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### How To

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<td>Trim characters other than spaces</td>
<td>Str.Trim(“$”c, “ “c, “%”c) ‘trim any of these’</td>
</tr>
<tr>
<td>Order of Precedence</td>
<td>^ Not / Or, AndAlso \ Or, OrElse, Xor Mod +</td>
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<tr>
<td>Format Numbers</td>
<td>.ToString(“N”) or C or P or D or F</td>
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<td>Use Financial functions</td>
<td>Financial.Pmt (etc)</td>
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<td>Check to see if a string matches a pattern</td>
<td>If str Like “K*” Then ‘starts with K’</td>
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<tr>
<td>Declare an array</td>
<td>Dim myArray(10) as Integer ‘10 is last index (0-10)’</td>
</tr>
<tr>
<td>Determine size of array</td>
<td>myArray.Length ‘Number of elements’</td>
</tr>
<tr>
<td>Sort an array</td>
<td>Array.Sort(myArray) ‘ascending’</td>
</tr>
<tr>
<td>Declare a n-D array</td>
<td>Dim myArray(2,2) as Integer</td>
</tr>
<tr>
<td>Initialize an n-D array</td>
<td>For each element as Integer in myArray element = “”</td>
</tr>
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</table>
| **Resize an array at runtime** | Redim myArray(4)  'Old values lost  
Redim Preserve myArray(4)  'Old values preserved |
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<td><strong>Search an array</strong></td>
<td>Array.BinarySearch(myArray, findme)</td>
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<td><strong>Use a MaskedTextBox</strong></td>
<td>¹Zak Page 267</td>
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| **Get image from file** | picBox.Image =  
System.Drawing.Image.FromFile("filename") ² |
| **Clearing an image** | picBox.Image = Nothing ² |
| **Determine the maximum/minimum values for a type** | Integer.MinValue  
Integer.MaxValue ² |
| **Accuracy of floating point types** | Single – 7 Digits after decimal point ²  
Double – 15 digits after decimal point ²  
Decimal - |
| **Use the value of pi π** | System.Math.PI ² |
| **Integer math rounding** | If fractional part is exactly .5:  
Round down if left is even (2.5)  
Round up if left is odd (3.5) |
| **Determine ASCII number for a character** | value=Asc("W") ² |
| **Determine the character represented by an ASCII number** | str = Chr(65) ² |
| **Using ControlChars** | ControlChars.NewLine  'same as CrLf  
ControlChars.Back  'back space  
ControlChars.Quote  'Quotation marks  
ControlChars.Tab  'Tab character  
ControlChars.NullChar  'Null character ² |
| **Extracting part of a Date** | myDate.Month  'etc ² |
| **Sharing variables between forms** | Make Public variable in a module  
or  
Declare form-level variable as Friend  
Friend varName as Integer  'In Form2  
Form1.varName = 15 ²  
Form2.varName = 15 ² |
| **Set the file filter for a dialog box** | dlg.Filter = "Text Files (*.txt) | *.txt | All Files (*.*) | *.*") |
| **Determine the locations of the user’s system folders** | strDir = Environment.GetFolderPath(  
_Environment.SpecialFolder.Desktop)  
or .MyComputer  
or .MyDocuments  
or .Recent  
or .SystemDirectory  
or .CurrentDirectory ² |
| Determine application directories | Application.StartupPath  
| | Application.ExecutablePath ‘Includes program filename  
| | Application.UserAppDataPath  
| | Application.LocalUserAppDataPath  
| | Directory.GetCurrentDirectory  
| Parsing a delimited string (Split) | ‘Split requires an array of delimiters  
| | Dim delim() as String = {"",""} ‘Only comma  
| | Dim fields() as String ‘Array to hold delimited flds  
| | ‘Parse into array  
| | Fields = inputString.Split(delim, StringSplitOptions.None)  
| Creating a custom color | Color.FromArgb(redvalue, greenvalue, bluevalue)  
| Determine the workable space of a form (client area) | ‘These exclude borders and title bar  
| | Me.ClientSize (returns a Size class)  
| | Me.ClientSize.Height  
| | Me.ClientSize.Width  
| Drawing shapes | ² Ekedahl Starting page 768  
| Drawing images | ‘bmp, ico, wmf only  
| | originPoint) ‘Full size  
| | or  
| | imgRectangle) ‘Size to fit rectangle  
| How to create hover buttons (buttons that change color when you touch them with the mouse) | Use the button’s MouseEnter and MouseLeave events to change the color of the button appropriately  
| Saving images as local resources vs. project resources | ² Ekedahl, page 834  
| | Note: forms (like a Welcome Screen) that use project images instead of local images, are much harder to copy to other projects.  
