("Sheet1").QueryTables(1) 
  .TextFileThousandsSeparator
Worksheets("Sheet1").QueryTables(1) 
  .TextFileThousandsSeparator = "."
**TextFileTrailingMinusNumbers**  

**Property**

- **True** for Microsoft Excel to treat numbers imported as text that begin with a "-" symbol as a negative symbol. **False** for Excel to treat numbers imported as text that begin with a "-" symbol as text. Read/write **Boolean**.

**expression**.TextFileTrailingMinusNumbers

**expression**  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the setting for cell A1, treating numbers imported as text that begin with a "-" symbol. This example assumes a QueryTable object exists on the active worksheet.

Sub CheckQueryTableSetting()
    ' Determine setting for TextFileTrailingMinusNumbers
    If Range("A1").QueryTable.TextFileTrailingMinusNumbers = True Then
        MsgBox "Numbers imported as text that begin with a '-' symbol "
            "will be treated as a negative symbol."
    Else
        MsgBox "Numbers imported as text that begin with a '-' symbol 
            "will not be treated as a negative symbol."
    End If
End Sub
TextFrame Property

Returns a TextFrame object that contains the alignment and anchoring properties for the specified shape. Read-only.
**Example**

This example causes text in the text frame in shape one to be justified. If shape one doesn’t have a text frame, this example fails.

```vba
Worksheets(1).Shapes(1).TextFrame_.HorizontalAlignment = x1HAlignJustify
```
TextShape Property

- 

Returns a Shape object representing the shape of the text box associated with a diagram node.

expression.TextShape

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

The following example adds child nodes to a parent node, and displays text in the parent node indicating the number of child nodes created.

Sub CountChildNodes()

    Dim nodRoot As DiagramNode
    Dim shDiagram As Shape
    Dim intCount As Integer
    Dim shText As Shape

    Set shDiagram = ActiveSheet.Shapes.AddDiagram(_
        (Type:=msoDiagramRadial, Left:=10, Top:=15, _
        Width:=400, Height:=475)

    ' Add 3 child nodes to the root node.
    For intCount = 1 To 3
        nodRoot.Children.AddNode
    Next

    ' Change text in node.
    For intCount = 1 To 4
        shText.TextFrame.Characters.Text = Str(intcount)
    Next intCount

End Sub
TextToDisplay Property

Returns or sets the text to be displayed for the specified hyperlink. The default value is the address of the hyperlink. Read/write String.
**Example**

This example sets the text to be displayed for the first hyperlink on the active worksheet.

```vba
ActiveSheet.Hyperlinks(1).TextToDisplay = "Company Home Page"
```
TextureName Property

Returns the name of the custom texture file for the specified fill. Read-only String.

Use the UserPicture or UserTextured method to set the texture file for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillTextured Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        If c1f.TextureType = msoTexturePreset Then
            .PresetTextured c1f.PresetTexture
        Else
            .UserTextured c1f.TextureName
        End If
    End With
End If
TextureType Property

Returns the texture type for the specified fill. Read-only \texttt{MsoTextureType}. MsoTextureType can be one of these MsoTextureType constants. \texttt{msoTexturePreset} \texttt{msoTextureTypeMixed} \texttt{msoTextureUserDefined}

\textit{expression.TextureType}

\textit{expression} Required. An expression that returns one of the objects in the Applies To list.

Use the \texttt{UserTextured} method to set the texture type for the fill.
Example

This example sets the fill format for chart two to the same style used for chart one.

Set c1f = Charts(1).ChartArea.Fill
If c1f.Type = msoFillTextured Then
    With Charts(2).ChartArea.Fill
        .Visible = True
        If c1f.TextureType = msoTexturePreset Then
            .PresetTextured c1f.PresetTexture
        Else
            .UserTextured c1f.TextureName
        End If
    End With
End If
ThisCell Property

- Returns the cell in which the user-defined function is being called from as a `Range` object.

`expression.ThisCell`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
Remarks

Users should not access properties or methods on the Range object when inside the user-defined function. Users can cache the Range object for later use and perform additional actions when the recalculation is finished.
Example

In this example, a function called "UseThisCell" contains the **ThisCell** property to notify the user of the cell address.

```vba
Function UseThisCell()
    MsgBox "The cell address is: " & _
        Application.ThisCell.Address
End Function
```
ThisWorkbook Property

Returns a **Workbook** object that represents the workbook where the current macro code is running. Read-only.
Remarks

Use this property to refer to the workbook that contains your macro code. **ThisWorkbook** is the only way to refer to an add-in workbook from inside the add-in itself. The **ActiveWorkbook** property doesn't return the add-in workbook; it returns the workbook that's *calling* the add-in. The **Workbooks** property may fail, as the workbook name probably changed when you created the add-in. **ThisWorkbook** always returns the workbook in which the code is running.

For example, use code such as the following to activate a dialog sheet stored in your add-in workbook.

```vba
ThisWorkbook.DialogSheets(1).Show
```

This property can be used only from inside Microsoft Excel. You cannot use it to access a workbook from any other application.
Example

This example closes the workbook that contains the example code. Changes to the workbook, if any, aren't saved.

ThisWorkbook.Close SaveChanges:=False
ThousandsSeparator Property

Sets or returns the character used for the thousands separator as a **String**. Read/write.

*expression*.ThousandsSeparator

*expression*  Required. An expression that returns an **Application** object.
Example

This example places "1,234,567.89" in cell A1 then changes the system separators to dashes for the decimals and thousands separators.

Sub ChangeSystemSeparators()

    Range("A1").Formula = "1,234,567.89"
    MsgBox "The system separators will now change."

    ' Define separators and apply.
    Application.DecimalSeparator = "-"
    Application.ThousandsSeparator = "-"
    Application.UseSystemSeparators = False

End Sub
ThreeD Property

Returns a ThreeDFormat object that contains 3-D – effect formatting properties for the specified shape. Read-only.
Example

This example sets the depth, extrusion color, extrusion direction, and lighting direction for the 3-D effects applied to shape one on myDocument.

Set myDocument = Worksheets(1)
With myDocument.Shapes(1).ThreeD
    .Visible = True
    .Depth = 50
    .ExtrusionColor.RGB = RGB(255, 100, 255)
    ' RGB value for purple
    .SetExtrusionDirection msoExtrusionTop
    .PresetLightingDirection = msoLightingLeft
End With
ThrottleInterval Property

Returns or sets a Long indicating the time interval between updates. Read/write.

expression.ThrottleInterval

expression  Required. An expression that returns an RTD object.
Remarks

The default value is 2000 milliseconds. If this value is changed, the new value will persist when Microsoft Excel is restarted.
TickLabelPosition Property

Describes the position of tick-mark labels on the specified axis. Read/write XlTickLabelPosition.

XlTickLabelPosition can be one of these XlTickLabelPosition constants.

- xlTickLabelPositionLow
- xlTickLabelPositionNone
- xlTickLabelPositionHigh
- xlTickLabelPositionNextToAxis

expression. TickLabelPosition

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets tick-mark labels on the category axis in Chart1 to the high position (above the chart).

Charts("Chart1").Axes(xlCategory)_
    .TickLabelPosition = xlTickLabelPositionHigh
TickLabels Property

Returns a TickLabels object that represents the tick-mark labels for the specified axis. Read-only.
Example

This example sets the color of the tick-mark label font for the value axis in Chart1.

TickLabelSpacing Property

Returns or sets the number of categories or series between tick-mark labels. Applies only to category and series axes. Read/write Long.
Remarks

Tick-mark label spacing on the value axis is always calculated by Microsoft Excel.
Example

This example sets the number of categories between tick-mark labels on the category axis in Chart1.

Charts("Chart1").Axes(xlCategory).TickLabelSpacing = 10
TickMarkSpacing Property

Returns or sets the number of categories or series between tick marks. Applies only to category and series axes. Read/write Long.
Remarks

Use the `MajorUnit` and `MinorUnit` properties to set tick-mark spacing on the value axis.
Example

This example sets the number of categories between tick marks on the category axis in Chart1.

Charts("Chart1").Axes(xlCategory).**TickMarkSpacing** = 10
Time Property

Sets or returns the time interval for the AutoRecover object. Permissible values are integers from 1 to 120 minutes. The default value is 10 minutes. Read/write Long.

expression.Time

expression Required. An expression that returns an AutoRecover object.
Remarks

Entering a decimal value will round to the nearest whole number. For example, entering a value of 5.5 is the equivalent of 6.

Anytime values outside the valid range are entered, Microsoft Excel will revert to the previous time value used.
Example

The following example sets the AutoRecover time interval to 5 minutes and notifies the user.

Sub SetTimeValue()
    Application.AutoRecover.Time = 5
    MsgBox "The AutoRecover time interval is set at " & _
        Application.AutoRecover.Time & " minutes."
End Sub
TintAndShade Property

Returns or sets a Single that lightens or darkens the color of a specified shape. Read/write.

expression.TintAndShade

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

You can enter a number from -1 (darkest) to 1 (lightest) for the TintAndShade property, 0 (zero) being neutral.
Example

This example creates a new shape in the active document, sets the fill color, and lightens the color shade.

Sub PrinterPlate()
    Dim s As Shape
    Set s = ActiveSheet.Shapes.AddShape(_
        Type:=msoShapeHeart, Left:=150, _
        Top:=150, Width:=250, Height:=250)
    With s.Fill.ForeColor
        .CMYK = 16111872
        .TintAndShade = 0.3
        .OverPrint = msoTrue
        .Ink(Index:=1) = 0
        .Ink(Index:=2) = 1
        .Ink(Index:=3) = 1
        .Ink(Index:=4) = 0
    End With
End Sub
Title Property

Returns or sets the title of the Web page when the document is saved as a Web page. Read/write String.
Remarks

The title is usually displayed in the window title bar when the document is viewed in the Web browser.
Example

This example sets the Web page title to "Sales Forecast" when the first item in the first workbook is saved as a Web page.

`Workbooks(1).PublishObjects(1).Title = "Sales Forecast"`
Top Property

- Top property as it applies to the **Application** object.

The distance from the top edge of the screen to the top edge of the main Microsoft Excel window. If the application window is minimized, this property controls the position of the window icon (anywhere on the screen). Read/write **Double**.

`expression.Top`

`expression` Required. An expression that returns an **Application** object.

- Top property as it applies to the **Window** object.

The distance from the top edge of the window to the top edge of the usable area (below the menus, any toolbars docked at the top, and the formula bar). You cannot set this property for a maximized window. Use the **WindowState** property to return or set the state of the window. Read/write **Double**.

`expression.Top`

`expression` Required. An expression that returns a **Window** object.

- Top property as it applies to the **AxisTitle**, **ChartData**, **ChartDataArea**, **ChartObjects**, **ChartTitle**, **DataLabel**, **DisplayUnitLabel**, **Legend**, **OLEObject**, **OLEObjects**, **PlotArea**, and **Window** objects.

The distance from the top edge of the object to the top of row 1 (on a worksheet) or the top of the chart area (on a chart). Read/write **Double**.

`expression.Top`

`expression` Required. An expression that returns one of the above objects.

- Top property as it applies to the **Axis**, **LegendEntry**, and **LegendKey** objects.
The distance from the top edge of the object to the top of row 1 (on a worksheet) or the top of the chart area (on a chart). Read-only **Double**.

*expression*.**Top**

*expression*  Required. An expression that returns one of the above objects.

- **Top property as it applies to the Shape and ShapeRange objects.**

The distance from the top edge of the topmost shape in the shape range to the top edge of the worksheet. Read/write **Single**.

*expression*.**Top**

*expression*  Required. An expression that returns one of the above objects.

- **Top property as it applies to the Range object.**

The distance from the top edge of row 1 to the top edge of the range. If the range is discontinuous, the first area is used. If the range is more than one row high, the top (lowest numbered) row in the range is used. Read-only **Variant**.

*expression*.**Top**

*expression*  Required. An expression that returns a **Range** object.
Example

This example arranges windows one and two horizontally; in other words, each window occupies half the available vertical space and all the available horizontal space in the application window's client area. For this example to work, there must be only two worksheet windows open.

Windows.Arrange xlArrangeTiled
ah = Windows(1).Height ' available height
aw = Windows(1).Width + Windows(2).Width ' available width
With Windows(1)
  .Width = aw
  .Height = ah / 2
  .Left = 0
End With
With Windows(2)
  .Width = aw
  .Height = ah / 2
  .Top = ah / 2
  .Left = 0
End With
TopLeftCell Property

Returns a `Range` object that represents the cell that lies under the upper-left corner of the specified object. Read-only.
Example

This example displays the address of the cell beneath the upper-left corner of embedded chart one on Sheet1.

MsgBox "The top left corner is over cell " & _
    Worksheets("Sheet1").ChartObjects(1).TopLeftCell.Address
TopMargin Property

Returns or sets the size of the top margin, in points. Read/write Double.
Remarks

Margins are set or returned in points. Use the `InchesToPoints` method or the `CentimetersToPoints` method to convert measurements from inches or centimeters.
Example

These two examples set the top margin of Sheet1 to 0.5 inch (36 points).

```vba
Worksheets("Sheet1").PageSetup.TopMargin = _
    Application.InchesToPoints(0.5)

Worksheets("Sheet1").PageSetup.TopMargin = 36
```

This example displays the current top-margin setting.

```vba
marginInches = ActiveSheet.PageSetup.TopMargin / _
    Application.InchesToPoints(1)
MsgBox "The current top margin is " & marginInches & " inches"
```
TotalLevels Property

Returns the total number of fields in the current field group. If the field isn’t grouped, or if the data source is OLAP-based, TotalLevels returns the value 1. Read-only Long.
Remarks

All fields in a set of grouped fields have the same TotalLevels value.
Example

This example displays the total number of fields in the group that contains the active cell.

Worksheets("Sheet1").Activate
MsgBox "This group has " & _
    ActiveCell.PivotField.TotalLevels & " levels."
**TotalsAnnotation Property**

*True* if an asterisk (*) is displayed next to each subtotal and grand total value in the specified PivotTable report if the report is based on an OLAP data source. The default value is *True*. Read/write *Boolean*. 
Remarks

When this property is set to **True**, the asterisk indicates that hidden items are included in the total. The asterisk appears regardless of whether any items in the report have been hidden.

For non-OLAP data sources, the value of this property is always **False**.
Example

This example turns off the asterisks in the first PivotTable report on the active worksheet.

ActiveSheet.PivotTables(1).TotalsAnnotation = False
Tracking Property

Returns or sets the ratio of the horizontal space allotted to each character in the specified WordArt to the width of the character. Can be a value from 0 (zero) through 5. (Large values for this property specify ample space between characters; values less than 1 can produce character overlap.) Read/write Single.

The following table gives the values of the Tracking property that correspond to the settings available in the user interface.

<table>
<thead>
<tr>
<th>User interface setting</th>
<th>Equivalent Tracking property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Tight</td>
<td>0.8</td>
</tr>
<tr>
<td>Tight</td>
<td>0.9</td>
</tr>
<tr>
<td>Normal</td>
<td>1.0</td>
</tr>
<tr>
<td>Loose</td>
<td>1.2</td>
</tr>
<tr>
<td>Very Loose</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Example

This example adds WordArt that contains the text "Test" to myDocument and specifies that the characters be very tightly spaced.

Set myDocument =Worksheets(1)
Set newWordArt = myDocument.Shapes.AddTextEffect(_
    PresetTextEffect:=msoTextEffect1, Text:="Test", _
    FontName:="Arial Black", FontSize:=36, _
    FontBold:=False, FontItalic:=False, Left:=100, _
    Top:=100)
newWordArt.TextEffect.Tracking =0.8
TrackStatus Property

*True* if status tracking is enabled for the routing slip. Read/write **Boolean**.
Remarks

You cannot set this property if routing is in progress
Example

This example sends Book1.xls to three recipients, with status tracking enabled.

```
Workbooks("BOOK1.XLS").HasRoutingSlip = True
With Workbooks("BOOK1.XLS").RoutingSlip
    .Delivery = xlOneAfterAnother
    .Recipients = Array("Adam Bendel", "Jean Selva", "Bernard Gabor")
    .Subject = "Here is BOOK1.XLS"
    .Message = "Here is the workbook. What do you think?"
    .ReturnWhenDone = True
    .TrackStatus = True
End With
Workbooks("BOOK1.XLS").Route
```
**TransitionExpEval Property**

**True** if Microsoft Excel uses Lotus 1-2-3 expression evaluation rules for the worksheet. Read/write **Boolean**.
Example

This example causes Microsoft Excel to use Lotus 1-2-3 expression evaluation rules for Sheet1.

`Worksheets("Sheet1").TransitionExpEval = True`
TransitionFormEntry Property

True if Microsoft Excel uses Lotus 1-2-3 formula entry rules for the worksheet. Read/write Boolean.
Example

This example causes Microsoft Excel to use Lotus 1-2-3 formula entry rules for Sheet1.

`Worksheets("Sheet1").TransitionFormEntry = True`
TransitionMenuKey Property

Returns or sets the Microsoft Excel menu or help key, which is usually "/". Read/write String.
Example

This example sets the transition menu key to "/" (which is the default).

Application.TransitionMenuKey = "/"
TransitionMenuKeyAction Property

Returns or sets the action taken when the Microsoft Excel menu key is pressed. Can be either xlExcelMenus or xlLotusHelp. Read/write Long.
Example

This example sets the Microsoft Excel menu key to run Lotus 1-2-3 Help when it is pressed.

Application.TransitionMenuKeyAction = xlLotusHelp
TransitionNavigKeys Property

True if transition navigation keys are active. Read/write Boolean.
Example

This example displays the current state of the Transition navigation keys option.

If Application.TransitionNavigKeys Then
    keyState = "On"
Else
    keyState = "Off"
End If
MsgBox "The Transition Navigation Keys option is " & keyState
Transparency Property

Returns or sets the degree of transparency of the specified fill as a value from 0.0 (opaque) through 1.0 (clear). Read/write Double.
Remarks

The value of this property affects the appearance of solid-colored fills and lines only; it has no effect on the appearance of patterned lines or patterned, gradient, picture, or textured fills.
Example

This example sets the shadow of shape three on worksheet one to semitransparent red. If the shape doesn't already have a shadow, this example adds one to it.

```vba
WithWorksheets(1).Shapes(3).Shadow
    .Visible = True
    .ForeColor.RGB = RGB(255, 0, 0)
    .Transparency = 0.5
End With
```
TransparencyColor Property

Returns or sets the transparent color for the specified picture as a red-green-blue (RGB) value. For this property to take effect, the TransparentBackground property must be set to True. Applies to bitmaps only. Read/write Long.

expression.TransparencyColor

expression  Required. An expression that returns one of the objects in the Applies To list.
Remarks

If you want to be able to see through the transparent parts of the picture all the way to the objects behind the picture, you must set the Visible property of the picture's FillFormat object to False. If your picture has a transparent color and the Visible property of the picture's FillFormat object is set to True, the picture's fill will be visible through the transparent color, but objects behind the picture will be obscured.
Example

This example sets the color that has the RGB value returned by the function RGB(0, 0, 255) as the transparent color for shape one on myDocument. For the example to work, shape one must be a bitmap.

blueScreen = RGB(0, 0, 255)
Set myDocument = Worksheets(1)
With myDocument.Shapes(1)
    With .PictureFormat
        .TransparentBackground = True
        .TransparencyColor = blueScreen
    End With
    .Fill.Visible = False
End With
Use the `TransparencyColor` property to set the transparent color. Applies to bitmaps only. Read/write `MsoTriState`.

MsoTriState can be one of these MsoTriState constants.
- `msoCTrue`
- `msoFalse`
- `msoTriStateMixed`
- `msoTriStateToggle`
- `msoTrue` The parts of the picture that are the color defined as the transparent color appear transparent.
Remarks

If you want to be able to see through the transparent parts of the picture all the way to the objects behind the picture, you must set the Visible property of the picture's FillFormat object to False. If your picture has a transparent color and the Visible property of the picture's FillFormat object is set to True, the picture's fill will be visible through the transparent color, but objects behind the picture will be obscured.
Example

This example sets the color that has the RGB value returned by the function RGB(0, 24, 240) as the transparent color for shape one on myDocument. For the example to work, shape one must be a bitmap.

blueScreen = RGB(0, 0, 255)
Set myDocument = Worksheets(1)
With myDocument.Shapes(1)
   With .PictureFormat
      .TransparentBackground = True
   .TransparencyColor = blueScreen
   End With
   .Fill.Visible = False
End With
TreeviewControl Property

- Returns the TreeviewControl object of the CubeField object, representing the cube manipulation control of an OLAP-based PivotTable report. Read-only.
Remarks

This property is available only when the control is visible.
Example

This example sets the first cube field control to “drilled” for the states of California and Maryland in the second PivotTable report on the active worksheet.

```vba
ActiveSheet.PivotTables("PivotTable2")
    .CubeFields(1).TreeviewControl.Drilled = _
        Array(Array("", ""), _
            Array("[state].[states].[CA]", _
                "[state].[states].[MD]"))
```
TwoInitialCapitals Property

True if words that begin with two capital letters are corrected automatically. Read/write Boolean.
**Example**

This example sets Microsoft Excel to correct words that begin with two capital letters.

```vbnet
With Application.AutoCorrect
    .TwoInitialCapitals = True
    .ReplaceText = True
End With
```
Type Property

- Type property as it applies to the Axis object.

