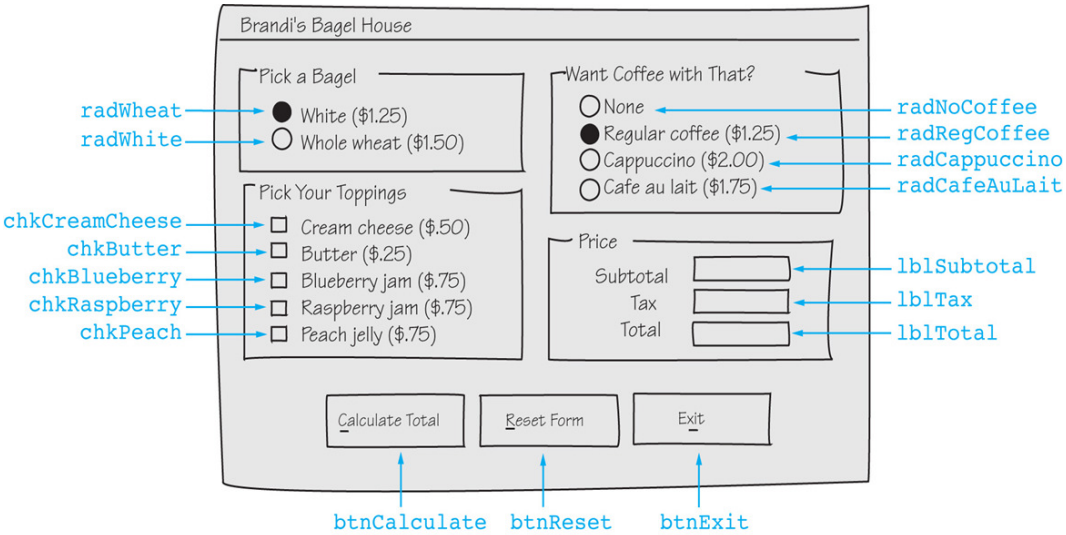
Lecture 16 In-class Lab

Name:_____

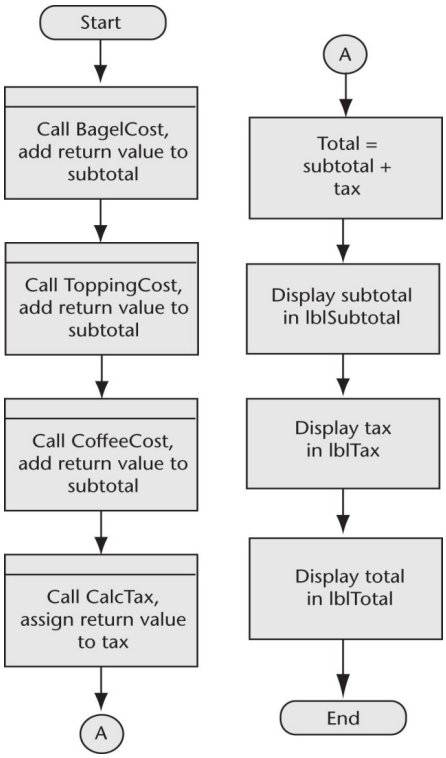
Part A: Implementing Procedures and Functions: You will be working through tutorial 6-7 in the textbook (p. 395). You can refer to the textbook for detail directions, but you might be able to get by with the following outline. Your task is to write a simple application to allow the user to enter their choice of bagel, toppings, and drink with the output being the calculated subtotal, tax, and total price. The application should look like the figure:



1) Copy the "starter" code with the VB form already layed out as shown from P:\Math-CS\810-030\common\Tutorial_6-7_Starter to the **Desktop** or download it from the web at http://www.cs.uni.edu/~fienup/cs030f09/lectures/Tutorial_6-7_Starter.zip

2) Open this project in VB.

3) User defined procedures/functions allow the programmer to split the problem into smaller, more managable steps. For example, when the "Calculate Total" button (btnCalculate) is clicked we need to do a sequence of steps:



Here: BagelCost, ToppingCost, CoffeeCost are all calls to user-defined functions that examine their respective group of radio buttons and return the corresponding price.