| Determining the status of editing keys | My.Computer.Keyboard.NumLock (Boolean)  
| | or  
| | .CapsLock  
| | .ScrollLock  
| Saving Rich Text Files | ² Ekedahl, pages 853-866  
| Setting conditional or hit count breakpoints | Set the breakpoint. Right-click the red breakpoint circle and choose the type of breakpoint  
| Make the SQLClient class available to an entire project | Open My Project, select the References tab. Check System.Data.SqlClient  
| Determine the scrollbar width | SystemInformation.VerticalScrollbarWidth  
| | In a data grid, add all column widths + ScrollBarWidth + 3 to keep horizontal scrollbar from showing  

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<th>Code</th>
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<td>Execute a scalar query from code</td>
<td>Dim conn as New SqlConnection( _ My.Settings.YourConnectionName)  &lt;br&gt;Dim selCommand as New SqlCommand( _  &quot;Select command here&quot;, conn)  &lt;br&gt;conn.Open()  &lt;br&gt;results = selCommand.ExecuteScalar  &quot;Change type if appropriate  &lt;br&gt;conn.Close()</td>
</tr>
<tr>
<td>Accessing a data table dynamically from code</td>
<td>Dim daName as New SqlDataAdapter( _  &quot;Select command here&quot;, My.Settings.YourConnectionName)  &lt;br&gt;Dim dtName as New DataTable  &lt;br&gt;daName.Fill(dtName)</td>
</tr>
<tr>
<td>Create list box or combo box that stores more than one value, displaying only one, without a data adapter.</td>
<td>Create a class that contains all the members. Provide a property for each field you need access to.  &lt;br&gt;Add the following method  &lt;br&gt;&lt;code&gt;Public Overrides Function ToString() As String&lt;/code&gt;  &lt;br&gt;This controls what is displayed in the combo/list.  &lt;br&gt;To access hidden data:  &lt;br&gt;&lt;code&gt;Ctype(cmbName.SelectedItem,ClassName).membername&lt;/code&gt;</td>
</tr>
<tr>
<td>Use a case statement to determine which radio button is selected</td>
<td>Select Case True  &lt;br&gt;Case rdoOne.Checked: code here  &lt;br&gt;Case rdoTwo.Checked: code here  &lt;br&gt;Case rdoThree.Checked: code here  &lt;br&gt;Etc.  &lt;br&gt;End Select</td>
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<tr>
<td>Connect to a web service</td>
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<td>Locate web services</td>
<td>Google WSDL list</td>
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<td>Determining the smaller / larger of two numbers</td>
<td>Smallest = Math.Min(value1, value2)  &lt;br&gt;Largest = Math.Max(value1, value2)</td>
</tr>
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<td>Using VSTO (Visual Studio Tools for Office)</td>
<td>Pages 953-978</td>
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<td>Access the Windows clipboard</td>
<td>My.Computer.Clipboard</td>
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<tr>
<td>Screen properties</td>
<td>My.Computer.Screen</td>
</tr>
<tr>
<td>Determine the current user’s name</td>
<td>My.User.Name</td>
</tr>
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</table>
| **Access an image in project resources** | Be sure to include the image in your project as a Project resource file
- Import image using a PictureBox Image property
- Use My Project, Resources, Add Resource, Existing

My.Resources.filename
(filename will appear without extension) |
| **Send Keys to an application** | SendKeys.Send(“keys”)  
See SendKeys.Send in Help for additional information. |
| **Access a table adapter (from the xsd) dynamically** | `Table adapter must be in Data Sources`  
Dim ta As New dsNameTableAdapters.tblNameTableAdapter  
ta.fill(dsName.TableName) |
| **Deck of Cards class** | See Deitel & Deitel, pages 348+ |
| **Running Exe on another machine** | In order to run your VB 2005 program on another computer (that probably doesn’t have VB 2005 installed), simply copy your Exe to that computer. The receiving computer must have Windows XP SP2 installed and must have the .Net 2.0 framework installed.  