Returns or sets the Axis type. Read/write **XlAxisType**.

XlAxisType can be one of these XlAxisType constants.

- **xlCategory**
- **xlSeriesAxis**
- **xlValue**

expression.Type

expression Required. An expression that returns an **Axis** object.

- Type property as it applies to the CalculatedMember object.

Returns the calculated member type. Read-only **XlCalculatedMemberType**.

XlCalculatedMemberType can be one of these XlCalculatedMemberType constants.

- **xlCalculatedMember**
- **xlCalculatedSet**

expression.Type

expression Required. An expression that returns a **CalculatedMember** object.

- Type property as it applies to the CalloutFormat object.

Returns or sets the callout format type. Read/write **MsoCalloutType**.

MsoCalloutType can be one of these MsoCalloutType constants.

- **msoCalloutFour**
msoCalloutMixed
msoCalloutOne
msoCalloutThree
msoCalloutTwo

expression.Type

expression  Required. An expression that returns a **CalloutFormat** object.

➤ **Type property as it applies to the Chart, ChartGroup, and Series objects.**

Returns or sets the chart or series type. Read/write **Long**.

expression.Type

expression  Required. An expression that returns one of the above objects.

➤ **Type property as it applies to the ChartColorFormat, FormatCondition, Hyperlink, and Validation objects.**

Returns or sets the object type. Read-only **Long**.

expression.Type

expression  Required. An expression that returns one of the above objects.

➤ **Type property as it applies to the ChartFillFormat and FillFormat objects.**

Returns or sets the fill type. Read-only **MsoFillType**.

MsoFillType can be one of these MsoFillType constants.

**msoFillBackground**  This constant is not used in Microsoft Excel.

**msoFillGradient**

**msoFillMixed**

**msoFillPatterned**

**msoFillPicture**

**msoFillSolid**

**msoFillTextured**
expression.Type

expression Required. An expression that returns one of the above objects.

- Type property as it applies to the ColorFormat object.

Returns or sets the color format type. Read-only MsoColorType.

MsoColorType can be one of these MsoColorType constants.
  msoColorTypeCMS
  msoColorTypeCMYK
  msoColorTypeInk
  msoColorTypeMixed
  msoColorTypeRGB
  msoColorTypeScheme

expression.Type

expression Required. An expression that returns a ColorFormat object.

- Type property as it applies to the ConnectorFormat object.

Returns or sets the connector format type. Read/write MsoConnectorType.

MsoConnectorType can be one of these MsoConnectorType constants.
  msoConnectorCurve
  msoConnectorElbow
  msoConnectorStraight
  msoConnectorTypeMixed

expression.Type

expression Required. An expression that returns a ConnectorFormat object.

- Type property as it applies to the DataLabel and DataLabels objects.

Returns or sets the label type. Read/write Variant.
expression.Type

expression  Required. An expression that returns one of the above objects.

- **Type property as it applies to the Diagram object.**

Returns or sets the diagram type. Read-only **MsoDiagramType**.

MsoDiagramType can be one of these MsoDiagramType constants.
- msoDiagramCycle
- msoDiagramMixed
- msoDiagramOrgChart
- msoDiagramPyramid
- msoDiagramRadial
- msoDiagramTarget
- msoDiagramVenn

expression.Type

expression  Required. An expression that returns a Diagram object.

- **Type property as it applies to the HPageBreak and VPageBreak objects.**

Returns or sets the page break type. Read/write **XlPageBreak**.

XlPageBreak can be one of these XlPageBreak constants.
- xlPageBreakAutomatic
- xlPageBreakManual
- xlPageBreakNone

expression.Type

expression  Required. An expression that returns one of the above objects.

- **Type property as it applies to the Parameter object.**

Returns or sets the parameter type. Read-only **XlParameterType**.
XlParameterType can be one of these XlParameterType constants.
xlConstant
xlPrompt
xlRange

expression.Type

expression Required. An expression that returns a Parameter object.

▶ Type property as it applies to the ShadowFormat object.

Returns or sets the shadow format type. Read/write MsoShadowType.

MsoShadowType can be one of these MsoShadowType constants.
msoShadow1
msoShadow10
msoShadow11
msoShadow12
msoShadow13
msoShadow14
msoShadow15
msoShadow16
msoShadow17
msoShadow18
msoShadow19
msoShadow2
msoShadow20
msoShadow3
msoShadow4
msoShadow5
msoShadow6
msoShadow7
msoShadow8
msoShadow9
msoShadowMixed
expression.Type

expression  Required. An expression that returns a ShadowFormat object.

- Type property as it applies to the Shape and ShapeRange objects.

Returns or sets the shape type. Read-only MsoShapeType.

MsoShapeType can be one of these MsoShapeType constants.

- msoAutoShape
- msoCallout
- msoCanvas
- msoChart
- msoComment
- msoDiagram
- msoEmbeddedOLEObject
- msoFormControl
- msoFreeform
- msoGroup
- msoLine
- msoLinkedOLEObject
- msoLinkedPicture
- msoMedia  Can not be used with this property. This constant is used with shapes in other Microsoft Office applications.
- msoOLEControlObject
- msoPicture
- msoPlaceholder  Can not be used with this property. This constant is used with shapes in other Microsoft Office applications.
- msoScriptAnchor
- msoShapeTypeMixed
- msoTable
- msoTextBox
- msoTextEffect

expression.Type
expression Required. An expression that returns one of the above objects.

- **Type property as it applies to the Trendline object.**

Returns or sets the trendline type. Read/write **XLtrendlineType**.

XLtrendlineType can be one of these XLtrendlineType constants.

- `xlExponential`
- `xlLinear`
- `xlLogarithmic`
- `xlMovingAvg`
- `xlPolynomial`
- `xlPower`

`expression.Type`

equation Required. An expression that returns a Trendline object.

- **Type property as it applies to the Window object.**

Returns or sets the window type. Read-only **XLwindowType**.

XLwindowType can be one of these XLwindowType constants.

- `xlChartAsWindow`
- `xlChartInPlace`
- `xlClipboard`
- `xlInfo`
- `xlWorkbook`

`expression.Type`

equation Required. An expression that returns a Window object.

- **Type property as it applies to the Worksheet object.**

Returns or sets the worksheet type. Read-only **XLsheetType**.

XLsheetType can be one of these XLsheetType constants.
expression. Type

expression  Required. An expression that returns a **Worksheet** object.
Example

- As it applies to the **Trendline** object.

This example changes the trendline type for the first series in embedded chart one on worksheet one. If the series has no trendline, this example fails.

```vbnet
Worksheets(1).ChartObjects(1).Chart._
.SeriesCollection(1).Trendlines(1).Type = xlMovingAvg
```
Underline Property

Returns or sets the type of underline applied to the font. Can be one of the following XlUnderlineStyle constants. Read/write Variant.

XlUnderlineStyle can be one of these XlUnderlineStyle constants.

- xlUnderlineStyleNone
- xlUnderlineStyleSingle
- xlUnderlineStyleDouble
- xlUnderlineStyleSingleAccounting
- xlUnderlineStyleDoubleAccounting

expression.Underline

expression Required. An expression that returns one of the objects in the Applies To list.
Example

This example sets the font in the active cell on Sheet1 to single underline.

Worksheets("Sheet1").Activate
ActiveCell.Font.Underline = xlUnderlineStyleSingle
UnlockedFormulaCells Property

When set to **True** (default), Microsoft Excel identifies selected cells that are unlocked and contain a formula. **False** disables error checking for unlocked cells that contain formulas. Read/write **Boolean**.

`expression.UnlockedFormulaCells`  

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

In the following example, the **AutoCorrect Options** button appears for cell A3, an unlocked cell containing a formula.

Sub CheckUnlockedCell()

    Application.ErrorCheckingOptions.UnlockedFormulaCells = True
    Range("A1").Value = 1
    Range("A2").Value = 2
    Range("A3").Formula = "=A1+A2"
    Range("A3").Locked = False

End Sub
UpBars Property

Returns an UpBars object that represents the up bars on a line chart. Applies only to line charts. Read-only.
Example

This example turns on up and down bars for chart group one in Chart1 and then sets their colors. The example should be run on a 2-D line chart containing two series that cross each other at one or more data points.

With Charts("Chart1").ChartGroups(1)
    .HasUpDownBars = True
    .DownBars.Interior.ColorIndex = 3
End With
UpdateLinks Property

Returns or sets an **XlUpdateLink** constant indicating a workbook's setting for updating embedded OLE links. Read/write.

XlUpdateLinks can be one of these XlUpdateLinks constants.

- **xlUpdateLinksAlways** Embedded OLE links are always updated for the specified workbook.
- **xlUpdateLinksNever** Embedded OLE links are never updated for the specified workbook.
- **xlUpdateLinksUserSetting** Embedded OLE links are updated according to the user's settings for the specified workbook.

**expression**.UpdateLinks

**expression**  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the setting for updating links and notifies the user.

Sub UseUpdateLinks()
    Dim wkbOne As Workbook
    Set wkbOne = Application.Workbooks(1)
    Select Case wkbOne.UpdateLinks
        Case xlUpdateLinksAlways
            MsgBox "Links will always be updated & _
                   for the specified workbook."
        Case xlUpdateLinksNever
            MsgBox "Links will never be updated & _
                   for the specified workbook."
        Case xlUpdateLinksUserSetting
            MsgBox "Links will update according & _
                   to user setting for the specified workbook."
    End Select
End Sub
**UpdateLinksOnSave Property**

*True* if hyperlinks and paths to all supporting files are automatically updated before you save the document as a Web page, ensuring that the links are up-to-date at the time the document is saved. *False* if the links are not updated. The default value is *True*. Read/write *Boolean*.
Remarks

You should set this property to **False** if the location where the document is saved is different from the final location on the Web server and the supporting files are not available at the first location.
Example

This example specifies that links are not updated before the document is saved.

Application.DefaultWebOptions.UpdateLinksOnSave = False
UpdateRemoteReferences Property

True if Microsoft Excel updates remote references in for the workbook. Read/write Boolean.
Example

This example causes remote references to be updated in the active workbook.

ActiveWorkbook.**UpdateRemoteReferences** = True
UsableHeight Property

Returns the maximum height of the space that a window can occupy in the application window area, in points. Read-only Double.
Example

This example expands the active window to the maximum size available (assuming that the window isn't already maximized).

With ActiveWindow
    .WindowState = xlNormal
    .Top = 1
    .Left = 1
    .Height = Application.UsableHeight
    .Width = Application.UsableWidth
End With
UsableWidth Property

- Returns the maximum width of the space that a window can occupy in the application window area, in points. Read-only Double.
Example

This example expands the active window to the maximum size available (assuming that the window isn't already maximized).

With ActiveWindow
    .WindowState = xlNormal
    .Top = 1
    .Left = 1
    .Height = Application.UsableHeight
    .Width = Application.UsableWidth
End With
UsedObjects Property

- Returns a UsedObjects object representing objects allocated in a workbook.

expression.UsedObjects

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the quantity of objects that have been allocated and notifies the user. This example assumes a recalculation was performed in the application and was interrupted before finishing.

Sub CountUsedObjects()

    MsgBox "The number of used objects in this application is: " & _
    Application.UsedObjects.Count

End Sub
UsedRange Property

Returns a Range object that represents the used range on the specified worksheet. Read-only.
Example

This example selects the used range on Sheet1.

Worksheets("Sheet1").Activate
ActiveSheet.UsedRange.Select
Show All
**UseLocalConnection Property**

*True* if the `LocalConnection` property is used to specify the string that enables Microsoft Excel to connect to a data source. *False* if the connection string specified by the `Connection` property is used. Read/write *Boolean.*
Example

This example sets the connection string of the first PivotTable cache to reference an offline cube file.

With ActiveWorkbook.PivotCaches(1)
    .LocalConnection = 
        "OLEDB;Provider=MSOLAP;Data Source=C:\Data\DataCube.cub"
    .UseLocalConnection = True
End With
UseLongFileNames Property

True if long file names are used when you save the document as a Web page. False if long file names are not used and the DOS file name format (8.3) is used. The default value is True. Read/write Boolean.
Remarks

If you don't use long file names and your document has supporting files, Microsoft Excel automatically organizes those files in a separate folder. Otherwise, use the `OrganizeInFolder` property to determine whether supporting files are organized in a separate folder.
**Example**

This example disallows the use of long file names as the global default for the application.

`Application.DefaultWebOptions.UseLongFileNames = False`
UserControl Property

True if the application is visible or if it was created or started by the user. False if you created or started the application programmatically by using the CreateObject or GetObject functions, and the application is hidden. Read/write Boolean.
Remarks

When the **UserControl** property is **False** for an object, that object is released when the last programmatic reference to the object is released. If this property is **False**, Microsoft Excel quits when the last object in the session is released.
Example

This example displays the status of the **UserControl** property.

```plaintext
If Application.UserControl Then
    MsgBox "This workbook was created by the user"
Else
    MsgBox "This workbook was created programmatically"
End If
```
UserDict Property

Instructs Microsoft Excel to create a custom dictionary to which new words can be added to, when performing spelling checks on a worksheet. Read/write String.

expression.UserDict

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

This example instructs Microsoft Excel to create custom dictionary called "Custom1.dic" in the spelling options feature and notifies the user.

Sub SpecialWord()
    Application.SpellingOptions.UserDict = "Custom1.dic"
    MsgBox "The custom dictionary is currently set to: " _ & Application.SpellingOptions.UserDict
End Sub
UserLibraryPath Property

Returns the path to the location on the user’s computer where the COM add-ins are installed. Read-only String.
Example

This example determines where the COM add-ins are installed on the user’s computer and assigns the string to the variable strLibPath.

\[
\text{strLibPath} = \text{Application.}\text{UserLibraryPath}
\]
UserName Property

Returns or sets the name of the current user. Read/write String.
Example

This example displays the name of the current user.

MsgBox "Current user is " & Application.UserName
Users Property

- Returns a UserAccessList object for the protected range on a worksheet.

expression.Users

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel displays the name of the first user allowed access to the first protected range on the active worksheet. This example assumes that a range has been chosen to be protected and that a particular user has been given access to this range.

Sub DisplayUserName()
    Dim wksSheet As Worksheet
    Set wksSheet = Application.ActiveSheet

    ' Display name of user with access to protected range.
    MsgBox wksSheet.Protection.AllowEditRanges(1).Users(1).Name
End Sub
UserStatus Property

Returns a 1-based, two-dimensional array that provides information about each user who has the workbook open as a shared list. The first element of the second dimension is the name of the user, the second element is the date and time when the user last opened the workbook, and the third element is a number indicating the type of list (1 indicates exclusive, and 2 indicates shared). Read-only Variant.
Remarks

The UserStatus property doesn't return information about users who have the specified workbook open as read-only.
Example

This example creates a new workbook and inserts into it information about all users who have the active workbook open as a shared list.

users = ActiveWorkbook.UserStatus
With Workbooks.Add.Sheets(1)
    For row = 1 To UBound(users, 1)
        .Cells(row, 1) = users(row, 1)
        .Cells(row, 2) = users(row, 2)
        Select Case users(row, 3)
            Case 1
                .Cells(row, 3).Value = "Exclusive"
            Case 2
                .Cells(row, 3).Value = "Shared"
        End Select
    Next
End With
UseStandardHeight Property

True if the row height of the Range object equals the standard height of the sheet. Returns Null if the range contains more than one row and the rows aren’t all the same height. Read/write Variant.
Example

This example sets the height of row one on Sheet1 to the standard height.

`Worksheets("Sheet1").Rows(1).UseStandardHeight = True`
UseStandardWidth Property

True if the column width of the Range object equals the standard width of the sheet. Returns Null if the range contains more than one column and the columns aren’t all the same width. Read/write Variant.
Example

This example sets the width of column A on Sheet1 to the standard width.

`Worksheets("Sheet1").Columns("A").UseStandardWidth = True`
UseSystemSeparators Property

True (default) if the system separators of Microsoft Excel are enabled. Read/write Boolean.

expression.UseSystemSeparators

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, "1,234,567.89" is placed in cell A1. The system separators are then changed to dashes for the decimals and thousands separators.

Sub ChangeSystemSeparators()

    Range("A1").Formula = "1,234,567.89"
    MsgBox "The system separators will now change."

    ' Define separators and apply.
    Application.DecimalSeparator = "-"
    Application.ThousandsSeparator = "-"
    Application.UseSystemSeparators = False

End Sub
VacatedStyle Property

Returns or sets the style applied to cells vacated when the PivotTable report is refreshed. The default value is a null string (no style is applied by default). Read/write String.
Example

This example sets the vacated cells in the PivotTable report to the BlackAndBlue style.

`Worksheets(1).PivotTables("Pivot1").VacatedStyle = "BlackAndBlue"`
Validation Property

Returns the **Validation** object that represents data validation for the specified range. Read-only.
Example

This example causes data validation for cell E5 to allow blank values.

Range("e5").Validation.**IgnoreBlank** = True
Value Property

- Value property as it applies to the Application, CubeField, and Style objects.

For the Application object, always returns "Microsoft Excel". For the CubeField object, the name of the specified field. For the Style object, the name of the specified style. Read-only String.

expression.Value

expression  Required. An expression that returns one of the above objects.

- Value property as it applies to the Borders and CustomProperty objects.

Synonym for Borders.LineStyle. Read/write Variant.

expression.Value

expression  Required. An expression that returns one of the above objects.

- Value property as it applies to the ControlFormat object.

The name of specified control format. Read/write Long.

expression.Value

expression  Required. An expression that returns a ControlFormat object.

- Value property as it applies to the Error and Validation objects.

True if all the validation criteria are met (that is, if the range contains valid data). Read-only Boolean.

expression.Value

expression  Required. An expression that returns one of the above objects.
- **Value property as it applies to the Name, PivotField, PivotFormula, PivotItem, and PivotTable objects.**

For the **Name** object, a string containing the formula that the name is defined to refer to. The string is in A1-style notation in the language of the macro, and it begins with an equal sign. For the **PivotField** object, the name of the specified field in the PivotTable report. For the **PivotFormula** object, the name of the specified formula in the PivotTable formula. For the **PivotItem** object, the name of the specified item in the PivotTable field. For the PivotTable object, the name of the PivotTable report. Read/write **String**.

`expression.Value`

`expression`  Required. An expression that returns one of the above objects.

- **Value property as it applies to the Parameter object.**

The parameter value. For more information, see the **Parameter** object. Read-only **Variant**.

`expression.Value`

`expression`  Required. An expression that returns a **Parameter** object.

- **Value property as it applies to the Range object.**

Returns or sets the value of the specified range. Read/write **Variant**.

`expression.Value(RangeValueDataType)`

`expression`  Required. An expression that returns a **Range** object.

**RangeValueDataType**  Optional **Variant**. The range value data type. Can be a **xlRangeValueDataType** constant.

- **xlRangeValueDataType** can be one of these xlRangeValueDataType constants.

**xlRangeValueDefault**  default  If the specified **Range** object is empty, returns the value **Empty** (use the **IsEmpty** function to test for this case). If the **Range** object contains more than one cell, returns an array of values (use the **IsArray** function to test for this case).
**xlRangeValueMSPersistXML**  Returns the recordset representation of the specified **Range** object in an XML format.

**xlRangeValueXMLSpreadsheet**  Returns the values, formatting, formulas and names of the specified **Range** object in the XML Spreadsheet format.
Remarks

When setting a range of cells with the contents of an XML spreadsheet file, only values of the first sheet in the workbook are used. You cannot set or get a discontiguous range of cells in the XML spreadsheet format.
Example

- As it applies to the `Range` object.

This example sets the value of cell A1 on Sheet1 to 3.14159.

```vba
Worksheets("Sheet1").Range("A1").Value = 3.14159
```

This example loops on cells A1:D10 on Sheet1. If one of the cells has a value less than 0.001, the code replaces the value with 0 (zero).

```vba
For Each c In Worksheets("Sheet1").Range("A1:D10")
    If c.Value < .001 Then
        c.Value = 0
    End If
Next c
```
Value2 Property

Returns or sets the cell value. Read/write Variant.
Remarks

The only difference between this property and the **Value** property is that the **Value2** property doesn’t use the **Currency** and **Date** data types. You can return values formatted with these data types as floating-point numbers by using the **Double** data type.
Example

This example uses the **Value2** property to add the values of two cells.

\[
\text{Range("a1").Value2} = \text{Range("b1").Value2 + Range("c1").Value2}
\]
Values Property

- Values property as it applies to the Scenario object.

Returns an array that contains the current values of the changing cells for the scenario. Read-only Variant.

expression. Values(Index)

expression  Required. An expression that returns one of the above objects.

