

Introduction to Computer and Information Science

CIS 110, Fall 2015

Project 10

For this project, use Visual Basic to create a temperature conversion program. The following instructions provide all of the details on how to create this program. Section 1 is worth 10 points, and Section 2 is worth 5 points.

Section 1

1. Visual Basic is installed on the computers in the CIS computer lab (Building 19, Room 124). Follow the lab instructions on how to sign on to the computers in the lab. The user name is “cisstudent”. Check with the lab assistants to learn the current password.
2. Start Visual Basic.
3. Select “File > New Project” to start a new project.
4. Select “Windows Forms Application” and click the OK button.
5. Add a **group box** to the form. Note: The group box control is located in the “Containers” section of controls.
6. Change the text property of the group box to “Conversion type”.
7. Add 2 **radio buttons** to the form, and make sure to place them inside of the group box.
8. Change the text property of the radio buttons as follows:

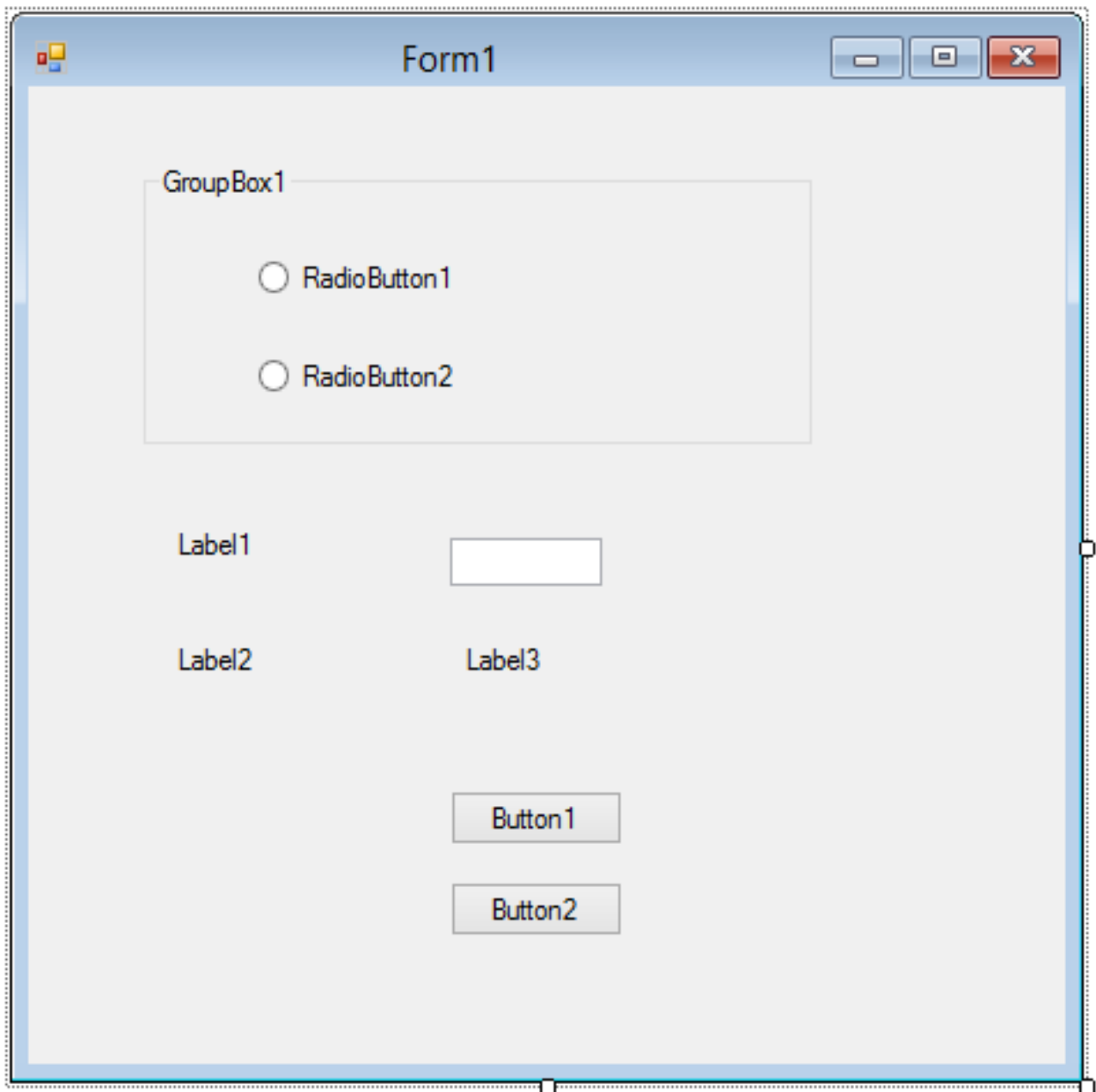
<u>Button</u>	<u>Text property</u>
RadioButton1	Fahrenheit to Celsius
RadioButton2	Celsius to Fahrenheit

9. Add 2 **labels** to the form (below the group box).
10. Add 2 **buttons** to the form (below the labels).
11. Change the text property of the buttons as follows:

<u>Button</u>	<u>Text property</u>
Button1	Calculate
Button2	End

12. Add a **text box** to the form (to the right of Label1).
13. Add a third label to the form (to the right of Label2). Change the text property of this label to blanks.