If your program accesses a SQL Server database, the receiving machine must also have SQL Server Express installed (or the full-blown SQL Server). Additionally, the receiving machine must have IIS (Internet Information Services) installed. This should have been installed when the operating system was installed. |
| **Select Multiple Listbox items** | Note: Multiple select must be enabled.  
lstBox.SetSelected(index, True/False) |
| **Network Access** | My Project, Security  
Enable ClickOnce  
Calculate Permissions  
On each computer accessing the program:  
Control Panel, Performance and Maintenance, Admin Tools  
.Net Framework 2.0 Configuration (may need to do 1.1 too)  
Drill down to Runtime Security Policy, Machine, Code Groups  
All Code  
Click LocalIntranet_Zone  
In the right pane, click Edit Code Group Properties  
Choose the Permission Set tab  
Change the Permission set to Full Trust  
Note: if the workstation doesn’t have the 2.0 Configuration Tool, run the .NET 2.0 Configuration installation program (Consulting pen drive). Students if you need it, ask me for a copy. |
| **Validating and Exit** | Exit buttons (and the form close button) ignore CausesValidaton = False commands (by design? so can’t exit with invalid data). This only seems to occur if the validation code opens a message box or other dialog box. Solution: display error in a label or error provider |
| Grid, Select First Row | `grd.CurrentCell = grd.FirstDisplayedCell`  
If grid is tied to a data adapter, first row is automatically selected when data adapter is filled. |
|-----------------------|------------------------------------------------------------------------------------------------|
| Apostrophe in Filter  | A binding source requires apostrophes around a like clause in the filter designation.  
`bndTable.Filter = "Name Like '*' & txtSearch.Text & '*'"`  
These can NOT be replaced with quotation marks. If txtSearch contains an apostrophe (O’Keefe), this statement will cause an exception. To solve the problem, replace all apostrophes in txtSearch with two apostrophes.  
`Dim filter As String = txtSearch.Text.Replace("","")  
bndTable.Filter = "Name Like '*' & filter & '*'"` |
| Multi-Select Listbox, Bound, SelectedValues | Selected values are only available for single-select, bound list boxes. However, you can still retrieve the value members from the selected items.  
`For Each itm As DataRowView In myListBox.SelectedItems  
    Debug.WriteLine(itm.Item(1).ToString)  
End For`  
Note that each item in a **bound** list box is a DataRowView. This row has indexed columns. This example extracts the value of the second column. You could also use this to store entire rows in a list box (many fields) and extract any field data you may need. |
| Search a binding source on multiple fields | `bsEmpHours.Position = bsEmpHours.Find("empDate", currRecord.empDate) And _  
bsEmpHours.Find("starttime", currRecord.startTime) And _  
bsEmpHours.Find("endtime", currRecord.endTime)` |
| Grid, Custom Format | To change the format of a column`s data, you first need to define a column style.  
`Dim colStyle As New DataGridViewCellStyle`  
Then, change the properties of the style (some examples)  
`colStyle.Format = "ddd, MMM d, yyyy"  
colStyle.Alignment = DataGridViewContentAlignment.MiddleLeft  
colStyle.Font = New Font("Arial Black", 10)`  
Finally, apply the style to a column  
`grdName.Columns("Name").DefaultCellStyle = colStyle` |
| Grid, Custom Column Header Format | Follow the instructions to create a custom grid format **above**.  
To apply the style to just a column header, apply the style to the `HeaderCell.Style`  
`grdName.Columns("Name").HeaderCell.Style = colStyle` |
| Pause a program | `Me.Update  
Threading.Thread.Sleep(1000)  
'Pause for 1 second"` |
Generates a collection of strings  
See Documentation Generator program. |
|---|---|
| Determine the width a printed string | *(This code is normally inside a PrintPage method)*  
```vbnet
Dim myFont As New Font("Arial", 12, FontStyle.Bold)  
w = ev.Graphics.MeasureString(theString, myFont).Width
```
| Determine the width of a string before it is printed (without a print document) | This code allows you to check the length of a string on a form to determine how width (in 100ths of an inch) it will be when it is printed.  
```vbnet
Dim g As Graphics  
Dim instance As New _  
    System.Drawing.Drawing2D.GraphicsUnitPixels  
g = instance.CreateMeasurementGraphics  
Dim myFont As New Font("Arial", 12, FontStyle.Bold)  
w = g.MeasureString(theString, myFont).Width
```
| Error Before Form Load | **InvalidOperationException** was unhandled  
This occurs because some object(s) is causing a TextChanged or ValueChanged event to occur **before** the form load event occurs.  
Causes:  
- Setting a date picker Value at design time  
- Using a MaskedTextBox  
Solution:  
- Reset date picker Value in design  
- Don’t use MaskedTextBox. The MTB causes a text changed event to occur before Form Load REGARDLESS of any settings  
- If you must use a MTB, instantiate currRecord when it is defined (form declarations) and not in frmLoad |

References:  
1. Zak, VB2005 Reloaded Advanced  
2. Ekedahl, VB2005 Object Oriented Approach (2nd Ed)  
3. Murach’s VB 2005  
4. Shelly, Cashman, Hoisington, VB2005 Comprehensive  
5. Deitel & Deitel, VB2005 How to Program (3rd)