Index  Optional Variant. The position of the value.

- Values property as it applies to the Series object.

Returns or sets a collection of all the values in the series. This can be a range on a worksheet or an array of constant values, but not a combination of both. See the examples for details. Read/write Variant.

expression. Values

expression  Required. An expression that returns one of the above objects.
Remark

For PivotChart reports, this property is read-only.
Example

This example sets the series values from a range.

Charts("Chart1").SeriesCollection(1).Values = _
   Worksheets("Sheet1").Range("C5:T5")

To assign a constant value to each individual data point, you must use an array.

Charts("Chart1").SeriesCollection(1).Values = _
   Array(1, 3, 5, 7, 11, 13, 17, 19)
**VaryByCategories Property**

**True** if Microsoft Excel assigns a different color or pattern to each data marker. The chart must contain only one series. Read/write **Boolean**.
Example

This example assigns a different color or pattern to each data marker in chart group one. The example should be run on a 2-D line chart that has data markers on a series.

Charts("Chart1").ChartGroups(1).VaryByCategories = True
**VBASigned Property**

*True* if the Visual Basic for Applications project for the specified workbook has been digitally signed. Read-only **Boolean**.
Example

This example loads a workbook named “mybook.xls” and then tests to see whether its Visual Basic for Applications project has a digital signature. If there’s no digital signature, the example displays a warning message.

Workbooks.Open FileName:="c:\My Documents\mybook.xls", _
  ReadOnly:=False
If Workbook.VBASigned = False Then
  MsgBox "Warning! The project " _
  "has not been digitally signed." _
  , vbCritical, "Digital Signature Warning"
End If
VBE Property

Returns a **VBE** object that represents the Visual Basic Editor. Read-only.
Example

This example changes the name of the active Visual Basic project.

Application.VBE.ActiveVBProject.Name = "TestProject"
VBProject Property

Returns a **VBProject** object that represents the Visual Basic project in the specified workbook. Read-only.
Example

This example changes the name of the Visual Basic project in the workbook.

ThisWorkbook.VBProject.Name = "TestProject"
Version Property

- Version property as it applies to the **PivotTable** object.

Returns the Microsoft Excel version number. Read-only **XlPivotTableVersionList**.

XlPivotTableVersionList can be one of these XlPivotTableVersionList constants.
- xlPivotTableVersion10
- xlPivotTableVersion2000
- xlPivotTableVersionCurrent

*expression*. **Version**

*expression*  Required. An expression that returns one of the above objects.

- Version property as it applies to the **Application** object.

Returns the Microsoft Excel version number. Read-only **String**.

*expression*. **Version**

*expression*  Required. An expression that returns one of the above objects.
Example

- As it applies to the Application object.

This example displays a message box that contains the Microsoft Excel version number and the name of the operating system.

MsgBox "Welcome to Microsoft Excel version " & _
    Application.Version & " running on " & _
    Application.OperatingSystem & "!"
Show All
VerticalAlignment Property

- VerticalAlignment property as it applies to the Style and TextFrame objects.

Returns or sets the vertical alignment of the specified object. Read/write XlVAlign.

XlVAlign can be one of these XlVAlign constants.
- xlVAlignCenter
- xlVAlignJustify
- xlVAlignBottom
- xlVAlignDistributed
- xlVAlignTop

expression.VerticalAlignment

expression Required. An expression that returns one of the above objects.
Remarks

Some of these constants may not be available to you, depending on the language support (U.S. English, for example) that you've selected or installed.

- **VerticalAlignment** property as it applies to the **AxisTitle**, **CellFormat**, **ChartTitle**, **DataLabel**, **DataLabels**, **DisplayUnitLabel**, and **Range** objects.

Returns or sets the vertical alignment of the specified object. Read/write **Variant**.

`expression.VerticalAlignment`

`expression`  Required. An expression that returns one of the above objects.
Example

- As it applies to the **CellFormat** object.

This example sets the height of row 2 on Sheet1 to twice the standard height and then centers the contents of the row vertically.

```vba
Worksheets("Sheet1").Rows(2).RowHeight = _
   2 * Worksheets("Sheet1").StandardHeight
Worksheets("Sheet1").Rows(2).VerticalAlignment = xlVAAlignCenter
```
VerticalFlip Property

**True** if the specified shape is flipped around the vertical axis. Read-only **MsoTriState**.

MsoTriState can be one of these MsoTriState constants.

- **msoCTrue**
- **msoFalse**
- **msoTriStateMixed**
- **msoTriStateToggle**
- **msoTrue** The specified shape is flipped around the vertical axis.

**expression**.VerticalFlip

**expression** Required. An expression that returns one of the objects in the Applies To list.
Example

This example restores each shape on myDocument to its original state if it's been flipped horizontally or vertically.

Set myDocument = Worksheets(1)
For Each s In myDocument.Shapes
    If s.HorizontalFlip Then s.Flip msoFlipHorizontal
    If s.VerticalFlip Then s.Flip msoFlipVertical
Next
Show All
Vertices Property

Returns the coordinates of the specified freeform drawing's vertices (and control points for Bézier curves) as a series of coordinate pairs. You can use the array returned by this property as an argument to the AddCurve method or AddPolyLine method. Read-only Variant.

The following table shows how the Vertices property associates the values in the array vertArray() with the coordinates of a triangle's vertices.

<table>
<thead>
<tr>
<th>vertArray element</th>
<th>Contains</th>
</tr>
</thead>
<tbody>
<tr>
<td>vertArray(1, 1)</td>
<td>The horizontal distance from the first vertex to the left side of the document</td>
</tr>
<tr>
<td>vertArray(1, 2)</td>
<td>The vertical distance from the first vertex to the top of the document</td>
</tr>
<tr>
<td>vertArray(2, 1)</td>
<td>The horizontal distance from the second vertex to the left side of the document</td>
</tr>
<tr>
<td>vertArray(2, 2)</td>
<td>The vertical distance from the second vertex to the top of the document</td>
</tr>
<tr>
<td>vertArray(3, 1)</td>
<td>The horizontal distance from the third vertex to the left side of the document</td>
</tr>
<tr>
<td>vertArray(3, 2)</td>
<td>The vertical distance from the third vertex to the top of the document</td>
</tr>
</tbody>
</table>
Example

This example assigns the vertex coordinates for shape one on myDocument to the array variable vertArray() and displays the coordinates for the first vertex.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes(1)
    vertArray = .Vertices
    x1 = vertArray(1, 1)
    y1 = vertArray(1, 2)
    MsgBox "First vertex coordinates: " & x1 & ", " & y1
End With
```

This example creates a curve that has the same geometric description as shape one on myDocument. Shape one must contain \(3n+1\) vertices for this example to succeed.

```vba
Set myDocument = Worksheets(1)
With myDocument.Shapes
    .AddCurve .Item(1).Vertices
End With
```
View Property

Returns or sets the view showing in the window. Read/write `XlWindowView`.

`XlWindowView` can be one of these `XlWindowView` constants.
- `xlNormalView`
- `xlPageBreakPreview`

`expression.View`

`expression` Required. An expression that returns one of the objects in the Applies To list.
Example

This example switches the view in the active window to page break preview.

ActiveWindow.View = xlPageBreakPreview
ViewCalculatedMembers Property

When set to **True** (default), calculated members for Online Analytical Processing (OLAP) PivotTables can be viewed. Read/write **Boolean**.

*expression.ViewCalculatedMembers*

*expression*  Required. An expression that returns a **PivotTable** object.
Example

This example determines if calculated members can be viewed on the PivotTable and notifies the user. It assumes that a PivotTable exists on the active worksheet.

Sub CheckViewCalculatedMembers()
    Dim pvtTable As PivotTable

    Set pvtTable = ActiveSheet.PivotTables(1)

    ' Determine if calculated members can be viewed.
    If pvtTable.ViewCalculatedMembers = True Then
        MsgBox "Calculated members can be viewed."
    Else
        MsgBox "Calculated members cannot be viewed."
    End If

End Sub
Visible Property

- Visible property as it applies to the ChartFillFormat, FillFormat, LineFormat, ShadowFormat, Shape, ShapeRange, and ThreeDFormat objects.

Determines whether the object is visible. Read/write MsoTriState.

MsoTriState can be one of these MsoTriState constants.
- msoCTrue
- msoFalse
- msoTriStateMixed
- msoTriStateToggle
- msoTrue The object is visible.

expression.Visible

expression Required. An expression that returns one of the above objects.

- Visible property as it applies to the Chart and Worksheet objects.

Determines whether the object is visible. Read/write XlSheetVisibility.

XlSheetVisibility can be one of these XlSheetVisibility constants.
- xlSheetHidden
- xlSheetVisible
- xlSheetVeryHidden Hides the object so that the only way for you to make it visible again is by setting this property to True (the user cannot make the object visible).

expression.Visible
expression Required. An expression that returns one of the above objects.

- Visible property as it applies to the Application, ChartObject, ChartObjects, Comment, Name, OLEObject, OLEObjects, Phonetic, Phonetics, PivotItem, and Window objects.

Determines whether the object is visible. Read/write Boolean.

expression.Visible

expression Required. An expression that returns one of the above objects.

- Visible property as it applies to the Charts, Sheets, and Worksheets objects.

Determines whether the object is visible. Read/write Variant.

expression.Visible

expression Required. An expression that returns one of the above objects.
Remarks

The **Visible** property for a PivotTable item is **True** if the item is currently visible in the table.

If you set the **Visible** property for a name to **False**, the name won't appear in the **Define Name** dialog box.
Example

As it applies to the **Charts**, **Sheets**, and **Worksheets** objects.

This example hides Sheet1.

`Worksheets("Sheet1").Visible = False`

This example makes Sheet1 visible.

`Worksheets("Sheet1").Visible = True`

This example makes every sheet in the active workbook visible.

```vba
For Each sh In Sheets
    sh.Visible = True
Next sh
```

This example creates a new worksheet and then sets its **Visible** property to **xlVeryHidden**. To refer to the sheet, use its object variable, `newSheet`, as shown in the last line of the example. To use the `newSheet` object variable in another procedure, you must declare it as a public variable (`Public newSheet As Object`) in the first line of the module preceding any **Sub** or **Function** procedure.

```vba
Set newSheet = Worksheets.Add
newSheet.Visible = xlVeryHidden
newSheet.Range("A1:D4").Formula = "=RAND()"
```
Show All
VisibleFields Property

Returns an object that represents either a single field in a PivotTable report (a PivotField object) or a collection of all the visible fields (a PivotFields object). Visible fields are shown as row, column, page or data fields. Read-only.

expression.VisibleFields(Index)

expression Required. An expression that returns a PivotTable object.

Index Optional Variant. The name or number of the field to be returned (can be an array to specify more than one field).
Remarks

For OLAP data sources, there are no hidden fields, and this property returns all the fields in the PivotTable cache.
**Example**

This example adds the visible field names to a list on a new worksheet.

```vba
Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtField In pvtTable.VisibleFields
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtField.Name
Next pvtField
```
VisibleItems Property

Returns an object that represents either a single visible PivotTable item (a PivotItem object) or a collection of all the visible items (a PivotItems object) in the specified field. Read-only.

expression.VisibleItems(Index)

expression Required. An expression that returns a PivotField object.

Index Optional Variant. The number or name of the item to be returned (can be an array to specify more than one item).
Remarks

For OLAP data sources, this property is read-only and always returns True. There are no hidden items.
Example

This example adds the names of all visible items in the field named "Product" to a list on a new worksheet.

Set nwSheet = Worksheets.Add
nwSheet.Activate
Set pvtTable = Worksheets("Sheet2").Range("A1").PivotTable
rw = 0
For Each pvtItem In pvtTable.PivotFields("Product").VisibleItems
    rw = rw + 1
    nwSheet.Cells(rw, 1).Value = pvtItem.Name
Next
VisibleRange Property

Returns a Range object that represents the range of cells that are visible in the window or pane. If a column or row is partially visible, it's included in the range. Read-only.
Example

This example displays the number of cells visible on Sheet1.

Worksheets("Sheet1").Activate
MsgBox "There are " & Windows(1).VisibleRange.Cells.Count _
    & " cells visible"
Show All
VisualTotals Property

True (default) to enable Online Analytical Processing (OLAP) PivotTables to retotal after an item has been hidden from view. Read/write Boolean.

expression.VisualTotals

expression Required. An expression that returns a PivotTable object.
Remarks

In non-OLAP PivotTables, if you hide an item, the total is recomputed to reflect only the items that remain visible in the PivotTable. In an OLAP PivotTable, the total is computed on the server and is therefore unaffected by whether any items are hidden in the PivotTable view. However, if the VisualTotals property is set to False for an OLAP PivotTable, then the results of the OLAP PivotTable will match those of the non-OLAP PivotTable.

For OLAP PivotTables, a VisualTotals property setting of True (default) works the same way as described for non-OLAP PivotTables.

The VisualTotals property returns True for all new PivotTables. However, if you open a workbook in the current version of Microsoft Excel and the PivotTable had been created in a previous version of Excel, then the VisualTotals property will return False.

Note  All previously created PivotTables will have the VisualTotals property set to False by default, unless the user changes it, but for all newly created ones the VisualTotals property is set to True.
Example

This example determines if the ability to re-total after an item has been hidden from view is available for OLAP PivotTables and notifies the user. The example assumes a PivotTable exists on the active worksheet.

Sub CheckVisualTotals()
    Dim pvtTable As PivotTable
    Set pvtTable = ActiveSheet.PivotTables(1)
    ' Determine if visual totals is enabled for OLAP PivotTables.
    If pvtTable.VisualTotals = True Then
        MsgBox "Ability enabled to re-total after an item " & _
            "has been hidden from view."
    Else
        MsgBox "Unable to re-total items not hidden from view."
    End If
End Sub
VPageBreaks Property

Returns a VPageBreaks collection that represents the vertical page breaks on the sheet. Read-only.

For information about returning a single member of a collection, see Returning an Object from a Collection.
Example

This example displays the total number of full-screen and print-area vertical page breaks.

For Each pb in Worksheets(1).VPageBreaks
    If pb.Extent = xlPageBreakFull Then
        cFull = cFull + 1
    Else
        cPartial = cPartial + 1
    End If
Next
MsgBox cFull & " full-screen page breaks, " & cPartial & _
" print-area page breaks"
Walls Property

Returns a **Walls** object that represents the walls of the 3-D chart. Read-only.
Remarks

This property doesn't apply to 3-D pie charts.
**Example**

This example sets the color of the wall border of Chart1 to red. The example should be run on a 3-D chart.

`Charts("Chart1").Walls.Border.ColorIndex = 3`
WallsAndGridlines2D Property

True if gridlines are drawn two-dimensionally on a 3-D chart. Read/write Boolean.
Example

This example causes Microsoft Excel to draw 2-D gridlines on Chart1.

Charts("Chart1").WallsAndGridlines2D = True
Watches Property

Returns a **Watches** object representing a range which is tracked when the worksheet is recalculated.

*expression*.**Watches**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example creates a summation formula in cell A3, and then adds this cell to the Watch Window.

Sub AddWatch()
    With Application
        .Range("A1").Formula = 1
        .Range("A2").Formula = 2
        .Range("A3").Formula = "=Sum(A1:A2"
        .Range("A3").Select
        .Watches.Add Source:=ActiveCell
    End With
End Sub
WebConsecutiveDelimitersAsOne Property

**True** if consecutive delimiters are treated as a single delimiter when you import data from HTML `<PRE>` tags in a Web page into a query table, and if the data is to be parsed into columns. **False** if you want to treat consecutive delimiters as multiple delimiters. The default value is **True**. Read/write **Boolean**.
Remarks

Use this property only when the query table’s **QueryType** property is set to **xlWebQuery**, the query returns an HTML document, and the **WebPreFormattedTextToColumns** property is set to **True**.
Example

This example sets the space character to be the delimiter in the query table on the first worksheet in the first workbook, and then it refreshes the query table. Consecutive spaces are treated as a single space.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "URL:http://datasvr/98q1/19980331.htm", _
        Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .WebConsecutiveDelimitersAsOne = True
    .Refresh
End With
WebDisableDateRecognition Property

True if data that resembles dates is parsed as text when you import a Web page into a query table. False if date recognition is used. The default value is False. Read/write Boolean.
Remarks

Use this property only when the query table’s `QueryType` property is set to `xlWebQuery` and the query returns an HTML document.
Example

This example turns off date recognition so that Web page data that resembles dates is imported as text. The example then refreshes the query table.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "URL:http://datasvr/98q1/19980331.htm", 
    Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .WebDisableDateRecognition = True
    .Refresh
End With
WebDisableRedirections Property

True if Web query redirections are disabled for a QueryTable object. The default value is False. Read/write Boolean.

expression.WebDisableRedirections

expression  Required. An expression that returns one of the objects in the Applies To list.
Example

In this example, Microsoft Excel determines the settings Web query redirections for the first worksheet in the workbook. This example assumes a QueryTable object exists on the first worksheet, otherwise a run-time error will occur.

Sub CheckWebQuerySetting()
    Dim wksSheet As Worksheet
    Set wksSheet = Application.ActiveSheet
    MsgBox wksSheet.QueryTables(1).WebDisableRedirections
End Sub
WebFormatting Property

Returns or sets a value that determines how much formatting from a Web page, if any, is applied when you import the page into a query table. Read/write XlWebFormatting.

XlWebFormatting can be one of these XlWebFormatting constants.
xlWebFormattingAll
xlWebFormattingRTF
xlWebFormattingNone default.

expression.WebFormatting

eexpression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property only when the query table’s QueryType property is set to xlWebQuery and the query returns an HTML document.
Example

This example adds a new Web query table to the first worksheet in the first workbook, imports all of the Web page formatting applied to the data, and then refreshes the query table.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "URL:http://datasvr/98q1/19980331.htm", _
         Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .WebFormatting = xlAll
    .Refresh
End With
```
WebOptions Property

Returns the WebOptions collection, which contains workbook-level attributes used by Microsoft Excel when you save a document as a Web page or open a Web page. Read-only.
Example

This example specifies that cascading style sheets and Western document encoding be used when items in the first workbook are saved to a Web page.

Set objWO = Workbooks(1).WebOptions
objWO.RelyOnCSS = True
objWO.Encoding = msoEncodingWestern
WebPreFormattedTextToColumns Property

Returns or sets whether data contained within HTML <PRE> tags in the Web page is parsed into columns when you import the page into a query table. The default is True. Read/write Boolean.
Remarks

This property is used only when the `QueryType` property of the query table is `xlWebQuery` and the query returns a HTML document.
Example

This example adds a new Web query table to the first worksheet in the first workbook. Note that the example doesn’t parse into columns any data located between the HTML <PRE> tags.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
   .Add(Connection := "URL:http://datasvr/98q1/19980331.htm", _
   Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
   .WebFormatting = xlNone
   .WebPreFormattedTextToColumns = False
   .Refresh
End With
WebSelectionType Property

Returns or sets a value that determines whether an entire Web page, all tables on the Web page, or only specific tables on the Web page are imported into a query table. Read/write XlWebSelectionType.

XlWebSelectionType can be one of these XlWebSelectionType constants.
\- xlEntirePage
\- xlAllTables default.
\- xlSpecifiedTables

expression. WebSelectionType

expression Required. An expression that returns one of the objects in the Applies To list.
Remarks

Use this property only when the query table’s **QueryType** property is set to **xlWebQuery** and the query returns an HTML document.

If the value of this property is **xlSpecifiedTables**, you can use the **WebTables** property to specify the tables to be imported.
Example

This example adds a new Web query table to the first worksheet in the first workbook and then imports data from the first and second tables in the Web page.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "URL:http://datasvr/98q1/19980331.htm", _
        Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .WebFormatting = xlNone
    .WebSelectionType = xlSpecifiedTables
    .WebTables = "1,2"
    .Refresh
End With
WebSingleBlockTextImport Property

True if data from the HTML <PRE> tags in the specified Web page is processed all at once when you import the page into a query table. False if the data is imported in blocks of contiguous rows so that header rows will be recognized as such. The default value is False. Read/write Boolean.
Remarks

Use this property only when the query table’s `QueryType` property is set to `xlWebQuery` and the query returns an HTML document.
Example

This example adds a new Web query table to the first worksheet in the first workbook and and then imports all of the HTML <PRE> tag data all at once.

```vba
Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
  .Add(Connection := "URL:http://datasvr/98q1/19980331.htm",
    Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
  .WebSingleBlockTextImport = True
  Refresh
End With
```

WebTables Property

Returns or sets a comma-delimited list of table names or table index numbers when you import a Web page into a query table. Read/write String.
Remarks

Use this property only when the query table’s QueryType property is set to xlWebQuery, the query returns an HTML document, and the value of the WebSelectionType property is xlSpecifiedTables.
Example

This example adds a new Web query table to the first worksheet in the first workbook and then imports data from the first and second tables in the Web page.

