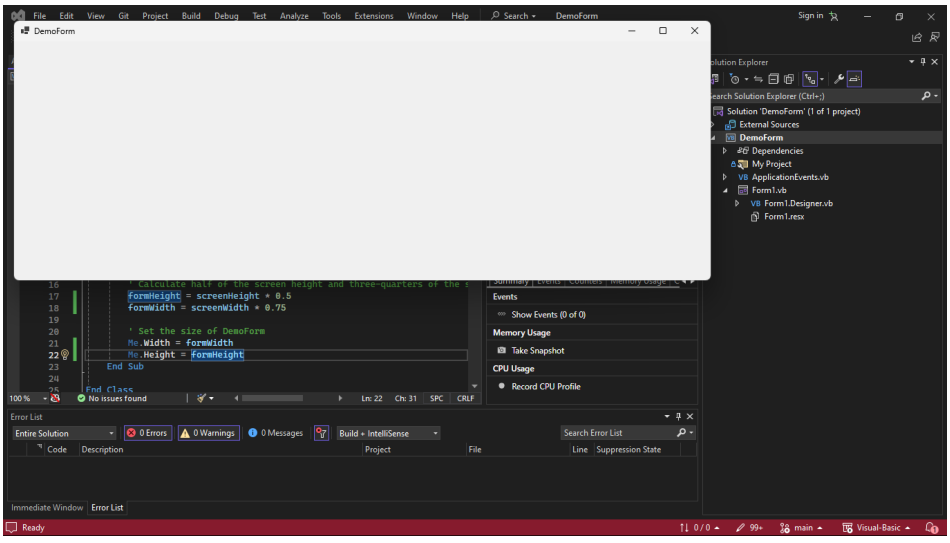
GROUP 6 & 13

BIT 2118 ASSIGNMENT

APPLICATION PROGRAMMING 1

1. Write a sub procedure in Visual Basic that sets the vertical and horizontal sizes of a form named DemoForm to half the vertical size of the screen and to three-quarters the horizontal size of the screen respectively.

```
Public Class DemoForm
    Private Sub DemoForm_Load(sender As Object, e As EventArgs) Handles MyBase.Load
        ResizeDemoForm()
    End Sub

    Public Sub ResizeDemoForm()
        Dim screenWidth As Integer
        Dim screenHeight As Integer
        Dim formHeight As Integer
        Dim formWidth As Integer

        ' Get the dimensions of the screen
        screenWidth = Screen.PrimaryScreen.Bounds.Width
        screenHeight = Screen.PrimaryScreen.Bounds.Height

        ' Calculate half of the screen height and three-quarters of the screen width
        formHeight = screenHeight * 0.5
        formWidth = screenWidth * 0.75

        ' Set the size of DemoForm
        Me.Width = formWidth
        Me.Height = formHeight
    End Sub

End Class
```



2. Write a program that can be used to generate and display the following multiplication table in a text box control. Don't use arrays

