**Computer Programming 1  
Essential Standard 4.00 Understand Variables and Naming Conventions  
Content Review**

**Variables**

* Syntax  
  Dim *varName* As *DataType*
  + *varName* – You should give your variable a name that represents the value that it holds
  + *DataType* – Your data type should represent the value
    - Integer (int) whole numbers
    - String (str) names/anything with 1+ letters
    - Float (flt) small number with decimals
    - Double (dbl) larger number with decimals
    - Decimal (dec) larger number with decimals - currency
    - Char (chr) single letter, number or symbol
    - Boolean (bln) true or false
  + Examples  
     Dim intYear As Integer  
     Dim strLastName As String  
     Dim dblGpa as Double  
     Dim chrInitial As Character
* Assignment
  + Assigning a value to a variable
  + Uses =
  + Value always moves left to right  
       
     strLastName = “Smith”
  + Always put “” around strings and characters only
  + You should assign a starting value when you declare your variables. You can two lines or one line.  
      
     Dim intYear As Integer  
     intYear = 2011  
     Dim intYear As Integer = 2011
* Concatenation
  + Means merging
  + Use &
  + Example  
     strName = strFName & “ “ & strLName  
     lblInfo.Text = “My name is “ & strName
* Variable Scope
  + Scope is where the variable is available to use
  + Lifetime is the time the variable is available to use.
  + Types
    - Global
      * Declaring a variable just below the public class Form1 statement at the top of your code – not in an event, like a button click
      * The variable can be used anywhere
    - Local
      * Declaring a variable in an event like a button click
      * The variable can only be used where it was declared
    - Procedural
      * Declaring a variable in a specific block of code where it will be available.

**Formatting Output**

* ToString Method
  + Allows you to format a numeric variable for display
  + Does not actually change the variable’s value
  + Use when displaying the value in a label.
  + Syntax  
     lblYourLabel.Text = varNum.ToString(**“**format**”**)
  + Example  
     lblTotal.Text = decTotal.ToString("$###.##")
* Format Function
  + Allows you to format a numeric variable for display
  + Does not actually change the variable’s value
  + Use when displaying the value in a label.
  + Syntax  
     label.Text = Format(number, “format type”)
  + Examples   
     Me.lblAnswer.Text = Format(numVar, "General Number") '8789  
     Me.lblAnswer.Text = Format(8789, "Currency") '$8,789.00  
     Me.lblAnswer.Text = Format(8789, "Fixed") '8789.00  
     Me.lblAnswer.Text = Format(8789, "Standard") '8,789.00  
     Me.lblAnswer.Text = Format(89, "Percent") '8900.00%  
     Me.lblAnswer.Text = Format(8789, "Scientific") '8.79E+3  
     Me.lblAnswer.Text = Format(8, "Yes/No") 'Yes   
     Me.lblAnswer.Text = Format(0, "True/False") 'False  
     Me.lblAnswer.Text = Format(1, "On/Off") 'On

**Textboxes**

* Allow you to get input from the user when your programming in running (runtime)
* Properties  
   (Name) – start with txt  
   Text – what is displayed inside the text box  
   Alignment – aligns the text relative to the text box.   
   PasswordChar – Sets a character to be displayed in the textbox as the user types.
* Prompt
  + The label next to the textbox to tell the user what to enter.
* Syntax  
   varName = txtTextBox.Text
* TextChanged Event
  + Executes when the user types in the textbox
  + Use to clear answers or messages from the label
  + Create the TextChanged event
    - Design Window
      * Double click the textbox
    - Code Window
      * Select the TextBox from the Class List
      * Select TextChanged from the Method List

**MessageBox**

* Pre-set form with an OK button
* Syntax  
   MessageBox.Show (“string here”)

**Advanced Variables**

* Static Variables
  + Hold its value between runs of the program.
  + Use Static instead of Dim
  + Static variables cannot be defined globally.
  + Example  
     Static intNumber As Integer
* Constant Variables
  + A variable that once declared cannot be changed by the program.
  + Constant variables should be declared using all uppercase letters.
  + Use Const instead of Dim
  + Use all capitals for the variable name (except for the prefix)
  + Example  
     Const decTAXRATE As Decimal = 0.775
* Counter
  + A variable that is used to determine how many times something happens
  + Declare as Static
  + Example – Can set up either way  
     Counter = Counter + 1  
     Counter +=1

**Name Objects**

* Use Hungarian Notation prefixes when naming control objects
  + Form- frm (frmMain)
  + Button- btn (btnSubmit)
  + Label- lbl (lblTotal)
  + Text Box- txt (txtAge)
  + Radio Button- rad(radAdd)
  + Check box- chk (chkDivide)
  + Image- img (imgMegaMan)
  + Combo Box- cbo (cboState)
  + Picture Box- pic (picFlower)
  + List box- lst (lstState)
  + Menu- mnu (mnuFile)