Set shFirstQtr = Workbooks(1).Worksheets(1)
Set qtQtrResults = shFirstQtr.QueryTables
    .Add(Connection := "URL: http://datasvr/98q1/19980331.htm", 
         Destination := shFirstQtr.Cells(1,1))
With qtQtrResults
    .WebFormatting = xlNone
    .WebSelectionType = xlSpecifiedTables
    .WebTables = "1,2"
    .Refresh
End With
Weight Property

- **Weight property as it applies to the LineFormat object.**

Returns or sets the weight of the line. Read/write [Single](https://docs.microsoft.com/en-us/office/vba/api/Word.XlLineWeight).

`expression.Weight`

`expression`  Required. An expression that returns one of the above objects.

- **Weight property as it applies to the Border and Borders objects.**

Returns or sets the weight of the border. Read/write [XlBorderWeight](https://docs.microsoft.com/en-us/office/vba/api/Word.XlBorderWeight).

XlBorderWeight can be one of these XlBorderWeight constants.

- [xlHairline](https://docs.microsoft.com/en-us/office/vba/api/Word.XlHairline)
- [xlThin](https://docs.microsoft.com/en-us/office/vba/api/Word.XlThin)
- [xlMedium](https://docs.microsoft.com/en-us/office/vba/api/Word.XlMedium)
- [xlThick](https://docs.microsoft.com/en-us/office/vba/api/Word.XlThick)

`expression.Weight`

`expression`  Required. An expression that returns one of the objects.
Example

This example sets the border weight for oval one on Sheet1.

`Worksheets("Sheet1").Ovals(1).Border.Weight = xlMedium`
Width Property

- **Width property as it applies to the Application object.**

  The distance from the left edge of the application window to its right edge. If the window is minimized, Application.Width is read-only and returns the width of the window icon. Read/write **Double**.

  `expression.Width`

  `expression`  Required. An expression that returns an **Application** object.

- **Width property as it applies to the Window object.**

  The width of the window. Use the **UsableWidth** property to determine the maximum size for the window. You cannot set this property if the window is maximized or minimized. Use the **WindowState** property to determine the window state. Read/write **Double**.

  `expression.Width`

  `expression`  Required. An expression that returns a **Window** object.

- **Width property as it applies to the ChartArea, ChartObject, ChartObjects, Legend, OLEObject, OLEObjects, and PlotArea objects.**

  The width of the object. Read/write **Double**.

  `expression.Width`

  `expression`  Required. An expression that returns one of the above objects.

- **Width property as it applies to the Axis, LegendEntry, and LegendKey objects.**

  The width of the object. Read-only **Double**.
expression.**Width**

*expression*  Required. An expression that returns one of the above objects.

- **Width property as it applies to the Graphic, Shape, and ShapeRange objects.**

The width of the object. Read/write **Single**.

**expression.** **Width**

*expression*  Required. An expression that returns one of the above objects.

- **Width property as it applies to the Range object.**

The width of the range. Read-only **Variant**.

**expression.** **Width**

*expression*  Required. An expression that returns a **Range** object.
Example

As it applies to the Application object.

This example expands the active window to the maximum size available (assuming that the window isn’t maximized).

With ActiveWindow
  .WindowState = xlNormal
  .Top = 1
  .Left = 1
  .Height = Application.UsableHeight
  .Width = Application.UsableWidth
End With

As it applies to the ChartArea, ChartObject, ChartObjects, Legend, OLEObject, OLEObjects, and PlotArea objects.

This example sets the width of the embedded chart.

Worksheets("Sheet1").ChartObjects(1).Width = 360
WindowNumber Property

Returns the window number. For example, a window named "Book1.xls:2" has 2 as its window number. Most windows have the window number 1. Read-only Long.
Remarks

The window number isn't the same as the window index (the return value of the Index property), which is the position of the window within the Windows collection.
Example

This example creates a new window of the active window and then displays the window number of the new window.

ActiveWindow.NewWindow
MsgBox ActiveWindow.WindowNumber
Windows Property

For an Application object, returns a Windows collection that represents all the windows in all the workbooks. For a Workbook object, returns a Windows collection that represents all the windows in the specified workbook. Read-only Windows object.
Remarks

For information about returning a single member of a collection, see Returning an Object from a Collection.

Using this property without an object qualifier is equivalent to using Application.Windows.

This property returns a collection of both visible and hidden windows.
Example

This example closes the first open or hidden window in Microsoft Excel.

Application.Workbooks(1).Close

This example names window one in the active workbook "Consolidated Balance Sheet." This name is then used as the index to the Windows collection.

ActiveWorkbook.Worksheets("Consolidated Balance Sheet").Activate

ActiveSheet.Calculate

Example
WindowsForPens Property

True if the computer is running under Microsoft Windows for Pen Computing. Read-only Boolean.
Example

This example shows how to limit handwriting recognition to numbers and punctuation only if Microsoft Windows for Pen Computing is running.

If Application.WindowsForPens Then
    Application.ConstrainNumeric = True
End If
WindowState Property

Returns or sets the state of the window. Read/write \texttt{XlWindowState}.

\texttt{XlWindowState} can be one of these \texttt{XlWindowState} constants.
\begin{itemize}
  \item \texttt{xlMaximized}
  \item \texttt{xlNormal}
  \item \texttt{xlMinimized}
\end{itemize}

\textit{expression} . \texttt{WindowState}

\textit{expression}  Required. An expression that returns one of the objects in the Applies To list.
Example

This example maximizes the application window in Microsoft Excel.

Application.WorksheetState = xlMaximized

This example expands the active window to the maximum size available (assuming that the window isn't already maximized).

With ActiveWindow
  .WindowState = xlNormal
  .Top = 1
  .Left = 1
  .Height = Application.UsableHeight
  .Width = Application.UsableWidth
End With
Workbooks Property

Returns a **Workbooks** collection that represents all the open workbooks. Read-only.

For information about returning a single member of a collection, see [Returning an Object from a Collection](#).
Remarks

Using this property without an object qualifier is equivalent to using Application.Workbooks.

The collection returned by the **Workbooks** property doesn’t include open add-ins, which are a special kind of hidden workbook. You can, however, return a single open add-in if you know the file name. For example, `Workbooks("Oscar.xla")` will return the open add-in named "Oscar.xla" as a **Workbook** object.
Example

This example activates the workbook Book1.xls.

`Workbooks("BOOK1").Activate`

This example opens the workbook Large.xls.

`Workbooks.Open filename:="LARGE.XLS"`

This example saves changes to and closes all workbooks except the one that’s running the example.

```vba
For Each w In Workbooks
    If w.Name <> ThisWorkbook.Name Then
        w.Close savechanges:=True
    End If
Next w
```
Worksheet Property

Returns a Worksheet object that represents the worksheet containing the specified range. Read-only.
**Example**

This example displays the name of the worksheet that contains the active cell. The example must be run from a worksheet.

`MsgBox ActiveCell.Worksheet.Name`

This example displays the name of the worksheet that contains the range named "testRange."

`MsgBox Range("testRange").Worksheet.Name`
WorksheetFunction Property

Returns the `WorksheetFunction` object. Read-only.
Example

This example displays the result of applying the **Min** worksheet function to the range A1:A10.

```vba
Set myRange = Worksheets("Sheet1").Range("A1:C10")
answer = Application.WorksheetFunction.Min(myRange)
MsgBox answer
```
Worksheets Property

For an Application object, returns a Sheets collection that represents all the worksheets in the active workbook. For a Workbook object, returns a Sheets collection that represents all the worksheets in the specified workbook. Read-only Sheets object.
Remarks

For information about returning a single member of a collection, see Returning an Object from a Collection.

Using this property without an object qualifier returns all the worksheets in the active workbook.

This property doesn’t return macro sheets; use the Excel4MacroSheets property or the Excel4IntlMacroSheets property to return those sheets.
**Example**

This example displays the value in cell A1 on Sheet1 in the active workbook.

```vba
MsgBox Worksheets("Sheet1").Range("A1").Value
```

This example displays the name of each worksheet in the active workbook.

```vba
For Each ws In Worksheets
    MsgBox ws.Name
Next ws
```

This example adds a new worksheet to the active workbook and then sets the name of the worksheet.

```vba
Set newSheet = Worksheets.Add
newSheet.Name = "current Budget"
```
WrapText Property

- **WrapText property as it applies to the Style object.**

**True** if Microsoft Excel wraps the text in the object. Read/write **Boolean**.

*expression*.WrapText

*expression*  Required. An expression that returns one of the above objects.

- **WrapText property as it applies to the CellFormat and Range objects.**

**True** if Microsoft Excel wraps the text in the object. Returns **Null** if the specified range contains some cells that wrap text and other cells that don’t. Read/write **Variant**.

*expression*.WrapText

*expression*  Required. An expression that returns one of the above objects.
Remarks

Microsoft Excel will change the row height of the range, if necessary, to accommodate the text in the range.
Example

- As it applies to the **Range** object.

This example formats cell B2 on Sheet1 so that the text wraps within the cell.

```vbnet
Worksheets("Sheet1").Range("B2").Value = _
"This text should wrap in a cell."
Worksheets("Sheet1").Range("B2").WrapText = True
```
WritePassword Property

Returns or sets a String for the write password of a workbook. Read/write.

`expression.WritePassword`

`expression`  Required. An expression that returns one of the objects in the Applies To list.
**Example**

In this example, if the active workbook is not protected against saving changes, Microsoft Excel sets the password to a string as the write password for the active workbook.

Sub UseWritePassword()
    Dim strPassword As String
    strPassword = "secret"
    ' Set password to a string if allowed.
    If ActiveWorkbook.WriteReserved = False Then
        ActiveWorkbook.WritePassword = strPassword
    End If
End Sub

**Note**  The **WritePassword** property is readable and returns "*******".
WriteReserved Property

True if the workbook is write-reserved. Read-only Boolean.
Remarks

Use the `SaveAs` method to set this property.
Example

If the active workbook is write-reserved, this example displays a message that contains the name of the user who saved the workbook as write-reserved.

With ActiveWorkbook
    If .WriteReserved = True Then
        MsgBox "Please contact " & .WriteReservedBy & Chr(13) & _
        " if you need to insert data in this workbook."
    End If
End With
WriteReservedBy Property

Returns the name of the user who currently has write permission for the workbook. Read-only String.
Example

If the active workbook is write-reserved, this example displays a message that contains the name of the user who saved the workbook as write-reserved.

With ActiveWorkbook
    If .WriteReserved = True Then
        MsgBox "Please contact " & .WriteReservedBy & Chr(13) & " if you need to insert data in this workbook."
    End If
End With
XML Property

Returns a **String** representing a sample of the XML that would be passed to the action handler. Read-only.

**expression.XML**

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Example

This example adds a smart tag to cell A1 and then displays the XML that would be passed to the action handler. This example assumes the host system is connected to the Internet.

Sub CheckXML()
    Dim strLink As String
    Dim strType As String

    ' Define SmartTag variables.
    strLink = "urn:schemas-microsoft-com:smarttags#StockTickerSymbol"
    strType = "stockview"

    ' Enable smart tags to be embedded and recognized.
    ActiveWorkbook.SmartTagOptions.EmbedSmartTags = True
    Application.SmartTagRecognizers.Recognize = True

    Range("A1").Formula = "MSFT"

    ' Display the sample of the XML.
    MsgBox Range("A1").SmartTags.Add(strLink).XML

End Sub
XValues Property

Returns or sets an array of x values for a chart series. The XValues property can be set to a range on a worksheet or to an array of values, but it cannot be a combination of both. Read/write Variant.

For PivotChart reports, this property is read-only.
Example

This example sets the x values for series one in Chart1 to the range B1:B5 on Sheet1.

Charts("Chart1").SeriesCollection(1).xValues = _
    Worksheets("Sheet1").Range("B1:B5")

This example uses an array to set values for the individual points in series one in Chart1.

Charts("Chart1").SeriesCollection(1).xValues = _
    Array(5.0, 6.3, 12.6, 28, 50)
This keyword is not implemented. It is reserved for future use.
Zoom Property

- Zoom property as it applies to the **PageSetup** object.

Returns or sets a percentage (between 10 and 400 percent) by which Microsoft Excel will scale the worksheet for printing. Applies only to worksheets. Read/write **Variant**.

`expression.Zoom`

`expression` Required. An expression that returns a **PageSetup** object.
Remarks

If this property is **False**, the [FitToPagesWide](#) and [FitToPagesTall](#) properties control how the worksheet is scaled.

All scaling retains the aspect ratio of the original document.

- **Zoom property as it applies to the Window object.**

Returns or sets the display size of the window, as a percentage (100 equals normal size, 200 equals double size, and so on). Read/write **Variant**.

expression.Zoom

**expression** Required. An expression that returns a [Window](#) object.
Remarks

You can also set this property to **True** to make the window size fit the current selection.

This function affects only the sheet that's currently active in the window. To use this property on other sheets, you must first activate them.
Example

- As it applies to the **PageSetup** object.

This example scales Sheet1 by 150 percent when the worksheet is printed.

WORKSHEETS("Sheet1").PAGESETUP.ZOOM = 150
ZOrder Property

Returns the z-order position of the object. Read-only Long.
Remarks

In any collection of objects, the object at the back of the z-order is *collection*(1), and the object at the front of the z-order is *collection*(collection.Count). For example, if there are embedded charts on the active sheet, the chart at the back of the z-order is *ActiveSheet.ChartObjects*(1), and the chart at the front of the z-order is *ActiveSheet.ChartObjects*(ActiveSheet.ChartObjects.Count).
Example

This example displays the z-order position of embedded chart one on Sheet1.

MsgBox "The chart's z-order position is " & _
    Worksheets("Sheet1").ChartObjects(1).ZOrder
Activate Event

Occurs when a workbook, worksheet, chart sheet, or embedded chart is activated.

Private Sub object_Activate()

object Chart, Workbook, or Worksheet. For information about using events with the Chart object, see Using Events with the Chart Object.
Remarks

When you switch between two windows showing the same workbook, the WindowActivate event occurs, but the Activate event for the workbook doesn't occur.

This event doesn't occur when you create a new window.
Example

This example sorts the range A1:A10 when the worksheet is activated.

Private Sub Worksheet_Activate()
    Range("a1:a10").Sort Key1:=Range("a1"), Order:=xlAscending
End Sub
AddinInstall Event

Occurs when the workbook is installed as an add-in

Private Sub Workbook_AddinInstall()
Example

This example adds a control to the standard toolbar when the workbook is installed as an add-in.

Private Sub Workbook_AdditnInstall()
    With Application.Commandbars("Standard").Controls.Add
        .Caption = "The AddIn's menu item"
        .OnAction = ":'ThisAddin.xls'!Amacro"
    End With
End Sub
AddinUninstall Event

Occurs when the workbook is uninstalled as an add-in.

Private Sub Workbook_AddinUninstall()
Remarks

The add-in doesn't automatically close when it's uninstalled.
Example

This example minimizes Microsoft Excel when the workbook is uninstalled as an add-in.

Private Sub Workbook_AddinUninstall()
    Application.Windows[0].WindowState = xlMinimized
End Sub
AfterRefresh Event

Occurs after a query is completed or canceled.

Private Sub QueryTable_AfterRefresh(Success As Boolean)

Success True if the query was completed successfully.
Example

This example uses the Success argument to determine which section of code to run.

Private Sub QueryTable_AfterRefresh(Success As Boolean)
    If Success
        ' Query completed successfully
    Else
        ' Query failed or was cancelled
    End If
End Sub
BeforeClose Event

Occurs before the workbook closes. If the workbook has been changed, this event occurs before the user is asked to save changes.

Private Sub Workbook_BeforeClose(Cancel As Boolean)

Cancel False when the event occurs. If the event procedure sets this argument to True, the close operation stops and the workbook is left open.
Example

This example always saves the workbook if it's been changed.

Private Sub Workbook_BeforeClose(Cancel as Boolean)
    If Me.Saved = False Then Me.Save
End Sub
BeforeDoubleClick Event

- **Activate method as it applies to the Worksheet object.**

Occurs when a worksheet is double-clicked, before the default double-click action.

**Private Sub** `expression_BeforeDoubleClick(ByVal Target As Range, Cancel As Boolean)`

`expression` A variable which references an object of type **Worksheet** declared with events in a class module.

**Target** Required. The cell nearest to the mouse pointer when the double-click occurs.

**Cancel** Optional. **False** when the event occurs. If the event procedure sets this argument to **True**, the default double-click action isn't performed when the procedure is finished.

- **Activate method as it applies to the Chart object.**

Occurs when an embedded chart is double-clicked, before the default double-click action.

**Private Sub** `expression_BeforeDoubleClick(ByVal ElementID As Long, ByVal Arg1 As Long, ByVal Arg2 As Long, Cancel As Boolean)`

`expression` A variable which references an object of type **Chart** declared with events in a class module.

**Cancel** Optional. **False** when the event occurs. If the event procedure sets this argument to **True**, the default double-click action isn't performed when the procedure is finished.

**ElementID** Required. The double-clicked object The meaning of **Arg1** and
Arg2 depends on the **ElementID** value, as shown in the following table.

<table>
<thead>
<tr>
<th>ElementID</th>
<th>Arg1</th>
<th>Arg2</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlAxis</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlAxisTitle</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlDisplayUnitLabel</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlMajorGridlines</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlMinorGridlines</td>
<td>AxisIndex</td>
<td>AxisType</td>
</tr>
<tr>
<td>xlPivotChartDropZone</td>
<td>DropZoneType</td>
<td>None</td>
</tr>
<tr>
<td>xlPivotChartFieldButton</td>
<td>DropZoneType</td>
<td>PivotFieldIndex</td>
</tr>
<tr>
<td>xlDownBars</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlDropLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xHILOLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlRadarAxisLabels</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlSeriesLines</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlUpBars</td>
<td>GroupIndex</td>
<td>None</td>
</tr>
<tr>
<td>xlChartArea</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xlChartTitle</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xICorners</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIDataTable</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIFloor</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xILegend</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xINothing</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIPlotArea</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIWalls</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>xIDataLabel</td>
<td>SeriesIndex</td>
<td>PointIndex</td>
</tr>
<tr>
<td>xLErrorBars</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xILegendEntry</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xILegendKey</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xISeries</td>
<td>SeriesIndex</td>
<td>PointIndex</td>
</tr>
<tr>
<td>xITrendline</td>
<td>SeriesIndex</td>
<td>TrendLineIndex</td>
</tr>
<tr>
<td>xIXErrorBars</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
<tr>
<td>xIYErrorBars</td>
<td>SeriesIndex</td>
<td>None</td>
</tr>
</tbody>
</table>
The following table describes the meaning of the arguments.

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AxisIndex</td>
<td>Specifies whether the axis is primary or secondary. Can be one of the following XLAxisGroup constants: xlPrimary or xlSecondary.</td>
</tr>
<tr>
<td>AxisType</td>
<td>Specifies the axis type. Can be one of the following XLAxisType constants: xlCategory, xlSeriesAxis, or xlValue.</td>
</tr>
<tr>
<td>DropZoneType</td>
<td>Specifies the drop zone type: column, data, page, or row field. Can be one of the following XLPivotFieldOrientation constants: xlColumnField, xlDataField, xlPageField, or xlRowField. The column and row field constants specify the series and category fields, respectively.</td>
</tr>
<tr>
<td>GroupIndex</td>
<td>Specifies the offset within the ChartGroups collection for a specific chart group.</td>
</tr>
<tr>
<td>PivotFieldIndex</td>
<td>Specifies the offset within the PivotFields collection for a specific column (series), data, page, or row (category) field.</td>
</tr>
<tr>
<td>PointIndex</td>
<td>Specifies the offset within the Points collection for a specific point within a series. The value – 1 indicates that all data points are selected.</td>
</tr>
<tr>
<td>SeriesIndex</td>
<td>Specifies the offset within the Series collection for a specific series.</td>
</tr>
<tr>
<td>ShapeIndex</td>
<td>Specifies the offset within the Shapes collection for a specific shape.</td>
</tr>
<tr>
<td>TrendlineIndex</td>
<td>Specifies the offset within the Trendlines collection for a specific trendline within a series.</td>
</tr>
</tbody>
</table>
Remarks

The **DoubleClick** method doesn't cause this event to occur.

This event doesn't occur when the user double-clicks the border of a cell.
Example

As it applies to the **Chart** object.

This example overrides the default double-click behavior for the chart floor.

```vba
Private Sub Chart_BeforeDoubleClick(ByVal ElementID As Long, _
    ByVal Arg1 As Long, ByVal Arg2 As Long, Cancel As Boolean)
    If ElementID = xlFloor Then
        Cancel = True
        MsgBox "Chart formatting for this item is restricted."
    End If
End Sub
```
**BeforePrint Event**

Occurs before the workbook (or anything in it) is printed.

**Private Sub Workbook_BeforePrint** *(Cancel As Boolean)*

*Cancel False* when the event occurs. If the event procedure sets this argument to *True*, the workbook isn't printed when the procedure is finished.
**Example**

This example recalculates all worksheets in the active workbook before printing anything.

```vba
Private Sub Workbook_BeforePrint(Cancel As Boolean)
    For Each wk inWorksheets
        wk.Calculate
    Next
End Sub
```
BeforeRefresh Event

Occurs before any refreshes of the query table. This includes refreshes resulting from calling the Refresh method, from the user's actions in the product, and from opening the workbook containing the query table.