Multiplication Table

** 1 2 3 4 5 6 7*

1 1 2 3 4 5 6 7

2 2 4 6 8 10 12 14

3 3 6 9 12 15 18 21

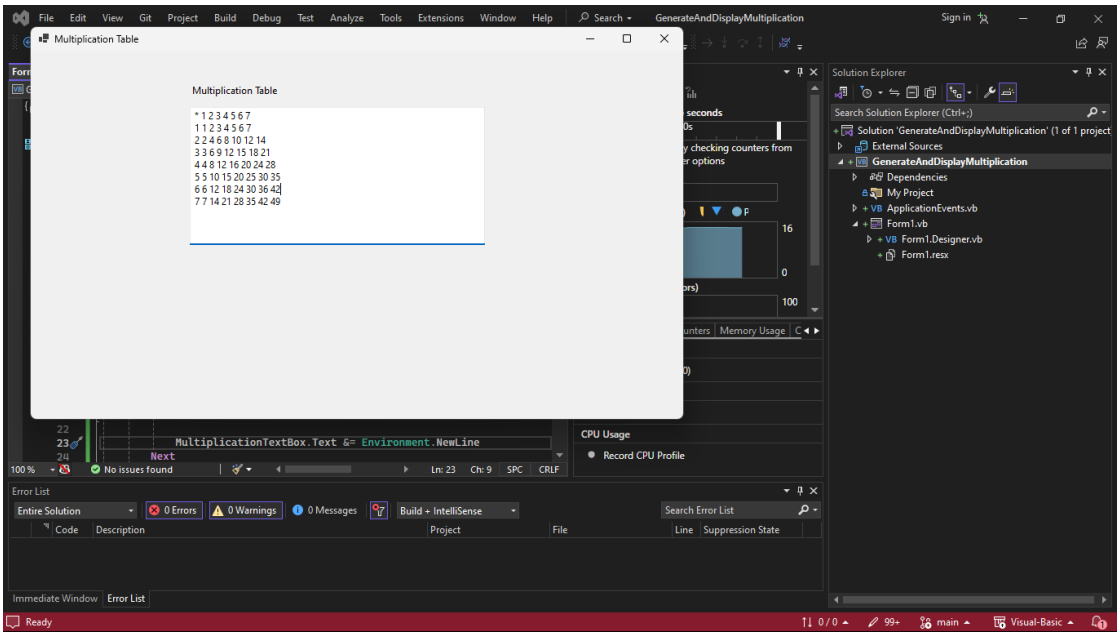
4 4 8 12 16 20 24 28

5 5 10 15 20 25 30 35

6 6 12 18 24 30 36 42

7 7 14 21 28 35 42 49

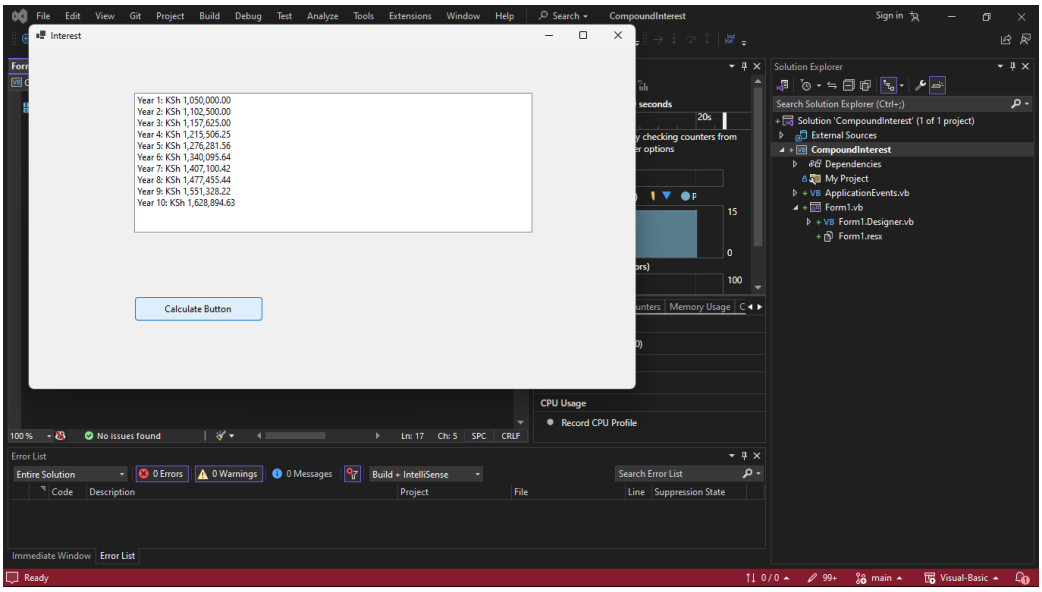
```
Public Class MultiplicationTableForm
  Private Sub MultiplicationTableForm_Load(sender As Object, e As EventArgs) Handles MyBase.Load

    GenerateMultiplicationTable()

  End Sub


  Public Sub GenerateMultiplicationTable()
    MultiplicationTextBox.Text = String.Empty

    MultiplicationTextBox.Text &= "* 1 2 3 4 5 6 7" & Environment.NewLine

    For i As Integer = 1 To 7
      MultiplicationTextBox.Text &= i.ToString()

      For j As Integer = 1 To 7
        MultiplicationTextBox.Text &= " " & (i * j).ToString()
      Next

      MultiplicationTextBox.Text &= Environment.NewLine
    Next
  End Sub


End Class
```



