

A201/ A505 Laboratory Session #8

LAB GOALS

To learn how to use advanced VB controls such as: (Radio Buttons, Check Boxes, Group Boxes, and Text Boxes).

In addition, we will review arithmetic calculation, IF statement, type conversion, user defined sub-programs, and formatting statement.

Step 1: Create a new project named "CheckBoxes". Once the main form is displayed, create the following interface. Make sure to save your new project in your A201 or A505 folder.

2 GroupBoxes, 2 Radio Buttons, 3 Checkboxes, 8 TextBoxes, 2 Buttons, and 3 Labels.

GroupBoxes: GroupBoxSandwich,
 GroupBoxCondiments

RadioButtons: RadioButtonChicken,
 RadioButtonRoastBeef

CheckBoxes: CheckBoxCheese,
 CheckBoxKetchup,
 CheckBoxLettuce

TextBoxes: TextBoxChicken,
 TextBoxRoastBeef,
 TextBoxCheese,
 TextBoxKetchup,
 TextBoxLettuce,
 TextBoxSandwich,
 TextBoxCondiments,
 TextBoxTotalPrice

Buttons: BtnTotal, BtnQuit



Also, make sure to create the GroupBoxes first, before placing the RadioButtons and Checkboxes on them. This way the RadioButtons and Checkboxes will be attached to their appropriate GroupBoxes and compose a single group of related RadioButtons, and Checkboxes.

Finally, load the price for each sandwich and condiment in its appropriate TextBox.

Step 2: Double click the Quit button and write the code that allows your program to properly exit. Also to invoke strong type checking by the compiler, don't forget to add the following two lines at the beginning of the program:

```
Option Explicit On
Option Strict On
```

Run: Compile and Run your program. If your program does not compile, fix the syntax errors and compile the program again. Once you are able to successfully run the program, check to see if the RadioButtons, CheckBoxes and the Quit button work properly. Radio Buttons are designed to allow the user to make mutually exclusive selections. In other words, when you press one button, the others should be deselected. Verify this before you move to the next step. CheckBoxes are designed to allow the user to make multiple selections. In other words, in our application (above) the user should be able to select one or more condiments at the same time. Verify this before you move to the next step.

Step 3: In this step, we would like to assign some functionality to our Radio buttons. When a Radio Button is clicked, (e.g. a Chicken sandwich is selected) we would like to transfer the price of the corresponding sandwich to the Sandwich TextBox. To write the event handler for the RadioButtonChicken, double click the radio button, and enter the highlighted code in the event handler.

```
Private Sub RadioButtonChicken_CheckedChanged(ByVal sender As System.Object, ByVal e As
                                             System.EventArgs) Handles
                                             RadioButtonChicken.CheckedChanged
    TextBoxSandwich.Text = TextBoxChicken.Text
End Sub
```

Similar code must be developed for the second Radio button (The roast beef sandwich).

NOTE: The event handler for all the radio buttons execute the same code and are identical. Later we will learn how one event handler can be used to handle multiple events.

Run: Compile and Run your code to see if it runs properly. Click on each of the RadioButtons to see if it will place the proper price into the sandwich TextBox.

Step 4: Now, we turn our attention to the Condiment checkboxes. The user is allowed to select zero or more condiments on their sandwich. When a CheckBox is selected we must add the price of the corresponding condiment to the price of the Condiment TextBox. In other words, each time a CheckBox is clicked (checked or unchecked), we must recalculate the price in the Condiment TextBox. To write the event handler for these CheckBoxes, we must double click each checkbox and enter the highlighted code in the event handler. The code Calculate_Condiment_Price() simply calls another sub program to perform the calculation. (See below)

```
' If the Cheese Checkbox is Checked, recalculate the Condiment Price
Private Sub CheckBoxCheese_CheckedChanged(ByVal sender As System.Object, ByVal e As
                                             System.EventArgs) Handles CheckBoxCheese.CheckedChanged
    Calculate_Condiment_Price()
End Sub
```

A similar event handler must be developed for the other (Ketchup and Lettuce) condiments. Note that the event handler for all three condiments simply call the Calculate_Condiment_Price() sub procedure (shown below) to do the actual work.

```
' This sub procedure will check to see if the Condiment CheckBoxes are checked off.
' If so, it will calculate the total price of condiments selected by the user.

Private Sub Calculate_Condiment_Price()

    Dim CondimentPrice As Double = 0.0

    If CheckBoxCheese.Checked = True Then
        CondimentPrice = CondimentPrice + Cdbl(TextBoxCheese.Text)
    End If

    If CheckBoxKetchup.Checked = True Then
        CondimentPrice = CondimentPrice + Cdbl(TextBoxKetchup.Text)
    End If

    If CheckBoxLettuce.Checked = True Then
        CondimentPrice = CondimentPrice + Cdbl(TextBoxLettuce.Text)
    End If

    TextBoxCondiments.Text = Format(CondimentPrice, "C") ' Convert to Currency

End Sub
```

Run: Compile and Run your code to see if it runs properly. Click on each of the CheckBoxes to see if the proper price is placed into the Condiment TextBox.

Step 5: Finally, we must develop the code to calculate the Total Price for the selected sandwich and condiments. Double Click the Total Button to write the event handler for this button.

```
' This event handler will total the price of the sandwich and condiments and convert it to currency
Private Sub ButtonTotal_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
    Handles ButtonTotal.Click

    Dim Total As Double

    Total = Cdbl(TextBoxSandwich.Text()) + Cdbl(TextBoxCondiments.Text())

    TextBoxTotalPrice.Text = Format(Total, "C")           ' Convert to Currency

End Sub
```

Run: Compile and Run your code to see if it runs properly. Put yourself in place of a naive user and test the program. Did you find any problems?

Discussion: (Improving our code)

- Try clicking the Total button before selecting a sandwich or condiments. What happened? How do you fix this?
- Now try selecting a sandwich and a couple of condiments, and then click the Total button. Verify that the total price is accurately calculated. Now simply select the other sandwich, note that the price of the sandwich in the Sandwich TextBox is updated, however the Total price is not. How do you fix this?