Private Sub QueryTable_BeforeRefresh(Cancel As Boolean)

Cancel False when the event occurs. If the event procedure sets this argument to True, the refresh doesn't occur when the procedure is finished.
Example

This example runs before the query table is refreshed.

Private Sub QueryTable_BeforeRefresh(Cancel As Boolean)
    a = MsgBox("Refresh Now?", vbYesNoCancel)
    If a = vbNo Then Cancel = True
    MsgBox Cancel
End Sub
BeforeRightClick Event

- Activate method as it applies to the Worksheet object.

Occurs when a worksheet is right-clicked, before the default right-click action.

Private Sub expression_BeforeRightClick(ByVal Target As Range, Cancel As Boolean)

eexpression  A variable which references an object of type Worksheet declared with events in a class module.

Target  Required. The cell nearest to the mouse pointer when the right-click occurs.

Cancel  Optional. False when the event occurs. If the event procedure sets this argument to True, the default right-click action doesn't occur when the procedure is finished.

- Activate method as it applies to the Chart object.

Occurs when an embedded chart is right-clicked, before the default right-click action.

Private Sub expression_BeforeRightClick(Cancel As Boolean)

eexpression  A variable which references an object of type Chart declared with events in a class module.

Cancel  Required. False when the event occurs. If the event procedure sets this argument to True, the default right-click action isn't performed when the procedure is finished.
Remarks

Like other worksheet events, this event doesn't occur if you right-click while the pointer is on a shape or a command bar (a toolbar or menu bar).
Example

- As it applies to the *Worksheet* object.

This example adds a new menu item to the shortcut menu for cells B1:B10.

```vba
Private Sub Worksheet_BeforeRightClick(ByVal Target As Range, _
    Cancel As Boolean)
    Dim icbc As Object
    For Each icbc In Application.CommandBars("cell").Controls
        If icbc.Tag = "brccm" Then icbc.Delete
    Next icbc
    If Not Application.Intersect(Target, Range("b1:b10")) Is Nothing Then
        With Application.CommandBars("cell").Controls _.Add(Type:=msoControlButton, before:=6, _
            temporary:=True)
            .Caption = "New Context Menu Item"
            .OnAction = "MyMacro"
            .Tag = "brccm"
        End With
    End If
End Sub
```
BeforeSave Event

Occurs before the workbook is saved.

Private Sub Workbook_BeforeSave(ByVal SaveAsUi As Boolean, Cancel As Boolean)

SaveAsUi  True if the Save As dialog box will be displayed.

Cancel  False when the event occurs. If the event procedure sets this argument to True, the workbook isn't saved when the procedure is finished.
Example

This example prompts the user for a yes or no response before saving the workbook.

Private Sub Workbook_BeforeSave(ByVal SaveAsUI As Boolean, _
    Cancel as Boolean)
    a = MsgBox("Do you really want to save the workbook?", vbYesNo)
    If a = vbNo Then Cancel = True
End Sub
Calculate Event

Occurs after the chart plots new or changed data, for the Chart object. Occurs after the worksheet is recalculated, for the Worksheet object.

Private Sub object_Calculate()

object Chart or Worksheet. For information about using events with the Chart object, see Using Events with the Chart Object.
Example

This example adjusts the size of columns A through F whenever the worksheet is recalculated.

Private Sub Worksheet_Calculate()
  Columns("A:F").AutoFit
End Sub
Change Event

Occurs when cells on the worksheet are changed by the user or by an external link.

**Private Sub Worksheet_Change(ByVal Target As Range)**

*Target*  The changed range. Can be more than one cell.
Remarks

This event doesn't occur when cells change during a recalculation. Use the Calculate event to trap a sheet recalculation.
**Example**

This example changes the color of changed cells to blue.

```vba
Private Sub Worksheet_Change(ByVal Target as Range)
    Target.Font.ColorIndex = 5
End Sub
```
Deactivate Event

Occurs when the chart, worksheet, or workbook is deactivated.

Private Sub object_Deactivate()

object Chart, Workbook, or Worksheet. For information about using events with the Chart object, see Using Events with the Chart Object.
Example

This example arranges all open windows when the workbook is deactivated.

Private Sub Workbook_Deactivate()
    Application.Windows.Arrange xlArrangeStyleTiled
End Sub
DragOver Event

Occurs when a range of cells is dragged over a chart.

Private Sub object_DragOver()

object An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.
Example

This example displays the address of a range of cells dragged over a chart.

Private Sub Chart_DragOver()
    MsgBox Selection.Address
End Sub
DragPlot Event

Occurs when a range of cells is dragged and dropped on a chart.

Private Sub object_DragPlot()

object An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.
Example

This example changes the chart type when a range of cells is dragged and dropped on a chart.

Private Sub Chart_DragPlot()
    Me.ChartType = xlLine
End Sub
FollowHyperlink Event

Occurs when you click any hyperlink on a worksheet. For application- and workbook-level events, see the SheetFollowHyperlink event.

Private Sub Worksheet_FollowHyperlink(ByVal Target As Hyperlink)

Target  Required Hyperlink. A Hyperlink object that represents the destination of the hyperlink.
Example

This example keeps a list, or history, of all the links that have been visited from the active worksheet.

Private Sub Worksheet__FollowHyperlink(ByVal Target As Hyperlink)
    With UserForm1
        .ListBox1.AddItem Target.Address
        .Show
    End With
End Sub
GotFocus Event

Occurs when an ActiveX control gets input focus.

Private Sub object_GotFocus()

object The name of an ActiveX control.
Example

This example runs when ListBox1 gets the focus.

Private Sub ListBox1_GotFocus()
    ' runs when list box gets the focus
End Sub
LostFocus Event

Occurs when an ActiveX control loses input focus.

**Private Sub** `object_LostFocus()`

`object`  The name of an ActiveX control.
This example runs when ListBox1 loses the focus.

Private Sub ListBox1_LostFocus()
    ' runs when list box loses the focus
End Sub
MouseDown Event

Occurs when a mouse button is pressed while the pointer is over a chart.

Private Sub object_MouseDown(ByVal Button As Long, ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)

object An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.

Button The mouse button that was pressed. Can be one of the following XLMouseButton constants: xlNoButton, xlPrimaryButton, xlSecondaryButton, or xlMiddleButton.

Shift The state of the SHIFT, CTRL, and ALT keys when the event occurred. Can be one of or a sum of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No keys</td>
</tr>
<tr>
<td>1</td>
<td>SHIFT key</td>
</tr>
<tr>
<td>2</td>
<td>CTRL key</td>
</tr>
<tr>
<td>4</td>
<td>ALT key</td>
</tr>
</tbody>
</table>

X The X coordinate of the mouse pointer in chart object client coordinates.

Y The Y coordinate of the mouse pointer in chart object client coordinates.
Example

This example runs when a mouse button is pressed while the pointer is over a chart.

Private Sub Chart_MouseDown(ByVal Button As Long, _
    ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)
    MsgBox "Button = " & Button & chr$(13) & _
        "Shift = " & Shift & chr$(13) & _
        "X = " & X & " Y = " & Y
End Sub
MouseMove Event

Occurs when the position of the mouse pointer changes over a chart.

Private Sub object_MouseMove(ByVal Button As Long, ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)

object An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.

Button The mouse button that was pressed. Can be one of the following XLMouseButton constants: xlNoButton, xlPrimaryButton, xlSecondaryButton, or xlMiddleButton.

Shift The state of the SHIFT, CTRL, and ALT keys when the event occurred. Can be one of or a sum of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (zero)</td>
<td>No keys</td>
</tr>
<tr>
<td>1</td>
<td>SHIFT key</td>
</tr>
<tr>
<td>2</td>
<td>CTRL key</td>
</tr>
<tr>
<td>4</td>
<td>ALT key</td>
</tr>
</tbody>
</table>

X The X coordinate of the mouse pointer in chart object client coordinates.

Y The Y coordinate of the mouse pointer in chart object client coordinates.
Example

This example runs when the position of the mouse pointer changes over a chart.

Private Sub Chart_MouseMove(ByVal Button As Long, ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)
    MsgBox "X = " & X & " Y = " & Y
End Sub
MouseUp Event

Occurs when a mouse button is released while the pointer is over a chart.

Private Sub object_MouseUp(ByVal Button As Long, ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)

object   An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.

Button   The mouse button that was released. Can be one of the following XLMouseButton constants: xlNoButton, xlPrimaryButton, xlSecondaryButton, or xlMiddleButton.

Shift   The state of the SHIFT, CTRL, and ALT keys when the event occurred. Can be one of or a sum of the following values.

<table>
<thead>
<tr>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No keys</td>
</tr>
<tr>
<td>1</td>
<td>SHIFT key</td>
</tr>
<tr>
<td>2</td>
<td>CTRL key</td>
</tr>
<tr>
<td>4</td>
<td>ALT key</td>
</tr>
</tbody>
</table>

X   The X coordinate of the mouse pointer in chart object client coordinates.

Y   The Y coordinate of the mouse pointer in chart object client coordinates.
Example

This example runs when a mouse button is released over a chart.

Private Sub Chart_MouseUp(ByVal Button As Long, _
    ByVal Shift As Long, ByVal X As Long, ByVal Y As Long)
    MsgBox "Button = " & Button & chr$(13) & _
        "Shift = " & Shift & chr$(13) & _
        "X = " & X & " Y = " & Y
End Sub
**NewSheet Event**

Occurs when a new sheet is created in the workbook.

**Private Sub Workbook_NewSheet(ByVal Sh As Object)**

*Sh* The new sheet. Can be a **Worksheet** or **Chart** object.
Example

This example moves new sheets to the end of the workbook.

Private Sub Workbook_NewSheet(ByVal Sh as Object)
    Sh.Move After:= Sheets(Sheets.Count)
End Sub
NewWorkbook Event

Occurs when a new workbook is created.

Private Sub object_NewWorkbook(ByVal Wb As Workbook)

object An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb The new workbook.
Example

This example arranges open windows when a new workbook is created.

Private Sub App_NewWorkbook(ByVal Wb As Workbook)
    Application.Windows.Arrange xlArrangeStyleTiled
End Sub
Open Event

Occurs when the workbook is opened.

Private Sub Workbook_Open()
Example

This example maximizes Microsoft Excel whenever the workbook is opened.

Private Sub Workbook_Open()
    Application.WindowState = xlMaximized
End Sub
PivotTableCloseConnection Event

Occurs after a PivotTable report closes the connection to its data source.

Private Sub expression_PivotTableCloseConnection(ByVal Target As PivotTable)

expression A variable which references an object of type Workbook declared with events in a class module.

Target Required. The selected PivotTable report.
**Example**

This example displays a message stating that the PivotTable report's connection to its source has been closed. This example assumes you have declared an object of type **Workbook** with events in a class module.

```vba
Private Sub ConnectionApp_PivotTableCloseConnection(ByVal Target As PivotTable)
    MsgBox "The PivotTable connection has been closed."
End Sub
```
**PivotTableOpenConnection Event**

Occurs after a PivotTable report opens the connection to its data source.

**Private Sub** `expression_PivotTableOpenConnection(ByVal Target As PivotTable)`

`expression` A variable which references an object of type `Workbook` declared with events in a class module.

`Target` Required. The selected PivotTable report.
Example

This example displays a message stating that the PivotTable report's connection to its source has been opened. This example assumes you have declared an object of type Workbook with events in a class module.

Private Sub ConnectionApp_PivotTableOpenConnection(ByVal Target As PivotTable)
    MsgBox "The PivotTable connection has been opened."
End Sub
PivotTableUpdate Event

Occurs after a PivotTable report is updated on a worksheet.

Private Sub expression_PivotTableUpdate(ByVal Target As PivotTable)

expression A variable which references an object of type Worksheet declared with events in a class module.

Target Required. The selected PivotTable report.
**Example**

This example displays a message stating that the PivotTable report has been updated. This example assumes you have declared an object of type `Worksheet` with events in a class module.

```vba
Private Sub Worksheet_PivotTableUpdate(ByVal Target As PivotTable)
    MsgBox "The PivotTable connection has been updated."
End Sub
```
Resize Event

Occurs when the chart is resized.

**Private Sub** `object_Resize()`

`object  Chart` or an object of type `Chart` declared with events in a class module. For more information, see [Using Events with Embedded Charts](#).
Example

This example keeps the upper-left corner of the chart at the same location when the chart is resized.

Private Sub myChartClass_Resize()
    With ActiveChart.Parent
        .Left = 100
        .Top = 150
    End With
End Sub
Select Event

Occurs when a chart element is selected.

**Private Sub** `object_Select(ByVal ElementID As Long, ByVal Arg1 As Long, ByVal Arg2 As Long)`

`object Chart` or an object of type `Chart` declared with events in a class module. For more information, see [Using Events with Embedded Charts](#).

`ElementID, Arg1, Arg2`  The selected chart element. For more information about these arguments, see the [BeforeDoubleClick](#) event.
**Example**

This example displays a message box if the user selects the chart title.

```vba
Private Sub Chart_Select(ByVal ElementID As Long, _
                          ByVal Arg1 As Long, ByVal Arg2 As Long)
    If ElementId = xlChartTitle Then
        MsgBox "please don't change the chart title"
    End If
End Sub
```
SelectionChange Event

Occurs when the selection changes on a worksheet.

Private Sub Worksheet_SelectionChange(ByVal Target As Excel.Range)

Target  The new selected range.


Example

This example scrolls through the workbook window until the selection is in the upper-left corner of the window.

Private Sub Worksheet_SelectionChange(ByVal Target As Range)
    With ActiveWindow
        .ScrollRow = Target.Row
        .ScrollColumn = Target.Column
    End With
End Sub
SeriesChange Event

Occurs when the user changes the value of a chart data point.

Private Sub object_SeriesChange(ByVal SeriesIndex As Long, ByVal PointIndex As Long)

object An object of type Chart declared with events in a class module. For more information, see Using Events with the Chart Object.

SeriesIndex The offset within the Series collection for the changed series.

PointIndex The offset within the Points collection for the changed point.
Example

This example changes the point's border color when the user changes the point value.

Private Sub Chart_SeriesChange(ByVal SeriesIndex As Long, _
    ByVal PointIndex As Long)
    Set p = Me.SeriesCollection(SeriesIndex).Points(PointIndex)
    p.Border.ColorIndex = 3
End Sub
SheetActivate Event

Occurs when any sheet is activated.

Private Sub object_SheetActivate(ByVal Sh As Object)

object Application or Workbook.

Sh The activated sheet. Can be a Chart or Worksheet object.
Example

This example displays the name of each activated sheet.

Private Sub Workbook_SheetActivate(ByVal Sh As Object)
    MsgBox Sh.Name
End Sub
SheetBeforeDoubleClick Event

Occurs when any worksheet is double-clicked, before the default double-click action.

Private Sub object_SheetBeforeDoubleClick(ByVal Sh As Object, ByVal Target As Range, ByVal Cancel As Boolean)

object Application or Workbook. For more information about using events with the Application object, see Using Events with the Application Object.

Sh  A Worksheet object that represents the sheet.

Target  The cell nearest to the mouse pointer when the double-click occurred.

Cancel  False when the event occurs. If the event procedure sets this argument to True, the default double-click action isn't performed when the procedure is finished.
Remarks

This event doesn't occur on chart sheets.
Example

This example disables the default double-click action.

Private Sub Workbook_SheetBeforeDoubleClick(ByVal Sh As Object, _
    ByVal Target As Range, ByVal Cancel As Boolean)
    Cancel = True
End Sub
SheetBeforeRightClick Event

Occurs when any worksheet is right-clicked, before the default right-click action.

Private Sub object_SheetBeforeRightClick(ByVal Sh As Object, ByVal Target As Range, ByVal Cancel As Boolean)

object Application or Workbook. For more information about using events with the Application object, see Using Events with the Application Object.

Sh A Worksheet object that represents the sheet.

Target The cell nearest to the mouse pointer when the right-click occurred.

Cancel False when the event occurs. If the event procedure sets this argument to True, the default right-click action isn't performed when the procedure is finished.
Remarks

This event doesn't occur on chart sheets.
Example

This example disables the default right-click action. For another example, see the BeforeRightClick event example.

Private Sub Workbook_SheetBeforeRightClick(ByVal Sh As Object, ByVal Target As Range, ByVal Cancel As Boolean)
    Cancel = True
End Sub
SheetCalculate Event

Occurs after any worksheet is recalculated or after any changed data is plotted on a chart.

Private Sub object_SheetCalculate(ByVal Sh As Object)

  object Application or Workbook. For more information about using events with the Application object, see Using Events with the Application Object.

  Sh  The sheet. Can be a Chart or Worksheet object.
Example

This example sorts the range A1:A100 on worksheet one when any sheet in the workbook is calculated.

Private Sub Workbook_SheetCalculate(ByVal Sh As Object)
    With Worksheets(1)
        .Range("a1:a100").Sort Key1:=.Range("a1")
    End With
End Sub
SheetChange Event

Occurs when cells in any worksheet are changed by the user or by an external link.

**Private Sub** `object_SheetChange(ByVal Sh As Object, ByVal Source As Range)`

`object Application` or `Workbook`. For more information about using events with the `Application` object, see [Using Events with the Application Object](#).

`Sh` A `Worksheet` object that represents the sheet.

`Source` The changed range.
Remarks

This event doesn't occur on chart sheets.
Example

This example runs when any worksheet is changed.

Private Sub Workbook_SheetChange(ByVal Sh As Object, _
    ByVal Source As Range)
    ' runs when a sheet is changed
End Sub
SheetDeactivate Event

Occurs when any sheet is deactivated.

Private Sub object_SheetDeactivate(ByVal Sh As Object)

object  Application or Workbook.

Sh  The sheet. Can be a Chart or Worksheet object.
Example

This example displays the name of each deactivated sheet.

Private Sub Workbook_SheetDeactivate(ByVal Sh As Object)
    MsgBox Sh.Name
End Sub
SheetFollowHyperlink Event

Occurs when you click any hyperlink in Microsoft Excel. For worksheet-level events, see the Help topic for the FollowHyperlink event.

Private Sub Workbook_SheetFollowHyperlink(ByVal Sh As Object, ByVal Target As Hyperlink)

Sh Required Object. The Worksheet object that contains the hyperlink.

Target Required Hyperlink. The Hyperlink object that represents the destination of the hyperlink.
**Example**

This example keeps a list, or history, of all the hyperlinks in the current workbook that have been clicked, plus the names of the worksheets that contain these hyperlinks.

```vba
Private Sub Workbook_SheetFollowHyperlink(ByVal Sh As Object, _
    ByVal Target As Hyperlink)
    UserForm1.ListBox1.AddItem Sh.Name & ":" & Target.Address
    UserForm1.Show
End Sub
```
SheetPivotTableUpdate Event

Occurs after the sheet of the PivotTable report has been updated.

Private Sub expression_SheetPivotTableUpdate(ByVal Sh As Object, Target As PivotTable)

expression A variable which references an object of type Application or Workbook declared with events in a class module.

Sh Required. The selected sheet.

Target Required. The selected PivotTable report.
Example

This example displays a message stating that the sheet of the PivotTable report has been updated. This example assumes you have declared an object of type Application or Workbook with events in a class module.

Private Sub ConnectionApp_SheetPivotTableUpdate(ByVal shOne As Object, Target As PivotTable)
    MsgBox "The SheetPivotTable connection has been updated."
End Sub
SheetSelectionChange Event

Occurs when the selection changes on any worksheet (doesn't occur if the selection is on a chart sheet).

**Private Sub object_SheetSelectionChange** *(ByVal Sh As Object, ByVal Target As Excel.Range)*

*object*  **Application** or **Workbook**. For more information about using events with the **Application** object, see **Using Events with the Application Object**.

*Sh*  The worksheet that contains the new selection.

*Target*  The new selected range.
Example

This example displays the sheet name and address of the selected range in the status bar.

Private Sub Workbook_SheetSelectionChange(ByVal Sh As Object, ByVal Target As Excel.Range)
    Application.StatusBar = Sh.Name & ":" & Target.Address
End Sub
WindowActivate Event

Occurs when any workbook window is activated.

Private Sub object_WindowActivate(ByVal Wb As Excel.Workbook, ByVal Wn As Excel.Window)

object  Application or Workbook. For more information about using events with the Application object, see Using Events with the Application Object.

Wb    Used only with the Application object. The workbook displayed in the activated window.

Wn    The activated window.
Example

This example maximizes any workbook window when it's activated.

Private Sub Workbook_WindowActivate(ByVal Wn As Excel.Window)
    Wn.WindowState = xlMaximized
End Sub
WindowDeactivate Event

Occurs when any workbook window is deactivated.