3. A person invests KSh 1000000 in a savings account yielding 5 percent interest. Assuming that all interest is left on the deposit in the account, Calculate and display in a list box the amount of money in the account at the end of each year for 10 years. Use the following formula for determining these amounts: A=P (1+R) n Where P is the original amount invested R is the annual interest rate n is number of years A is the amount of deposit at the end of the nth year

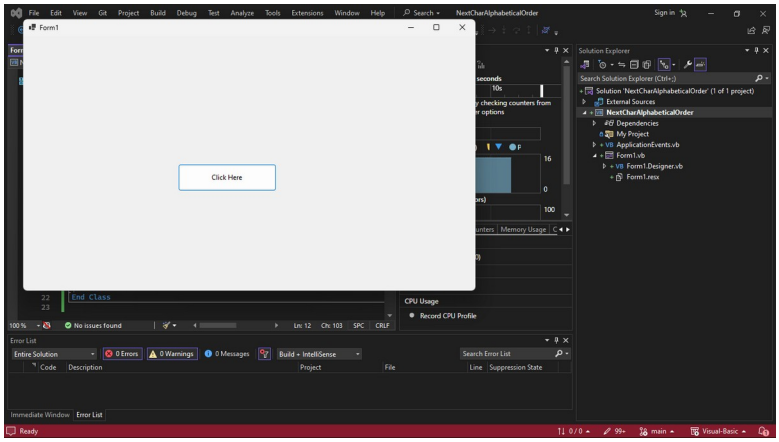
```
Public Class Form1
    Private Sub CalculateButton_Click(sender As Object, e As EventArgs) Handles CalculateButton.Click

        ' Clear the list box
        InterestListBox.Items.Clear()

        Const principal As Decimal = 1000000
        Const annualInterestRate As Decimal = 0.05

        ' Calculate and display the amount for each year
        For CurrentYear = 1 To 10
            Dim amount As Decimal = principal * (1 + annualInterestRate) ^ CurrentYear
            InterestListBox.Items.Add($"Year {CurrentYear}: KSh {amount:N2}")
        Next
    End Sub
```

