Function Procedure

VB.net has many built in functions, some of which we have already used. The val( ) function is one example. Functions are passed data (input), the data is processed and output is returned. While input can involve several values, the output is always a single value.

A Function Procedure is code used to perform a common task. Functions are used when your design calls for a specific calculation or operation to be performed several times.

Functions are always declared by the return data type.

The general form of a user-defined function:

Function *procedureName* (**ByVal** *parameter1* **As** *type1*, **ByVal** *parameter2* **As** *type2*, . . .) **As** *Returntype*

> *Statement(s)*
> **Return** *value*

End Function

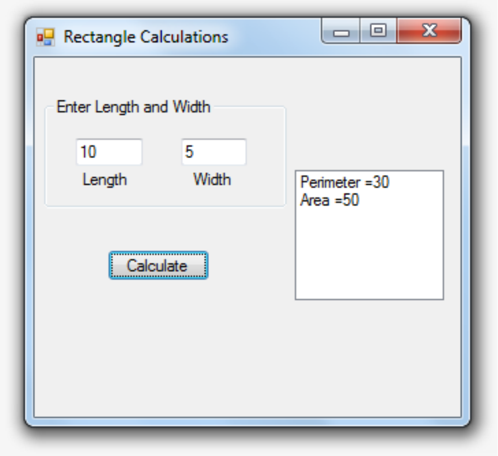
Create an application similar to the one below to calculate the area and the perimeter of a rectangle. The length and width will be input from the user. Copy and paste the code below into your btnCalculate button

```
' declare and initialize variable
Dim len, wid, area, perimeter As Integer
len = Val(TxtLength.Text)
wid = Val(TxtWidth.Text)

' calls functions
area = calculateArea(len, wid)
perimeter = calculatePerimeter(len, wid)

'output to screen
ListBox1.Items.Add("Perimeter =:" & perimeter)
ListBox1.Items.Add("Area =:" & area)
```

Your assignment is to write the **calculateArea** and **calculatePerimeter** functions. Both functions will be passed the length and the width and should return the appropriate calculation.



10
5

```
Perimeter =30
Area =50
```

```
Private Sub btnSumit_Click(sender As Object, e As EventArgs) Handles btnSumit.Click
        'declare and initialize variables
        Dim gradeEntered
        gradeEntered = Val(txtGrade.Text)

        'verify the grade entered using the gooGrade function, if it is proceed with calculation
        If goodGrade(gradeEntered) = True Then
            'output - notice the function letterGrade is being called
            ListBox1.Items.Add("Numeric grade= " & gradeEntered & " Letter grade= " &
letterGrade(gradeEntered))
        End If


    End Sub
```

Error Handling

Your assignment is to write a **checkInput** function to insure the user has input positive values for both the length and the width.. The function will be passed the length and the width, and should return a boolean value (true if the both values are positive and false if they are not).

If either of the values are negative,

- display the appropriate error message
- change the back color of the textbox to red (only the one with the negative value)

Each subsequent reentry of data should reset the textbook and the label to its original state.

. Copy and paste the code below into your btnCalculate button

```
          ' declare and initialize variable
          Dim len, wid, area, perimeter As Integer
          len = Val(TxtLength.Text)
          wid = Val(TxtWidth.Text)

     If checkInput(len, Width) = True Then
          ' calls functions
          area = calculateArea(len, wid)
          perimeter = calculatePerimeter(len, wid)

          'output to screen
          ListBox1.Items.Add("Perimeter =:" & perimeter)
          ListBox1.Items.Add("Area =:" & area)
     End If
```