Private Sub object_WindowDeactivate(ByVal Wb As Excel.Workbook, ByVal Wn As Excel.Window)

object Application or Workbook. For more information about using events with the Application object, see Using Events with the Application Object.

Wb Used only with the Application object. The workbook displayed in the deactivated window.

Wn The deactivated window.
Example

This example minimizes any workbook window when it's deactivated.

Private Sub Workbook_WindowDeactivate(ByVal Wn As Excel.Window)
    Wn.WindowState = xlMinimized
End Sub
WindowResize Event

Occurs when any workbook window is resized.

`Private Sub object_WindowResize(ByVal Wb As Excel.Workbook, ByVal Wn As Excel.Window)`

`object Application` or `Workbook`. For more information about using events with the `Application` object, see [Using Events with the Application Object](#).

`Wb` Used only with the `Application` object. The workbook displayed in the resized window.

`Wn` The resized window.
Example

This example runs when any workbook window is resized.

Private Sub Workbook_WindowResize(ByVal Wn As Excel.Window)
    Application.StatusBar = Wn.Caption & " resized"
End Sub
WorkbookActivate Event

Occurs when any workbook is activated.

Private Sub app_WorkbookActivate(ByVal Wb As Workbook)

app An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb The activated workbook.
Example

This example arranges open windows when a workbook is activated.

Private Sub App_WorkbookActivate(ByVal Wb As Workbook)
    Application.Windows.Arrange xlArrangeStyleTiled
End Sub
WorkbookAddinInstall Event

Occurs when a workbook is installed as an add-in.

Private Sub object_WorkbookAddinInstall(ByVal Wb As Workbook)

object An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb The installed workbook.
**Example**

This example maximizes the Microsoft Excel window when a workbook is installed as an add-in.

Private Sub App**WorkbookAddinInstall**(ByVal Wb As Workbook)
    Application.WindowState = xlMaximized
End Sub
WorkbookAddinUninstall Event

Occurs when any add-in workbook is uninstalled.

Private Sub object_WorkbookAddinUninstall(ByVal Wb As Workbook)

object An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb The uninstalled workbook.
Example

This example minimizes the Microsoft Excel window when a workbook is installed as an add-in.

Private Sub App_WorkbookAddinUninstall(ByVal Wb As Workbook)
    Application.WindowState = xlMinimized
End Sub
WorkbookBeforeClose Event

Occurs immediately before any open workbook closes.

Private Sub object_WorkbookBeforeClose(ByVal Wb As Workbook, ByVal Cancel As Boolean)

object  An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb  The workbook that's being closed.

Cancel  False when the event occurs. If the event procedure sets this argument to True, the workbook doesn't close when the procedure is finished.
Example

This example prompts the user for a yes or no response before closing any workbook.

Private Sub App_WorkbookBeforeClose(ByVal Wb as Workbook, _
    Cancel as Boolean)
    a = MsgBox("Do you really want to close the workbook?", _
      vbYesNo)
    If a = vbNo Then Cancel = True
End Sub
WorkbookBeforePrint Event

Occurs before any open workbook is printed.

**Private Sub** `object_WorkbookBeforePrint(ByVal Wb As Workbook, ByVal Cancel As Boolean)`

`object`  An object of type **Application** declared with events in a class module. For more information, see [Using Events with the Application Object](#).

`Wb`  The workbook.

`Cancel`  **False** when the event occurs. If the event procedure sets this argument to **True**, the workbook isn't printed when the procedure is finished.
Example

This example recalculates all worksheets in the workbook before printing anything.

Private Sub App WorkbookBeforePrint(ByVal Wb As Workbook, _
    Cancel As Boolean)
    For Each wk in Wb.Worksheets
        wk.Calculate
    Next
End Sub
**WorkbookBeforeSave Event**

Occurs before any open workbook is saved.

**Private Sub object_WorkbookBeforeSave(ByVal Wb As Workbook, ByVal SaveAsUi As Boolean, ByVal Cancel As Boolean)**

*object*  An object of type **Application** declared with events in a class module. For more information, see [Using Events with the Application Object](#).

*Wb*  The workbook.

*SaveAsUi*  **True** if the **Save As** dialog box will be displayed.

*Cancel*  **False** when the event occurs. If the event procedure sets this argument to **True**, the workbook isn't saved when the procedure is finished.
Example

This example prompts the user for a yes or no response before saving any workbook.

Private Sub App_WorkbookBeforeSave(ByVal Wb As Workbook, _
    ByVal SaveAsUI As Boolean, Cancel as Boolean)
    a = MsgBox("Do you really want to save the workbook?", vbYesNo)
    If a = vbNo Then Cancel = True
End Sub
**WorkbookDeactivate Event**

Occurs when any open workbook is deactivated.

**Private Sub** `object_WorkbookDeactivate(ByVal Wb As Workbook)`

- `object` An object of type `Application` declared with events in a class module. For more information, see [Using Events with the Application Object](#).

- `Wb` The workbook.
Example

This example arranges all open windows when a workbook is deactivated.

Private Sub App_WorkbookDeactivate(ByVal Wb As Workbook)
    Application.Windows.Arrange xlArrangeStyleTiled
End Sub
WorkbookNewSheet Event

Occurs when a new sheet is created in any open workbook.

Private Sub object_WorkbookNewSheet(ByVal Wb As Workbook, ByVal Sh As Object)

object  An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb  The workbook.

Sh  The new sheet.
Example

This example moves the new sheet to the end of the workbook.

Private Sub App_WorkbookNewSheet(ByVal Wb As Workbook, _
    ByVal Sh As Object)
End Sub
WorkbookOpen Event

Occurs when a workbook is opened.

Private Sub object_WorkbookOpen(ByVal Wb As Workbook)

object An object of type Application declared with events in a class module. For more information, see Using Events with the Application Object.

Wb The workbook.
Example

This example arranges all open windows when a workbook is opened.

Private Sub App_WorkbookOpen(ByVal Wb As Workbook)
    Application.Windows.Arrange xlArrangeStyleTiled
End Sub
WorkbookPivotTableCloseConnection Event

Occurs after a PivotTable report connection has been closed.

Private Sub expression_WorkbookPivotTableCloseConnection(ByVal Wb As Workbook, Target As PivotTable)

expression A variable which references an object of type Application declared with events in a class module.

Wb Required. The selected workbook.

Target Required. The selected PivotTable report.
Example

This example displays a message stating that the PivotTable report's connection to its source has been closed. This example assumes you have declared an object of type **Workbook** with events in a class module.

```vba
Private Sub ConnectionApp_WorkbookPivotTableCloseConnection(ByVal wb As Workbook, Target As PivotTable)
    MsgBox "The PivotTable connection has been closed."
End Sub
```
WorkbookPivotTableOpenConnection Event

Occurs after a PivotTable report connection has been opened.

Private Sub expression_WorkbookPivotTableOpenConnection(ByVal Wb As Workbook, Target As PivotTable)

expression  A variable which references an object of type Application declared with events in a class module.

Wb  Required. The selected workbook.

Target  Required. The selected PivotTable report.
Example

This example displays a message stating that the PivotTable report's connection to its source has been opened. This example assumes you have declared an object of type **Workbook** with events in a class module.

```vbnet
Private Sub ConnectionApp_WorkbookPivotTableOpenConnection(ByVal wbOne As Workbook, Target As PivotTable)
    MsgBox "The PivotTable connection has been opened."
End Sub
```
Microsoft Excel Objects (Worksheet)
Legend

Object and collection
Object only

▶ Click arrow to expand chart
Microsoft Excel Objects (Charts)

Charts (Chart)

- ChartArea
- PlotArea
- Floor
- Walls
- Corners
- PageSetup
- ChartTitle
- SeriesCollection (Series)
  - Trendlines (Trendline)
- Axes (Axis)
  - AxisTitle
  - DisplayUnitLabel
- Gridlines
- TickLabels
- DataTable
  - Border
  - Font
- Legend
  - LegendEntries (LegendEntry)
    - LegendKey
  - Shapes (Shape)
  - Scripts (Script)
  - ChartGroups (ChartGroup)
- PivotLayout

Legend

Object and collection
Object only

▶ Click arrow to expand chart
ActiveX Controls

For more information on a specific control, select an object from the following list. For information about events, select a control and click Events at the top of the topic.

**CheckBox**
**ComboBox**
**CommandButton**
**Image**
**Label**
**ListBox**

**OptionButton**
**ScrollBar**
**SpinButton**
**TextBox**
**ToggleButton**
Worksheet Object Events

Events on sheets are enabled by default. To view the event procedures for a sheet, right-click the sheet tab and click View Code on the shortcut menu. Select the event name from the Procedure drop-down list box.

Activate
Deactivate
BeforeDoubleClick
FollowHyperlink
BeforeRightClick
PivotTableUpdate
Calculate
SelectionChange

Worksheet-level events occur when a worksheet is activated, the user changes a worksheet cell, or when PivotTable is changes. The following example adjusts the size of columns A through F whenever the worksheet is recalculated.

Private Sub Worksheet_Calculate()
    Columns("A:F").AutoFit
End Sub

Some events can be used to substitute an action for the default application behavior, or to make a small change to the default behavior. The following example traps the right-click event and adds a new menu item to the shortcut menu for cells B1:B10.

Private Sub Worksheet_BeforeRightClick(ByVal Target As Range, _
    Cancel As Boolean)
    For Each icbc In Application.CommandBars("cell").Controls
        If icbc.Tag = "brccm" Then icbc.Delete
    Next icbc
    If Not Application.Intersect(Target, Range("b1:b10")) _
        Is Nothing Then
With Application.CommandBars("cell").Controls _
  .Add(Type:=msoControlButton, before:=6, _
      temporary:=True)
  .Caption = "New Context Menu Item"
  .OnAction = "MyMacro"
  .Tag = "brccm"
End With
End If
End Sub
Chart Object Events

Chart events occur when the user activates or changes a chart. Events on chart sheets are enabled by default. To view the event procedures for a sheet, right-click the sheet tab and select View Code from the shortcut menu. Select the event name from the Procedure drop-down list box.

Activate
BeforeDoubleClick
BeforeRightClick
Calculate
Deactivate
MouseMove
DragOver
DragPlot

Note To write event procedures for an embedded chart, you must create a new object using the WithEvents keyword in a class module. For more information, see Using Events with Embedded Charts.

This example changes a point's border color when the user changes the point value.

Private Sub Chart_SeriesChange(ByVal SeriesIndex As Long, _
ByVal PointIndex As Long)
    Set p = ActiveChart.SeriesCollection(SeriesIndex). _
          Points(PointIndex)
    p.Border.ColorIndex = 3
End Sub
Workbook Object Events

Workbook events occur when the workbook changes, when any sheet in the workbook changes, when add-ins change, or when PivotTables change. Events on workbooks are enabled by default. To view the event procedures for a workbook, right-click the title bar of a restored or minimized workbook window and click View Code on the shortcut menu. Select the event name from the Procedure drop-down list box.

Activate
AddinInstall
AddinUninstall
BeforeClose
BeforePrint
BeforeSave
Deactivate
NewSheet
Open
PivotTableCloseConnection
PivotTableOpenConnection
SheetActivate

SheetBeforeDoubleClick
SheetBeforeRightClick
SheetCalculate
SheetChange
SheetDeactivate
SheetFollowHyperlink
SheetPivotTableUpdate
SheetSelectionChange
WindowActivate
WindowDeactivate
WindowResize

This example maximizes Microsoft Excel when the workbook is opened
Sub Workbook_Open()
    Application.WindowState = xlMaximized
End Sub
QueryTable Object Events

QueryTable object events occur when a QueryTable object is refreshed. These events are enabled by default. To view the event procedures available for a particular sheet, right-click the sheet tab and then click View Code on the shortcut menu. In the Procedure drop-down list box in the Code window, click the name of the event you want to use.

AfterRefresh
BeforeRefresh

Note  To write event procedures for a QueryTable object, you must first create a new object by using the WithEvents keyword in a class module. For more information, see Using Events with the QueryTable Object.
Application Object Events

Application events occur when a workbook is created or opened, when any sheet in any open workbook changes or when any PivotTable is created or opened. To write event procedures for the Application object, you must create a new object using the WithEvents keyword in a class module. For more information, see Using Events with the Application Object.

**NewWorkbook**  
**WindowResize**

**SheetActivate**  
**WorkbookActivate**

**SheetBeforeDoubleClick**  
**WorkbookAddinInstall**

**SheetBeforeRightClick**  
**WorkbookAddinUninstall**

**SheetCalculate**  
**WorkbookBeforeClose**

**SheetChange**  
**WorkbookBeforePrint**

**SheetDeactivate**  
**WorkbookBeforeSave**

**SheetFollowHyperlink**  
**WorkbookDeactivate**

**SheetSelectionChange**  
**WorkbookNewSheet**

**SheetPivotTableUpdate**  
**WorkbookOpen**

**WindowActivate**  
**WorkbookPivotTableCloseConnection**

**WindowDeactivate**  
**WorkbookPivotTableOpenConnection**
# Built-In Dialog Box Argument Lists

<table>
<thead>
<tr>
<th>Dialog box constant</th>
<th>Argument list(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlDialogActivate</td>
<td>window_text, pane_num</td>
</tr>
<tr>
<td></td>
<td>font, font_style, size, strikethrough,</td>
</tr>
<tr>
<td></td>
<td>superscript, subscript, outline, shadow,</td>
</tr>
<tr>
<td></td>
<td>underline, color, normal, background,</td>
</tr>
<tr>
<td></td>
<td>start_char, char_count</td>
</tr>
<tr>
<td>xlDialogActiveCellFont</td>
<td>operation_num, addinname_text, copy_logical</td>
</tr>
<tr>
<td>xlDialogAlignment</td>
<td>horiz_align, wrap, vert_align, orientation,</td>
</tr>
<tr>
<td></td>
<td>add_indent</td>
</tr>
<tr>
<td>xlDialogApplyNames</td>
<td>name_array, ignore, use_rowcol, omit_col,</td>
</tr>
<tr>
<td></td>
<td>omit_row, order_num, append_last</td>
</tr>
<tr>
<td>xlDialogApplyStyle</td>
<td>style_text</td>
</tr>
<tr>
<td>xlDialogAppMove</td>
<td>x_num, y_num</td>
</tr>
<tr>
<td>xlDialogAppSize</td>
<td>x_num, y_num</td>
</tr>
<tr>
<td>xlDialogArrangeAll</td>
<td>arrange_num, active_doc, sync_horiz,</td>
</tr>
<tr>
<td></td>
<td>sync_vert</td>
</tr>
<tr>
<td>xlDialogAssignToObject</td>
<td>macro_ref</td>
</tr>
<tr>
<td>xlDialogAssignToTool</td>
<td>bar_id, position, macro_ref</td>
</tr>
<tr>
<td>xlDialogAttachText</td>
<td>attach_to_num, series_num, point_num</td>
</tr>
<tr>
<td>xlDialogAttachToolbars</td>
<td>correct_initial_caps, capitalize_days</td>
</tr>
<tr>
<td>xlDialogAxes</td>
<td>x_primary, y_primary, x_secondary, y_secondary</td>
</tr>
<tr>
<td>xlDialogAxes</td>
<td>x_primary, y_primary, z_primary</td>
</tr>
<tr>
<td>xlDialogBorder</td>
<td>outline_color, left_color, right_color,</td>
</tr>
<tr>
<td></td>
<td>top_color, bottom_color</td>
</tr>
<tr>
<td></td>
<td>type_num, iter, max_num, max_change,</td>
</tr>
</tbody>
</table>
xlDialogCalculation
update, precision, date_1904, calc_save,
save_values, alt_exp, alt_form
xlDialogCellProtection
locked, hidden
xlDialogChangeLink
old_text, new_text, type_of_link
xlDialogChartAddData
ref, rowcol, titles, categories, replace, series
xlDialogChartLocation
xlDialogChartOptionsDataLabels
xlDialogChartOptionsDataTable
xlDialogChartSourceData
xlDialogChartTrend
type, ord_per, forecast, backcast, intercept,
equation, r_squared, name
xlDialogChartType
xlDialogChartWizard
long, ref, gallery_num, type_num, plot_by,
categories, ser_titles, legend, title, x_title,
y_title, z_title, number_cats, number_titles
xlDialogCheckboxProperties
value, link, accel_text, accel2_text,
3d_shading
xlDialogClear
type_num
xlDialogColorPalette
file_text
xlDialogColumnWidth
width_num, reference, standard, type_num,
standard_num
xlDialogCombination
type_num
xlDialogConditionalFormatting
xlDialogConsolidate
source_refs, function_num, top_row, left_col,
create_links
xlDialogCopyChart
size_num
xlDialogCopyPicture
appearance_num, size_num, type_num
xlDialogCreateNames
top, left, bottom, right
xlDialogCreatePublisher
file_text, appearance, size, formats
xlDialogCustomizeToolbar
category
xlDialogCustomViews
dlDialogDataDelete
xlDialogDataLabel
show_option, auto_text, show_key
rowcol, type_num, date_num, step_value,
xlDialogDataSeries stop_value, trend

xlDialogDataValidation name_text, refers_to, macro_type, shortcut_text, hidden, category, local

xlDialogDefineName style_text, number, font, alignment, border, pattern, protection

xlDialogDemote row_col

xlDialogDisplay color_num, reserved, outline, page_breaks, object_num

xlDialogDisplay cell, formula, value, format, protection, names, precedents, dependents, note

xlDialogEditboxProperties validation_num, multiline_logical, vscroll_logical, password_logical

xlDialogEditColor color_num, red_value, green_value, blue_value

xlDialogEditionOptions edition_type, edition_name, reference, option, appearance, size, formats

xlDialogEditSeries series_num, name_ref, x_ref, y_ref, z_ref, plot_order

xlDialogErrorbarX include, type, amount, minus

xlDialogErrorbarY include, type, amount, minus

xlDialogExternalDataProperties unique

xlDialogFileDelete file_text

xlDialogFileSharing

xlDialogFillGroup type_num

xlDialogFillWorkgroup type_num

xlDialogFilter
<table>
<thead>
<tr>
<th>Function</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlDialogFilterAdvanced</td>
<td>operation, list_ref, criteria_ref, copy_ref, unique</td>
</tr>
<tr>
<td>xlDialogFindFile</td>
<td>name_text, size_num</td>
</tr>
<tr>
<td>xlDialogFont</td>
<td>font, font_style, size, strikethrough, superscript, subscript, outline, shadow, underline, color, normal, background, start_char, char_count</td>
</tr>
<tr>
<td>xlDialogFontProperties</td>
<td></td>
</tr>
<tr>
<td>xlDialogFormatAuto</td>
<td>format_num, number, font, alignment, border, pattern, width</td>
</tr>
<tr>
<td></td>
<td>layer_num, view, overlap, angle, gap_width, gap_depth, chart_depth, doughnut_size, axis_num, drop, hilo, up_down, series_line, labels, vary</td>
</tr>
<tr>
<td>xlDialogFormatChart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>apply_to, group_num, dimension, type_num</td>
</tr>
<tr>
<td></td>
<td>color, backgd, apply, name_text, size_num, bold, italic, underline, strike, outline, shadow, object_id, start_num, char_num</td>
</tr>
<tr>
<td>xlDialogFormatFont</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name_text, size_num, bold, italic, underline, strike, color, outline, shadow</td>
</tr>
<tr>
<td></td>
<td>name_text, size_num, bold, italic, underline, strike, color, outline, shadow, object_id_text, start_num, char_num</td>
</tr>
<tr>
<td>xlDialogFormatLegend</td>
<td>position_num</td>
</tr>
<tr>
<td></td>
<td>type_num, view, overlap, gap_width, vary, drop, hilo, angle, gap_depth, chart_depth, up_down, series_line, labels, doughnut_size</td>
</tr>
<tr>
<td>xlDialogFormatMain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>x_offset, y_offset, reference</td>
</tr>
<tr>
<td></td>
<td>x_pos, y_pos</td>
</tr>
<tr>
<td></td>
<td>explosion_num</td>
</tr>
<tr>
<td>xlDialogFormatNumber</td>
<td>format_text</td>
</tr>
<tr>
<td></td>
<td>type_num, view, overlap, gap_width, vary, drop, hilo, angle, series_dist, series_num, up_down, series_line, labels, doughnut_size</td>
</tr>
<tr>
<td>xlDialogFormatOverlay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>width, height</td>
</tr>
</tbody>
</table>
xlDialogFormatSize  x_off, y_off, reference
xlDialogFormatText  x_align, y_align, orient_num, auto_text,
auto_size, show_key, show_value, add_indent
xlDialogFormulaFind  text, in_num, at_num, by_num, dir_num,
machine_case, match_byte
xlDialogFormulaGoto  reference, corner
xlDialogFormulaReplace  find_text, replace_text, look_at, look_by,
active_cell, match_case, match_byte
xlDialogFunctionWizard
xlDialogGallery3dArea  type_num
xlDialogGallery3dBar  type_num
xlDialogGallery3dColumn  type_num
xlDialogGallery3dLine  type_num
xlDialogGallery3dPie  type_num
xlDialogGallery3dSurface  type_num
xlDialogGalleryArea  type_num, delete_overlay
xlDialogGalleryBar  type_num, delete_overlay
xlDialogGalleryColumn  type_num, delete_overlay
xlDialogGalleryCustom  name_text
xlDialogGalleryDoughnut  type_num, delete_overlay
xlDialogGalleryLine  type_num, delete_overlay
xlDialogGalleryPie  type_num, delete_overlay
xlDialogGalleryRadar  type_num, delete_overlay
xlDialogGalleryScatter  type_num, delete_overlay
xlDialogGoalSeek  target_cell, target_value, variable_cell
xlDialogGridlines  x_major, x_minor, y_major, y_minor,
z_major, z_minor, 2D_effect
xlDialogImportTextFile
xlDialogInsert  shift_num
xlDialogInsertHyperlink
xlDialogInsertNameLabel
xlDialogInsertObject  object_class, file_name, link_logical,
display_icon_logical, icon_file, icon_number,
xlDialogInsertPicture  icon_label
file_name, filter_number

