

Lab 4 Due next lab period – week of May 9-12

Purpose:

1. Debug a Window Application project
2. Create a class library dll file

What to submit

1. Demo will be done in lab, in your lab section.
2. Upload your project compressed into a .zip file to the Dropbox on D2L.

Evaluation (12 marks):

1. Be prepared to demonstrate your solution at the start of next lab. If you are not ready at the start of lab or are not present, a mark of 0 will be given.
2. Your solution will be assessed based on (3 marks each):
 - correctly identifying and fixing the errors in the project. Demonstrate the working application has no syntax or run-time errors.
 - correctly creating the TrigLib.dll assembly and adding the display area functionality to the form.
 - Following coding and naming conventions
 - Correctly answering questions about your solution.
3. **All work must be individual.** Any plagiarism will result in a mark of 0 and possibly additional penalties.

Description

Download and unzip the initial buggy project **CurveDraw** from D2L into your Visual Studio projects folder. Visual Studio may convert the project for you to a newer format when you open up the **CurveDraw** project's solution file.

The **CurveDraw** application is supposed to plot four points as selected by the user using the form's four numeric up-down controls (these objects are prefixed in the VB code with nud). Default values for the four points are supplied to start. The points are connected with straight lines (the blue line) and then with a special curve (the red line), known as a cardinal *spline*, drawn based on the location of the four points. The points are defined as **Point**, a structure member of class **System.Drawing**. Right click on one of the **Point** keywords in the code and select **Go To Definition** from the context menu to see the methods and properties of the **Point** object.

The **CurveDraw** application contains several syntax errors. Perform the following steps using the Task List as a guide.

1. Correct all the syntax errors in the project. Some errors include misnamed objects, incorrect programming syntax, and improper use of symbols. Change all the PointF to Point declarations. To view the errors, select View | Error List

Error List					
10 Errors 0 Warnings 0 Messages					
	Description	File	Line	Column	Project
1	'NavyBlue' is not a member of 'System.Drawing.Color'.	Form1.vb	6	32	CurveDraw
2	'radLoop' is not declared. It may be inaccessible due to its protection level.	Form1.vb	16	12	CurveDraw
3	Syntax error.	Form1.vb	23	9	CurveDraw
4	Character is not valid.	Form1.vb	28	50	CurveDraw
5	'Private Sub NumericUpDown2_ValueChanged(sender As Object, e As System.EventArgs)' has multiple definitions with identical signatures	Form1.vb	42	17	CurveDraw

2. Provide additional functionality to the application so that while the check box is checked (and the shape is a closed triangle), the area of the given triangle is provided (rounded to the nearest integer value) in a label on the form. If the check box is not checked, no area values should be displayed on the form.

Make a new, separate Windows project called **TrigLib** (select the **Class Library** template not Windows Forms Application) to create a **TrigLib.dll** file, which contains the **AreaFunction**. This project will not create a Windows application – just a class .DLL file – so you won't be able to run **TrigLib** as a standalone, you just need to build the .DLL file. See below for the VB source code to the **TrigLib** class file. To use the TrigLib function, create a Triglib object, and call the function:

```
` Create the TrigLib object.
Dim g as TrigLib = New TrigLib.TrigLib
g.AreaTriangle(New Point(0,0), _
               New Point(0,0), _
               New Point(0,0) )
```

You will need to add References to this project to make it work: a Reference to **System.Drawing** so that **Point** objects are understood (from the menu click Project, Add Reference, select the .NET tab and scroll down to the **System.Drawing** Reference) and a Reference to the **TrigLib** (from the menu click **Project** | Add Reference, select the Browse tab and browse to where the TrigLib.dll is stored in the project's bin folder).

```
1 Imports System.Drawing
2 Public Class TrigLib
3     Dim p1 As Point
4     Private Function Distance(ByVal P1 As Point, _
5                               ByVal P2 As Point) As Single
6         Return Math.Sqrt((P1.X - P2.X) ^ 2 + (P1.Y - P2.Y) ^ 2)
7     End Function
8
9     Public Function AreaTriangle(ByVal P1 As Point, _
10                                ByVal P2 As Point, _
11                                ByVal P3 As Point) As Double
12         Dim sideA As Single
13         Dim sideB As Single
14         Dim sideC As Single
15
16         sideA = Distance(P1, P2)
17         sideB = Distance(P1, P3)
18         sideC = Distance(P2, P3)
19
20         Dim s As Single
21
22         s = (sideA + sideB + sideC) / 2.0
23
24         Return Math.Sqrt(s * (s - sideA) * _
25                           (s - sideB) * _
26                           (s - sideC))
27     End Function
28 End Class
```

It may be necessary for you to define the Project's build Framework as version 4.0 (or later) if it is not already set. In the Solution Explorer panel right click on the top CurveDraw project name and select the properties option from the context menu.