Here is the general layout of the form.



The screenshot shows a Windows Form titled "Form1" with a standard Windows XP-style title bar (minimize, maximize, close buttons). The form contains the following controls:

- A **GroupBox1** container in the upper left area, containing two radio buttons:
 - RadioButton1**
 - RadioButton2**
- Label1** and an empty text box are positioned in the middle left area.
- Label2** and **Label3** are positioned below Label1, with Label3 to the right of Label2.
- Button1** and **Button2** are positioned at the bottom center of the form, one above the other.

14. Double click **RadioButton1**. This will display the code window.
15. In the code window, move the cursor to the top of the code. Immediately below the "**Public Class** Form1" line, add the following 3 lines of code to define 3 variables:

```
Dim c As Single  
Dim f As Single  
Dim type As Char
```

16. Move the cursor to the line below the “`Private Sub RadioButton1_CheckedChanged`” line, and add the following 3 lines of code to define the text property for the labels:

```
type = "C"  
Label1.Text = "Enter Fahrenheit temperature"  
Label2.Text = "The Celsius temperture is"
```

17. Return to the form window.

18. Double click `RadioButton2`.

19. Add the following 3 lines of code:

```
type = "F"  
Label1.Text = "Enter Celsius temperature"  
Label2.Text = "The Fahrenheit temperature is"
```

20. At this point, your code should look like this:

```
Public Class Form1  
    Dim c As Single  
    Dim f As Single  
    Dim type As Char  
  
    Private Sub RadioButton1_CheckedChanged(ByVal sender As  
        System.Object, ByVal e As System.EventArgs) Handles  
            RadioButton1.CheckedChanged  
        type = "C"  
        Label1.Text = "Enter Fahrenheit temperature"  
        Label2.Text = "The Celsius temperture is"  
    End Sub  
  
    Private Sub RadioButton2_CheckedChanged(ByVal sender As  
        System.Object, ByVal e As System.EventArgs) Handles  
            RadioButton2.CheckedChanged  
        type = "F"  
        Label1.Text = "Enter Celsius temperature"  
        Label2.Text = "The Fahrenheit temperature is"  
    End Sub  
  
End Class
```

21. Return to the form window.

22. Double click `Button1`.

23. Add the following code to make the appropriate conversion calculation:

```
Select Case type
    Case "C"
        f = Val(TextBox1.Text)
        c = (f - 32) / 1.8
        Label3.Text = Str(c)
    Case "F"
        c = Val(TextBox1.Text)
        f = c * 1.8 + 32
        Label3.Text = Str(f)
End Select
```

24. Return to the form window.
25. Double click Button2 and add the following code:
- ```
End
```
26. You are now ready to test your program. Press the F5 key. When the program screen appears, click on the radio buttons and watch the appropriate text appear. Enter some test data and click the “Calculate” button. The answer will be displayed.
27. Click the “End” button on the program screen.

## Section 2

Add the option to convert from Celsius to Kelvin. The Kelvin temperature is equal to the Celsius temperature plus 273.15.

Here is a checklist of what you will need to do:

- Add a radio button for this option (inside the group box)
- Add code for the radio button (similar to step 16 above)
- Define a variable at the beginning of the code (use “k” as the variable name)
- Add code for the “Calculate” button

Test your program to make sure the new option works correctly.

## Summary section

- Return to the code window.
- Select “File > Print” and print a copy of your code.
- Go to the window that displays your form.

4. Press the CTRL and PRINT SCREEN keys at the same time. (This takes a “screen shot” and places it on the Windows clipboard.)
- e. From the Windows Start menu, locate Microsoft Office, and start Microsoft Word.
6. In Microsoft Word, press the CTRL and V keys at the same time. (This takes the contents of the Windows clipboard and pastes it into the Word document.)
7. Print a copy of this page.
8. When you are done, make sure to sign out of the “cisstudent” ID. This is a very important step!

Expected project length: 2 pages (one for the Visual Basic code, one for the screen shot). Make sure that the pages are stapled or bound together in a report folder. **Multiple, loose sheets of paper will not be accepted.**

Remember to include your name, the date, and the project number at the top of your project.

Projects may not be submitted via email.

Due date: December 7