xlDialogInsertTitle  chart, y_primary, x_primary, y_secondary, x_secondary

xlDialogLabelProperties  accel_text, accel2_text, 3d_shading
range, link, drop_size, multi_select, 3d_shading

xlDialogListboxProperties  macro_name, description, menu_on, menu_text, shortcut_on, shortcut_key, function_category, status_bar_text, help_id, help_file
range, link, drop_size, multi_select, 3d_shading

xlDialogMacroOptions  to_recipients, cc_recipients, bcc_recipients, subject, enclosures, which_address
macro_name, description, menu_on, menu_text, shortcut_on, shortcut_key, function_category, status_bar_text, help_id, help_file

xlDialogMailEditMailer  name_text, password_text, download_logical
name_text, password_text, download_logical
to_recipients, cc_recipients, bcc_recipients, subject, enclosures, which_address

xlDialogMailLogon  type_num, stack, 100, vary, overlap, drop, hilo, overlap%, cluster, angle
type_num, stack, 100, vary, overlap, drop, hilo, overlap%, cluster, angle

xlDialogMove  x_pos, y_pos, window_text
x_pos, y_pos, window_text

xlDialogNew  type_num, xy_series, add_logical
type_num, xy_series, add_logical

xlDialogNewWebQuery  add_text, cell_ref, start_char, num_chars
add_text, cell_ref, start_char, num_chars

xlDialogNote  placement_type, print_object
placement_type, print_object

xlDialogObjectProtection  locked, lock_text
locked, lock_text

xlDialogOpen  file_text, update_links, read_only, format, prot_pwd, write_res_pwd, ignore_rorec, file_origin, custom_delimit, add_logical, editable, file_access, notify_logical, converter
document_text1, document_text2, ..., read_only, type_of_link
document_text1, document_text2, ..., read_only, type_of_link

xlDialogOpenLinks  subject, comments
subject, comments

xlDialogOpenMail  file_name, file_origin, start_row, file_type, text_qualifier, consecutive_delim, tab,
semicolon, comma, space, other, other_char, field_info

type_num, iter, max_num, max_change, update, precision, date_1904, calc_save, save_values

display_blanks, plot_visible, size_with_window

incell_edit, drag_drop, alert, enternmove, fixed, decimals, copy_objects, update_links, move_direction, autocomplete, animations

R1C1_mode, dde_on, sum_info, tips, recent_files, old_menus, user_info, font_name, font_size, default_location, alternate_location, sheet_num, enable_under

string_array

import_ref, by_row

def_rtl_sheet, crsr_mvmt, show_ctrl_char, gui_lang

menu_key, menu_key_action, nav_keys, trans_eval, trans_entry

object_num, page_breaks, formulas, gridlines, color_num, headers, outline, zeros, hor_scroll, vert_scroll, sheet_tabs

auto_styles, row_dir, col_dir, create_apply

type_num, stack, 100, vary, overlap, drop, hilo, overlap%, cluster, angle, series_num, auto

type_num

head, foot, left, right, top, bot, hdng, grid, h_cntr, v_cntr, orient, paper_size, scale, pg_num, pg_order, bw_cells, quality, head_margin, foot_margin, notes, draft

head, foot, left, right, top, bot, size, h_cntr, v_cntr, orient, paper_size, scale, pg_num, bw_chart, quality, head_margin, foot_margin,
draft

head, foot, left, right, top, bot, orient,
paper_size, scale, quality, head_margin,
foot_margin, pg_num

parse_text, destination_ref

paste_num, operation_num, skip_blanks,
transpose

title, categories, replace, series

format_text, pastelink_logical,
display_icon_logical, icon_file, icon_number,
icon_label

apattern, afore, aback, newui

lauto, lstyle, lcolor, lwt, hwidth, hlength,
htype

bauto, bstyle, bcolor, bwt, shadow, aauto,
apattern, afore, aback, rounded, newui

bauto, bstyle, bcolor, bwt, shadow, aauto,
apattern, afore, aback, invert, apply, newfill

lauto, lstyle, lcolor, lwt, tmajor, tminor, tlabel

lauto, lstyle, lcolor, lwt, apply, smooth

lauto, lstyle, lcolor, lwt, mauto, mstyle, mfore,
mback, apply, smooth

type, picture_units, apply

start, end, by, periods

name, pivot_field_name, new_name,
orientation, function, formats

name, page_field
xlDialogPivotSolveOrder
xlDialogPivotTableOptions
type, source, destination, name, row_grand, col_grand, save_data, apply_auto_format, auto_page, reserved
xlDialogPivotTableWizard
xlDialogPlacement
placement_type
xlDialogPrint
range_num, from, to, copies, draft, preview,
print_num, color, feed, quality, y_resolution,
selection, printer_text, print_to_file, collate
xlDialogPrinterSetup
printer_text
xlDialogPrintPreview
xlDialogPromote
rowcol
xlDialogProperties
title, subject, author, keywords, comments
xlDialogProtectDocument
contents, windows, password, objects, scenarios
xlDialogProtectSharing
xlDialogPublishAsWebPage
xlDialogPushbuttonProperties
default_logical, cancel_logical,
dismiss_logical, help_logical, accel_text,
accel_text2
xlDialogReplaceFont
font_num, name_text, size_num, bold, italic,
underline, strike, color, outline, shadow
xlDialogRoutingSlip
recipients, subject, message, route_num,
return_logical, status_logical
xlDialogRowHeight
height_num, reference, standard_height,
type_num
xlDialogRun
reference, step
xlDialogSaveAs
document_text, type_num, prot_pwd, backup,
write_res_pwd, read_only_rec
xlDialogSaveCopyAs
document_text
xlDialogSaveNewObject
document_text, type_num, prot_pwd, backup,
write_res_pwd, read_only_rec
xlDialogSaveWorkbook
document_text, type_num, prot_pwd, backup,
write_res_pwd, read_only_rec
xlDialogSaveWorkspace
name_text
cross, cat_labels, cat_marks, between, max,
xlDialogScale
  reverse

xlDialogScale
  min_num, max_num, major, minor, cross, logarithmic, reverse, max

xlDialogScale
  cat_labels, cat_marks, reverse, between

xlDialogScale
  series_labels, series_marks, reverse

xlDialogScale
  min_num, max_num, major, minor, cross, logarithmic, reverse, min

xlDialogScenarioAdd
  scen_name, value_array, changing_ref, scen_comment, locked, hidden

xlDialogScenarioCells
  changing_ref

xlDialogScenarioEdit
  scen_name, new_scenname, value_array, changing_ref, scen_comment, locked, hidden

xlDialogScenarioMerge
  source_file

xlDialogScenarioSummary
  result_ref, report_type

xlDialogScrollbarProperties
  value, min, max, inc, page, link, 3d_shading

xlDialogSelectSpecial
  type_num, value_type, levels

xlDialogSendMail
  recipients, subject, return_receipt

xlDialogSeriesAxes
  axis_num

xlDialogSeriesOptions

xlDialogSeriesOrder
  chart_num, old_series_num, new_series_num

xlDialogSeriesShape
  x_ref

xlDialogSeriesY
  name_ref, y_ref

xlDialogSetBackgroundPicture
  titles_for_cols_ref, titles_for_rows_ref

xlDialogSetPrintTitles
  titles_for_cols_ref, titles_for_rows_ref

xlDialogSetUpdateStatus
  link_text, status, type_of_link

xlDialogShowDetail
  bar_id, visible, dock, x_pos, y_pos, width, protect, tool_tips, large_buttons, color_buttons

xlDialogShowToolbar
  width, height, window_text

xlDialogSort
  orientation, key1, order1, key2, order2, key3, order3, header, custom, case
xlDialogSort orientation, key1, order1, type, custom
xlDialogSortSpecial sort_by, method, key1, order1, key2, order2, key3, order3, header, order, case
xlDialogSplit col_split, row_split
xlDialogStandardFont name_text, size_num, bold, italic, underline, strike, color, outline, shadow
xlDialogStandardWidth standard_num
xlDialogStyle bold, italic
xlDialogSubscribeTo file_text, format_num
xlDialogSubtotalCreate at_change_in, function_num, total, replace, pagebreaks, summary_below
xlDialogSummaryInfo title, subject, author, keywords, comments
xlDialogTable row_ref, column_ref
xlDialogTabOrder destination_ref, data_type, text_delim, consecutive_delim, tab, semicolon, comma, space, other, other_char, field_info
xlDialogTextToColumns window_text
xlDialogUpdateLink link_text, type_of_link
xlDialogVbaInsertFile filename_text
xlDialogVbaMakeAddIn
xlDialogVbaProcedureDefinition
xlDialogView3d elevation, perspective, rotation, axes, height%, autoscale
xlDialogWebOptionsEncoding
xlDialogWebOptionsFiles
xlDialogWebOptionsFonts
xlDialogWebOptionsGeneral
xlDialogWebOptionsPictures
xlDialogWindowMove x_pos, y_pos, window_text
xlDialogWindowSize width, height, window_text
xlDialogWorkbookAdd name_array, dest_book, position_num
xlDialogWorkbookCopy name_array, dest_book, position_num
xlDialogWorkbookInsert type_num
<table>
<thead>
<tr>
<th>Function</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlDialogWorkbookMove</td>
<td>name_array, dest_book, position_num</td>
</tr>
<tr>
<td>xlDialogWorkbookName</td>
<td>oldname_text, newname_text</td>
</tr>
<tr>
<td>xlDialogWorkbookNew</td>
<td></td>
</tr>
<tr>
<td>xlDialogWorkbookOptions</td>
<td>sheet_name, bound_logical, new_name</td>
</tr>
<tr>
<td>xlDialogWorkbookProtect</td>
<td>structure, windows, password</td>
</tr>
<tr>
<td>xlDialogWorkbookTabSplit</td>
<td>ratio_num</td>
</tr>
<tr>
<td>xlDialogWorkbookUnhide</td>
<td>sheet_text</td>
</tr>
<tr>
<td>xlDialogWorkgroup</td>
<td>name_array</td>
</tr>
<tr>
<td>xlDialogWorkspace</td>
<td>fixed, decimals, r1c1, scroll, status, formula, menu_key, remote, entermove, underlines, tools, notes, nav_keys, menu_key_action, drag_drop, show_info</td>
</tr>
<tr>
<td>xlDialogZoom</td>
<td>magnification</td>
</tr>
</tbody>
</table>
Using ActiveX Controls on Sheets

This topic covers specific information about using ActiveX controls on worksheets and chart sheets. For general information on adding and working with controls, see Using ActiveX Controls on a Document and Creating a Custom Dialog box.

Keep the following points in mind when you are working with controls on sheets.

- In addition to the standard properties available for ActiveX controls, the following properties can be used with ActiveX controls in Microsoft Excel: 
  BottomRightCell, LinkedCell, ListFillRange, Placement, PrintObject, TopLeftCell, and ZOrder.

  These properties can be set and returned using the ActiveX control name. The following example scrolls the workbook window so CommandButton1 is in the upper-left corner.

    Set t = Sheet1.CommandButton1.TopLeftCell
    With ActiveWindow
        .ScrollRow = t.Row
        .ScrollColumn = t.Column
    End With

- Some Microsoft Excel Visual Basic methods and properties are disabled when an ActiveX control is activated. For example, the Sort method cannot be used when a control is active, so the following code fails in a button click event procedure (because the control is still active after the user clicks it).

    Private Sub CommandButton1.Click
        Range("a1:a10").Sort Key1:=Range("a1")
    End Sub

You can work around this problem by activating some other element on the sheet before you use the property or method that failed. For example, the following
code sorts the range:

Private Sub CommandButton1.Click
    Range("a1").Activate
    Range("a1:a10").Sort Key1:=Range("a1")
    CommandButton1.Activate
End Sub

- Controls on a Microsoft Excel workbook embedded in a document in another application will not work if the user double clicks the workbook to edit it. The controls will work if the user right clicks the workbook and selects the Open command from the shortcut menu.
- When a Microsoft Excel workbook is saved using the Microsoft Excel 5.0/95 Workbook file format, ActiveX control information is lost.
- The Me keyword in an event procedure for an ActiveX control on a sheet refers to the sheet, not to the control.
Adding Controls with Visual Basic

In Microsoft Excel, ActiveX controls are represented by OLEObject objects in the OLEObjects collection (all OLEObject objects are also in the Shapes collection). To programmatically add an ActiveX control to a sheet, use the Add method of the OLEObjects collection. The following example adds a command button to worksheet one.

```vba
Worksheets(1).OLEObjects.Add "Forms.CommandButton.1", _  Left:=10, Top:=10, Height:=20, Width:=100
```
Using Control Properties with Visual Basic

Most often, your Visual Basic code will refer to ActiveX controls by name. The following example changes the caption on the control named "CommandButton1."

Sheet1.CommandButton1.Caption = "Run"

Note that when you use a control name outside the class module for the sheet containing the control, you must qualify the control name with the sheet name.

To change the control name you use in Visual Basic code, select the control and set the (Name) property in the Properties window.

Because ActiveX controls are also represented by OLEObject objects in the OLEObjects collection, you can set control properties using the objects in the collection. The following example sets the left position of the control named "CommandButton1."

Worksheets(1).OLEObjects("CommandButton1").Left = 10

Control properties that are not shown as properties of the OLEObject object can be set by returning the actual control object using the Object property. The following example sets the caption for CommandButton1.

Worksheets(1).OLEObjects("CommandButton1")._Object.Caption = "run me"

Because all OLE objects are also members of the Shapes collection, you can use the collection to set properties for several controls. The following example aligns the left edge of all controls on worksheet one.

For Each s In Worksheets(1).Shapes
    If s.Type = msoOLEControlObject Then s.Left = 10
Next
Using Control Names with the Shapes and OLEObjects Collections

An ActiveX control on a sheet has two names: the name of the shape that contains the control, which you can see in the Name box when you view the sheet, and the code name for the control, which you can see in the cell to the right of (Name) in the Properties window. When you first add a control to a sheet, the shape name and code name match. However, if you change either the shape name or code name, the other isn’t automatically changed to match.

You use the code name of a control in the names of its event procedures. However, when you return a control from the Shapes or OLEObjects collection for a sheet, you must use the shape name, not the code name, to refer to the control by name. For example, assume that you add a check box to a sheet and that both the default shape name and the default code name are CheckBox1. If you then change the control code name by typing chkFinished next to (Name) in the Properties window, you must use chkFinished in event procedures names, but you still have to use CheckBox1 to return the control from the Shapes or OLEObject collection, as shown in the following example.

Private Sub chkFinished_Click()
    ActiveSheet.OLEObjects("CheckBox1").Object.Value = 1
End Sub
Group Method (ShapeRange Object)

Groups the shapes in the specified range. Returns the grouped shapes as a single Shape object.

expression.Group

expression  Required. An expression that returns a ShapeRange object.
Remarks

Because a group of shapes is treated as a single shape, grouping and ungrouping shapes changes the number of items in the Shapes collection and changes the index numbers of items that come after the affected items in the collection.
Example

This example adds two shapes to myDocument, groups the two new shapes, sets the fill for the group, rotates the group, and sends the group to the back of the drawing layer.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    .AddShape(msoShapeCan, 50, 10, 100, 200).Name = "shpOne"
    .AddShape(msoShapeCube, 150, 250, 100, 200).Name = "shpTwo"
With .Range(Array("shpOne", "shpTwo")).Group
    .Fill.PresetTextured msoTextureBlueTissuePaper
    .Rotation = 45
    .ZOrder msoSendToBack
End With
End With
You can use most Microsoft Excel worksheet functions in your Visual Basic statements. To see a list of the worksheet functions you can use, see List of Worksheet Functions Available to Visual Basic.

**Note** Some worksheet functions aren’t useful in Visual Basic. For example, the **Concatenate** function isn’t needed because in Visual Basic you can use the & operator to join multiple text values.
Calling a Worksheet Function from Visual Basic

In Visual Basic, the Microsoft Excel worksheet functions are available through the **WorksheetFunction** object.

The following **Sub** procedure uses the **Min** worksheet function to determine the smallest value in a range of cells. First, the variable **myRange** is declared as a **Range** object, and then it’s set to range A1:C10 on Sheet1. Another variable, **answer**, is assigned the result of applying the **Min** function to **myRange**. Finally, the value of **answer** is displayed in a message box.

```vba
Sub UseFunction()
    Dim myRange As Range
    Set myRange = Worksheets("Sheet1").Range("A1:C10")
    answer = Application.WorksheetFunction.Min(myRange)
    MsgBox answer
End Sub
```

If you use a worksheet function that requires a range reference as an argument, you must specify a **Range** object. For example, you can use the **Match** worksheet function to search a range of cells. In a worksheet cell, you would enter a formula such as =MATCH(9,A1:A10,0). However, in a Visual Basic procedure, you would specify a **Range** object to get the same result.

```vba
Sub FindFirst()
    myVar = Application.WorksheetFunction.Match(9, Worksheets(1).Range("A1:A10"), 0)
    MsgBox myVar
End Sub
```

**Note**  Visual Basic functions don’t use the **WorksheetFunction** qualifier. A function may have the same name as a Microsoft Excel function and yet work differently. For example, **Application.WorksheetFunction.Log** and **Log** will return different values.
Inserting a Worksheet Function into a Cell

To insert a worksheet function into a cell, you specify the function as the value of the Formula property of the corresponding Range object. In the following example, the RAND worksheet function (which generates a random number) is assigned to the Formula property of range A1:B3 on Sheet1 in the active workbook.

Sub InsertFormula()
    Worksheets("Sheet1").Range("A1:B3").Formula = "=RAND()"
End Sub
Example

This example uses the worksheet function Pmt to calculate a home mortgage loan payment. Notice that this example uses the InputBox method instead of the InputBox function so that the method can perform type checking. The Static statements cause Visual Basic to retain the values of the three variables; these are displayed as default values the next time you run the program.

Static loanAmt
Static loanInt
Static loanTerm
loanAmt = Application.InputBox _
   (Prompt:="Loan amount (100,000 for example)", _
    Default:=loanAmt, Type:=1)
loanInt = Application.InputBox _
   (Prompt:="Annual interest rate (8.75 for example)", _
    Default:=loanInt, Type:=1)
loanTerm = Application.InputBox _
   (Prompt:="Term in years (30 for example)", _
    Default:=loanTerm, Type:=1)
payment = Application.WorksheetFunction _
   .Pmt(loanInt / 1200, loanTerm * 12, loanAmt)
MsgBox "Monthly payment is " & Format(payment, "Currency")
RotationX Property

Returns or sets the rotation of the extruded shape around the x-axis in degrees. Can be a value from –90 through 90. A positive value indicates upward rotation; a negative value indicates downward rotation. Read/write **Single**.

*expression*.RotationX

*expression*  Required. An expression that returns one of the objects in the Applies To list.
Remarks

To set the rotation of the extruded shape around the y-axis, use the RotationY property of the ThreeDFormat object. To set the rotation of the extruded shape around the z-axis, use the Rotation property of the Shape object. To change the direction of the extrusion’s sweep path without rotating the front face of the extrusion, use the SetExtrusionDirection method.
Example

This example adds three identical extruded ovals to myDocument and sets their rotation around the x-axis to $-30$, $0$, and $30$ degrees, respectively.

Set myDocument = Worksheets(1)
With myDocument.Shapes
    With .AddShape(msoShapeOval, 30, 30, 50, 25).ThreeD
        .Visible = True
        .RotationX = -30
    End With
    With .AddShape(msoShapeOval, 30, 70, 50, 25).ThreeD
        .Visible = True
        .RotationX = 0
    End With
    With .AddShape(msoShapeOval, 30, 110, 50, 25).ThreeD
        .Visible = True
        .RotationX = 30
    End With
End With
Modify Method (FormatCondition Object)

Modifies an existing conditional format.

\textit{expression} \texttt{.Modify(}\textit{Type, Operator, Formula1, Formula2)}

\textit{expression} \quad Required. An expression that returns a \texttt{FormatCondition} object.