The pseudocode for the BagelCost function is as follows:

If radWhite Is Selected Then
    cost of bagel = 1.25
Else
    cost of bagel = 1.50
End If
Return cost of bagel

You are to complete the VB application by writing the code to implement the procedures and functions. The code is attached, but don't just type it. Instead, think about the code and try to write as much code as possible on your own.

At the end of class, you should copy the application from the Desktop to your P: drive folder and/or to a USB flash drives.

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Name:_____

```
Public Class Form1
      Inherits System.Windows.Forms.Form
      ' This application calculates the total order for a bagel and coffee
      ' at Brandi's Bagel house. The application uses several functions
      ' to calculate the total cost.

      Const decTAX_RATE As Decimal = 0.06D             ' Sales tax rate

      Private Sub btnCalculate_Click(ByVal sender As System.Object, _
            ByVal e As System.EventArgs) Handles btnCalculate.Click
            ' This procedure calculates the total of an order.

            Dim decSubtotal As Decimal       ' Holds the order subtotal
            Dim decTax As Decimal            ' Holds the sales tax
            Dim decTotal As Decimal          ' Holds the order total

            decSubtotal = BagelCost() + ToppingCost() + CoffeeCost()
            decTax = CalcTax(decSubtotal)
            decTotal = decSubtotal + decTax

            lblSubtotal.Text = decSubtotal.ToString("c")
            lblTax.Text = decTax.ToString("c")
            lblTotal.Text = decTotal.ToString("c")

      End Sub

      Private Sub btnReset_Click(ByVal sender As System.Object, _
            ByVal e As System.EventArgs) Handles btnReset.Click
            ' This procedure resets the controls to default values.

            ResetBagels()
            ResetToppings()
            ResetCoffee()
            ResetPrice()

      End Sub

      Private Sub btnExit_Click(ByVal sender As System.Object, _
            ByVal e As System.EventArgs) Handles btnExit.Click

            ' End the application
            Me.Close()

      End Sub

      Function BagelCost() As Decimal
            ' This function returns the cost of the bagel.

            If radWhite.Checked = True Then
                  Return 1.25D
            Else
                  Return 1.5D
            End If

      End Function
```

```
Function ToppingCost() As Decimal
      ' This function returns the cost of the toppings.

      Dim decCostOfTopping As Decimal = 0D

      If chkCreamCheese.Checked = True Then
            decCostOfTopping += 0.5D
      End If
      If chkButter.Checked = True Then
            decCostOfTopping += 0.25D
      End If
      If chkBlueberry.Checked = True Then
            decCostOfTopping += 0.75D
      End If
      If chkRaspberry.Checked = True Then
            decCostOfTopping += 0.75D
      End If
      If chkPeach.Checked = True Then
            decCostOfTopping += 0.75D
      End If

      Return decCostOfTopping

End Function

Function CoffeeCost() As Decimal
      ' This function returns the cost of the
      ' selected coffee.

      If radNoCoffee.Checked Then
            Return 0
      ElseIf radRegCoffee.Checked = True Then
            Return 1.25D
      ElseIf radCappuccino.Checked = True Then
            Return 2
      ElseIf radCafeAuLait.Checked = True Then
            Return 1.75D
      End If

End Function

Function CalcTax(ByVal decAmount As Decimal) As Decimal
      ' This function receives the sale amount. It
      ' calculates and returns the sales tax, based
      ' on the sale amount.

      Return decAmount * decTAX_RATE

End Function

Private Sub ResetBagels()
      ' This procedure resets the bagel selection.

      radWhite.Checked = True

End Sub

Sub ResetToppings()
      ' This procedure resets the topping selection.

      chkCreamCheese.Checked = False
      chkButter.Checked = False
      chkBlueberry.Checked = False
      chkRaspberry.Checked = False
      chkPeach.Checked = False

End Sub
```

```
    Sub ResetCoffee()
        ' This procedure resets the coffee selection.

        radRegCoffee.Checked = True

    End Sub

    Sub ResetPrice()
        ' This procedure resets the price.

        lblSubtotal.Text = String.Empty
        lblTax.Text = String.Empty
        lblTotal.Text = String.Empty

    End Sub

End Class
```