\textit{Type} \quad Required \texttt{XlFormatCondition}. Specifies whether the conditional format is based on a cell value or an expression.

\texttt{XlFormatCondition} can be one of these \texttt{XlFormatCondition} constants.
\texttt{xlCellValue}
\texttt{xlExpression}

\textit{Operator} \quad Optional \texttt{XlFormatConditionOperator}. The conditional format operator.

\texttt{XlFormatConditionOperator} can be one of these \texttt{XlFormatConditionOperator} constants.
\texttt{xlBetween}
\texttt{xlEqual}
\texttt{xlGreater}
\texttt{xlGreaterEqual}
\texttt{xlLess}
\texttt{xlLessEqual}
\texttt{xlNotBetween}
xlNotEqual

If Type, is xlExpression, the Operator argument is ignored.

**Formula1** Optional Variant. The value or expression associated with the conditional format. Can be a constant value, a string value, a cell reference, or a formula.

**Formula2** Optional Variant. The value or expression associated with the conditional format. Can be a constant value, a string value, a cell reference, or a formula.
Example

This example modifies an existing conditional format for cells E1:E10.

Worksheets(1).Range("e1:e10").FormatConditions(1) _
     .Modify xlCellValue, xlLess, ","="$a$1"
Modify Method (Validation Object)

Modifies data validation for a range.

\[ \text{expression} \text{.Modify} \left( \text{Type}, \text{AlertStyle}, \text{Operator}, \text{Formula1}, \text{Formula2} \right) \]

\text{expression} Required. An expression that returns a \text{Validation} object.

\textbf{Type} Required \text{XIDVType}. The validation type.

\text{XIDVType} can be one of these \text{XIDVType} constants.

\text{xlValidateCustom}
\text{xlValidateDate}
\text{xlValidateDecimal}
\text{xlValidateInputOnly}
\text{xlValidateList}
\text{xlValidateTextLength}
\text{xlValidateTime}
\text{xlValidateWholeNumber}

\textbf{AlertStyle} Optional \text{XIDVAalertStyle}. The validation alert style.

\text{XIDVAalertStyle} can be one of these \text{XIDVAalertStyle} constants.

\text{xlValidAlertInformation}
\text{xlValidAlertStop}
\text{xlValidAlertWarning}
**Operator** Optional **XlFormatConditionOperator**. The data validation operator.

XlFormatConditionOperator can be one of these XlFormatConditionOperator constants.
- **xlBetween**
- **xlEqual**
- **xlGreater**
- **xlGreaterEqual**
- **xlLess**
- **xlLessEqual**
- **xlNotBetween**
- **xlNotEqual**

**Formula1** Optional **Variant**. The first part of the data validation equation.

**Formula2** Optional **Variant**. The second part of the data validation when **Operator** is **xlBetween** or **xlNotBetween** (otherwise, this argument is ignored).
Remarks

The **Modify** method requires different arguments, depending on the validation type, as shown in the following **table**.

<table>
<thead>
<tr>
<th>Validation type</th>
<th>Arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>xlInputOnly</td>
<td><em>AlertStyle</em>, <em>Formula1</em>, and <em>Formula2</em> are not used.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> is required; <em>Formula2</em> is ignored.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> must contain an expression that evaluates to <strong>True</strong> when data entry is valid and <strong>False</strong> when data entry is invalid.</td>
</tr>
<tr>
<td>xlValidateCustom</td>
<td><em>Formula1</em> is required; <em>Formula2</em> is ignored.</td>
</tr>
<tr>
<td></td>
<td><em>Formula1</em> must contain either a comma-delimited list of values or a worksheet reference to the list.</td>
</tr>
<tr>
<td>xlValidateList</td>
<td><em>Formula1</em> or <em>Formula2</em>, or both, must be specified.</td>
</tr>
<tr>
<td>xlValidateDate,</td>
<td></td>
</tr>
<tr>
<td>xlValidateDecimal,</td>
<td></td>
</tr>
<tr>
<td>xlValidateTextLength,</td>
<td></td>
</tr>
<tr>
<td>xlValidateTime,</td>
<td></td>
</tr>
<tr>
<td>xlValidateWholeNumber</td>
<td></td>
</tr>
</tbody>
</table>
Example

This example changes data validation for cell E5.

Range("e5").Validation _
    .Modify xlValidateList, xlValidAlertStop, _
    xlBetween, "=$A$1:$A$10"
ZOrderPosition Property

Returns the position of the specified shape in the z-order. Read-only **Long**.
Remarks

To set the shape's position in the z-order, use the `ZOrder` method.

A shape's position in the z-order corresponds to the shape's index number in the `Shapes` collection. For example, if there are four shapes on `myDocument`, the expression `myDocument.Shapes(1)` returns the shape at the back of the z-order, and the expression `myDocument.Shapes(4)` returns the shape at the front of the z-order.

Whenever you add a new shape to a collection, it’s added to the front of the z-order by default.
Example

This example adds an oval to myDocument and then places the oval second from the back in the z-order if there is at least one other shape on the document.

Set myDocument = Worksheets(1)
With myDocument.Shapes.AddShape(msoShapeOval, 100, 100, 100, 300)
    While .ZOrderPosition > 2
        .ZOrder msoSendBackward
    Wend
End With
Returning an Object from a Collection

The **Item** property returns a single object from a collection. The following example sets the `firstBook` variable to a **Workbook** object that represents workbook one.

```
Set FirstBook = Workbooks.Item(1)
```

The **Item** property is the **default property** for most collections, so you can write the same statement more concisely by omitting the **Item** keyword.

```
Set FirstBook = Workbooks(1)
```

For more information about a specific collection, see the Help topic for that collection or the **Item** property for the collection.
Named Objects

Although you can usually specify an integer value with the Item property, it may be more convenient to return an object by name. Before you can use a name with the Item property, you must name the object. Most often, this is done by setting the object's Name property. The following example creates a named worksheet in the active workbook and then refers to the worksheet by name.

```vba
ActiveWorkbook.Worksheets.Add.Name = "A New Sheet"
With Worksheets("A New Sheet")
    .Range("A5:A10").Formula = "=RAND()"
End With
```
Predefined Index Values

Some collections have predefined index values you can use to return single objects. Each predefined index value is represented by a constant. For example, you specify an XlBordersIndex constant with the Item property of the Borders collection to return a single border.

The following example sets the bottom border of cells A1:G1 on Sheet1 to a double line.

```vba
Worksheets("Sheet1").Range("A1:A1").__
Borders.Item(xlEdgeBottom).LineStyle = xlDouble
```
Formatting Codes for Headers and Footers

The following special formatting codes can be included as a part of the header and footer properties (LeftHeader, CenterHeader, RightHeader, LeftFooter, CenterFooter, RightFooter).

<table>
<thead>
<tr>
<th>Format code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;L</td>
<td>Left aligns the characters that follow.</td>
</tr>
<tr>
<td>&amp;C</td>
<td>Centers the characters that follow.</td>
</tr>
<tr>
<td>&amp;R</td>
<td>Right aligns the characters that follow.</td>
</tr>
<tr>
<td>&amp;E</td>
<td>Turns double-underline printing on or off.</td>
</tr>
<tr>
<td>&amp;X</td>
<td>Turns superscript printing on or off.</td>
</tr>
<tr>
<td>&amp;Y</td>
<td>Turns subscript printing on or off.</td>
</tr>
<tr>
<td>&amp;B</td>
<td>Turns bold printing on or off.</td>
</tr>
<tr>
<td>&amp;I</td>
<td>Turns italic printing on or off.</td>
</tr>
<tr>
<td>&amp;U</td>
<td>Turns underline printing on or off.</td>
</tr>
<tr>
<td>&amp;S</td>
<td>Turns strikethrough printing on or off.</td>
</tr>
<tr>
<td>&amp;D</td>
<td>Prints the current date.</td>
</tr>
<tr>
<td>&amp;T</td>
<td>Prints the current time.</td>
</tr>
<tr>
<td>&amp;F</td>
<td>Prints the name of the document.</td>
</tr>
<tr>
<td>&amp;A</td>
<td>Prints the name of the workbook tab.</td>
</tr>
<tr>
<td>&amp;P</td>
<td>Prints the page number.</td>
</tr>
<tr>
<td>&amp;P+number</td>
<td>Prints the page number plus the specified number.</td>
</tr>
<tr>
<td>&amp;P-number</td>
<td>Prints the page number minus the specified number.</td>
</tr>
<tr>
<td>&amp;&amp;</td>
<td>Prints a single ampersand.</td>
</tr>
<tr>
<td>&amp; &quot;fontname&quot;</td>
<td>Prints the characters that follow in the specified font. Be sure to include the double quotation marks.</td>
</tr>
<tr>
<td>&amp;nn</td>
<td>Prints the characters that follow in the specified font size. Use a two-digit number to specify a size in points.</td>
</tr>
</tbody>
</table>
Prints the total number of pages in the document.
Using Events with Embedded Charts

Events are enabled for chart sheets by default. Before you can use events with a Chart object that represents an embedded chart, you must create a new class module and declare an object of type Chart with events. For example, assume that a new class module is created and named EventClassModule. The new class module contains the following code.

```vba
Public WithEvents myChartClass As Chart

After the new object has been declared with events, it appears in the Object drop-down list box in the class module, and you can write event procedures for this object. (When you select the new object in the Object box, the valid events for that object are listed in the Procedure drop-down list box.)

Before your procedures will run, however, you must connect the declared object in the class module with the embedded chart. You can do this by using the following code from any module.

```vba
Dim myClassModule As New EventClassModule
Sub InitializeChart()
    Set myClassModule.myChartClass = _
        Worksheets(1).ChartObjects(1).Chart
End Sub
```

After you run the InitializeChart procedure, the myChartClass object in the class module points to embedded chart one on worksheet one, and the event procedures in the class module will run when the events occur.
Using Events with the Application Object

Before you can use events with the Application object, you must create a new class module and declare an object of type Application with events. For example, assume that a new class module is created and called EventClassModule. The new class module contains the following code.

```vba
Public WithEvents App As Application
```

After the new object has been declared with events, it appears in the Object drop-down list box in the class module, and you can write event procedures for the new object. (When you select the new object in the Object box, the valid events for that object are listed in the Procedure drop-down list box.)

Before the procedures will run, however, you must connect the declared object in the class module with the Application object. You can do this with the following code from any module.

```vba
Dim X As New EventClassModule

Sub InitializeApp()
    Set X.App = Application
End Sub
```

After you run the InitializeApp procedure, the App object in the class module points to the Microsoft Excel Application object, and the event procedures in the class module will run when the events occur.
Microsoft Excel Objects (Shapes)

Shapes (Shape) | LinkFormat
├── OLEFormat
├── Hyperlink
├── FillFormat
├── ControlFormat
├── ConnectorFormat
├── TextFrame
├── Diagram
│   ├── DiagramNodes
│   │   ├── DiagramNode
│   │   │   └── DiagramNodeChildren
├── Adjustments
├── LineFormat
├── PictureFormat
├── ShadowFormat
├── TextEffectFormat
├── Scripts (Script)

Legend

Object and collection
Object only
Microsoft Excel Objects (ChartGroups)

ChartGroups (ChartGroup)
- DownBars
- HiLoLines
- SeriesLines
- DropLines
- TickLabels

SeriesCollection (Series)
- ErrorBars
- Border
- DataLabels (DataLabel)
- ChartFillFormat
- Interior
- LeaderLines
- Points (Point)
- DataLabel
- Trendlines (Trendline)

Legend
Object and collection
Object only
Using Events with the QueryTable Object

Before you can use events with the QueryTable object, you must first create a new class module and declare a QueryTable object with events. For example, assume that you’ve created a new class module and named it clsModQT. This module contains the following code:

```
Public WithEvents qtQueryTable As QueryTable
```

After you’ve declared the new object by using events, it appears in the Object drop-down list box in the class module.

Before the procedures will run, however, you must connect the declared object in the class module to the specified QueryTable object. You can do this by entering the following code in the class module:

```
Sub InitQueryEvent(QT as Object)
   Set qtQueryTable = QT
End Sub
```

After you run this initialization procedure, the object you declared in the class module points to the specified QueryTable object. You can initialize the event in a module by calling the event. In this example, the first query table on the active worksheet is connected to the qtQueryTable object.

```
Dim clsQueryTable as New clsModQT

Sub RunInitQTEvent
   clsQueryTable.InitQueryEvent _
   QT:=ActiveSheet.QueryTables(1)
End Sub
```

You can write other event procedures in the object’s class. When you click the new object in the Object box, the valid events for that object are displayed in the Procedure drop-down list box.
Using ActiveX Controls on a Document

Just as you can add ActiveX controls to custom dialog boxes, you can add controls directly to a document when you want to provide a sophisticated way for the user to interact directly with your macro without the distraction of dialog boxes. Use the following procedure to add ActiveX controls to your document. For more specific information about using ActiveX controls in Microsoft Excel, see Using ActiveX Controls on Sheets.

1. **Add controls to the document**

   Display the Control Toolbox, click the control you want to add, and then click the document.

2. **Set control properties**

   Right-click a control in design mode and click Properties to display the Properties window.

3. **Initialize the controls**

   You can initialize controls in a procedure.

4. **Write event procedures**

   All controls have a predefined set of events. For example, a command button has a Click event that occurs when the user clicks the command button. You can write event procedures that run when the events occur.

5. **Use control values while code is running**

   Some properties can be set at run time.
Creating a Custom Dialog Box

Use the following procedure to create a custom dialog box:

1. **Create a UserForm**
   
   On the **Insert** menu in the Visual Basic Editor, click **UserForm**.

2. **Add controls to the UserForm**
   
   Find the control you want to add in the **Toolbox** and drag the control onto the form.

3. **Set control properties**
   
   Right-click a control in design mode and click **Properties** to display the Properties window.

4. **Initialize the controls**
   
   You can initialize controls in a procedure before you show a form, or you can add code to the Initialize event of the form.

5. **Write event procedures**
   
   All controls have a predefined set of events. For example, a command button has a Click event that occurs when the user clicks the command button. You can write event procedures that run when the events occur.

6. **Show the dialog box**
   
   Use the **Show** method to display a UserForm.

7. **Use control values while code is running**
   
   Some properties can be set at run time. Changes made to the dialog box by
the user are lost when the dialog box is closed.
List of Worksheet Functions Available to Visual Basic

ABCDEFGHIJKLMNOPQRSTUVWXYZ
Acos
Acosh
And
Asin
Asinh
Atan2
Atanh
AveDev
Average

B
BetaDist
BetaInv
BinomDist

C
Ceiling
ChiDist
ChiInv
ChiTest
Choose
Clean
Combin
Confidence
Correl
Cosh
Count
CountA
CountBlank
CountIf
Covar
CritBinom
D
DAverage
Days360
Db
DCount
DCountA
DDb
Degrees
DevSq
DGet
DMax
DMin
Dollar
DProduct
DStDev
DStDevP
DSum
DVar
DVarP
E
Even
ExponDist
F
Fact
FDist
Find
FindB
FInv
Fisher
FisherInv
Fixed
Floor
Forecast
Frequency
FTest
Fv
G
GammaDist
GammaInv
GammaLn
GeoMean
Growth
H
HarMean
HLookup
HypGeomDist
I
Index
Intercept
Ipmt
Irr
IsErr
IsError
IsLogical
IsNA
IsNonText
IsNumber
Ispm
IsText
J
K

Kurt

L

Large

LinEst

Ln

Log

Log10

LogEst

LogInv

LogNormDist

Lookup

M

Match

Max

MDeterm

Median

Min

MInverse

MIrr
Poisson
Power
Ppmt
Prob
Product
Proper
Pv
Q
Quartile
R
Radians
Rank
Rate
Replace
ReplaceB
Rept
Roman
Round
RoundDown
RoundUp
RSq
RTD
S
Search
SearchB
Sinh
Skew
Sln
Slope
Small
Standardize
StDev
StDevP
StEyx
Substitute
Subtotal
Sum
SumIf
SumProduct
SumSq
SumX2MY2
SumX2PY2
SumXMY2
Syd
T
Tanh
TDist
Text
TInv
Transpose
Trend
Trim
TrimMean
TTest
U
USDollar
V
Var
VarP
Vdb
VLookup
W
Weekday
Weibull

X
Adding Controls to a Document

To add controls to a document, display the Control Toolbox, click the control you want to add, and then click on the document. Drag an adjustment handle of the control until the control's outline is the size and shape you want.

**Note** Dragging a control (or a number of "grouped" controls) from the form back to the Control Toolbox creates a template of that control, which can be reused. This is a useful feature for implementing a standard interface for your applications.
Setting Control Properties

You can set some control properties at design time (before any macro is running). In design mode, right-click a control and click **Properties** to display the Properties window. Property names are shown in the left column in the window, property values in the right column. You set a property value by entering the new value to the right of the property name.
Initializing Control Properties

You can initialize controls at run time by using Visual Basic code in a macro. For example, you could fill a list box, set text values, or set option buttons.

The following example uses the AddItem method to add data to a list box. Then it sets the value of a text box and displays the form.

Private Sub GetUserName()
    With UserForm1
        .lstRegions.AddItem "North"
        .lstRegions.AddItem "South"
        .lstRegions.AddItem "East"
        .lstRegions.AddItem "West"
        .txtSalesPersonID.Text = "00000"
        .Show
    ' ...
    End With
End Sub

You can also use code in the Initialize event of a form to set initial values for controls on the form. An advantage to setting initial control values in the Initialize event is that the initialization code stays with the form. You can copy the form to another project, and when you run the Show method to display the dialog box, the controls will be initialized.

Private Sub UserForm_Initialize()
    UserForm1.lstNames.AddItem "Test One"
    UserForm1.lstNames.AddItem "Test Two"
    UserForm1.txtUserName.Text = "Default Name"
End Sub
Control and Dialog Box Events

After you have added controls to your dialog box or document, you add event procedures to determine how the controls respond to user actions.

User forms and controls have a predefined set of events. For example, a command button has a Click event that occurs when the user clicks the command button, and UserForms have an Initialize event that runs when the form is loaded.

To write a control or form event procedure, open a module by double-clicking the form or control, and select the event from the Procedure drop-down list box.

Event procedures include the name of the control. For example, the name of the Click event procedure for a command button named Command1 is Command1_Click.

If you add code to an event procedure and then change the name of the control, your code remains in procedures with the previous name.

For example, assume you add code to the Click event for Command1 and then rename the control to Command2. When you double-click Command2, you will not see any code in the Click event procedure. You will need to move code from Command1_Click to Command2_Click.

To simplify development, it’s a good practice to name your controls before writing code.
Using Control Values While Code Is Running

Some control properties can be set and returned while Visual Basic code is running. The following example sets the Text property of a text box to "Hello."

```
TextBox1.Text = "Hello"
```

The data entered on a form by a user is lost when the form is closed. If you return the values of controls on a form after the form has been unloaded, you get the initial values for the controls rather than the values the user entered.

If you want to save the data entered on a form, you can save the information to module-level variables while the form is still running. The following example displays a form and saves the form data.

```
' Code in module to declare public variables.
Public strRegion As String
Public intSalesPersonID As Integer
Public blnCancelled As Boolean

' Code in form.
Private Sub cmdCancel_Click()
    Module1.blnCancelled = True
    Unload Me
End Sub

Private Sub cmdOK_Click()
    ' Save data.
    intSalesPersonID = txtSalesPersonID.Text
    strRegion = lstRegions.List(lstRegions.ListIndex)
    Module1.blnCancelled = False
    Unload Me
End Sub

Private Sub UserForm_Initialize()
    Module1.blnCancelled = True
End Sub
```
' Code in module to display form.
Sub LaunchSalesPersonForm()
    frmSalesPeople.Show
    If blnCancelled = True Then
        MsgBox "Operation Cancelled!", vbExclamation
    Else
        MsgBox "The Salesperson's ID is: " & intSalesPersonID & _
            "The Region is: " & strRegion
    End If
End Sub
Creating a User Form

To create a custom dialog box, you must create a UserForm. To create a UserForm, click UserForm on the Insert menu in the Visual Basic Editor.

Use the Properties window to change the name, behavior, and appearance of the form. For example, to change the caption on a form, set the Caption property.
Adding Controls to a User Form

To add controls to a user form, find the control you want to add in the Toolbox, drag the control onto the form, and then drag an adjustment handle on the control until the control's outline is the size and shape you want.

Note Dragging a control (or a number of "grouped" controls) from the form back to the Toolbox creates a template of that control, which can be reused. This is a useful feature for implementing a standard interface for your applications.

When you've added controls to the form, use the commands on the Format menu in the Visual Basic Editor to adjust the control alignment and spacing.
Displaying a Custom Dialog Box

To test your dialog box in the Visual Basic Editor, click **Run Sub/UserForm** on the **Run** menu in the Visual Basic Editor.

To display a dialog box from Visual Basic, use the **Show** method. The following example displays the dialog box named UserForm1.

```vbnet
Private Sub GetUserame()
    UserForm1.Show
End Sub
```