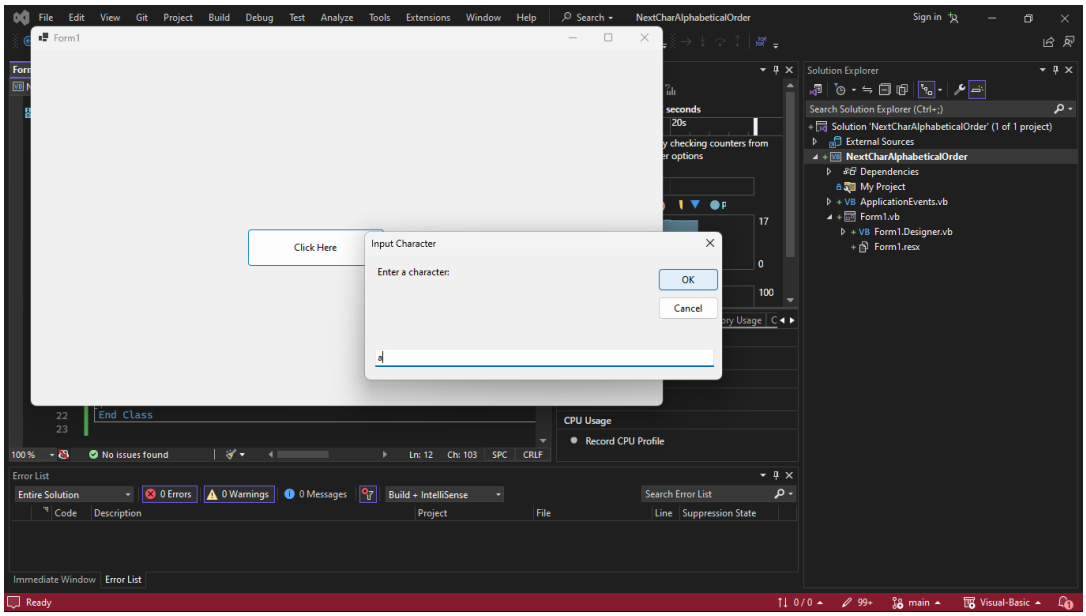
```
End Class
```

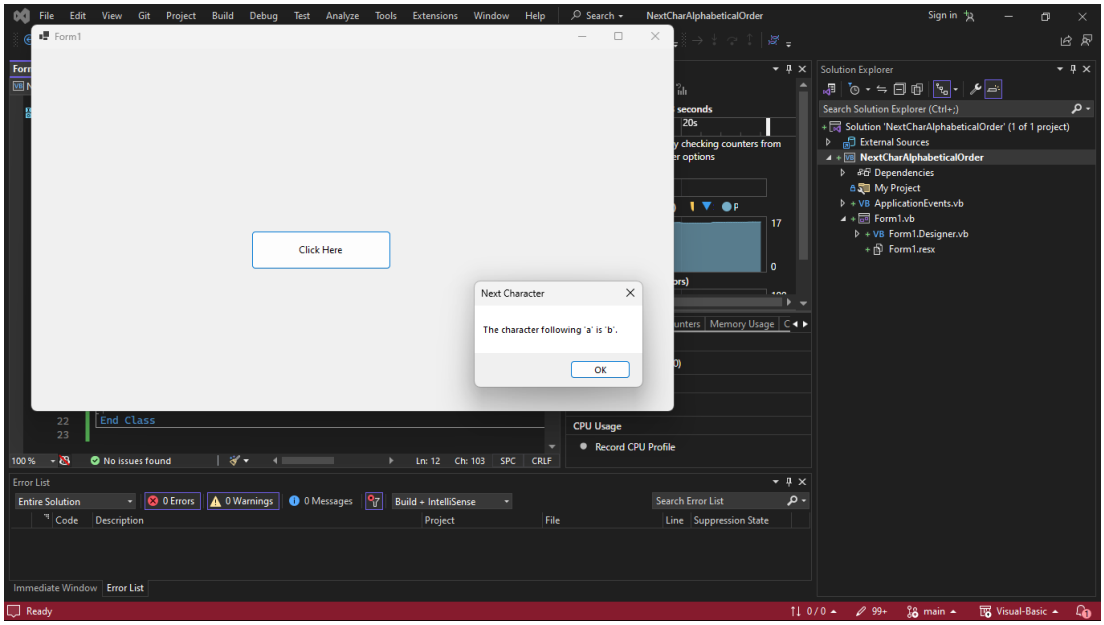


4. Write a Visual Basic program that incorporates a function to return the character which follows the input character according to the ASCII table. For example, if the user specifies "A", the function has to return "B". No error checking necessary. Use inputbox dialog for inputs and messagebox dialog for outputs perform the task after a click of a button.

```
Public Class Form1
    Private Sub GetNextCharacterButton_Click(sender As Object, e As EventArgs) Handles
GetNextCharacterButton.Click
        ' Prompt the user to input a character
        Dim userInput As String = InputBox("Enter a character:", "Input Character")

        ' Check if the user input is not empty
        If Not String.IsNullOrEmpty(userInput) Then
            ' Call the function to get the next character
            Dim nextCharacter As Char = GetNextCharacter(userInput)

            ' Display the result using MessageBox
            MessageBox.Show($"The character following '{userInput}' is '{nextCharacter}'.", "Next Character")
        End If
    End Sub

    Private Function GetNextCharacter(inputChar As Char) As Char
        Dim nextAsciiValue As Integer = Asc(inputChar) + 1

        Dim nextCharacter As Char = Chr(nextAsciiValue)
        Return nextCharacter
    End Function
End Class
```







5. Write a program that uses a progress bar and a timer control to simulate a lengthily process. The current percentage progress of the progress bar should be indicated in a label control. Design your graphical user interface and write down the properties that you would set for all the controls in the GUI and their values.

PROPERTIES:

Form:

Name: `ProgressForm`

Text: "Progress Simulation"

Size: Width = 400, Height = 200

Progress Bar Control

Name: ProgressBar1

Position: (Left = 50, Top = 50)

Size: Width = 300

Minimum: 0

Maximum: 100

Value: 0

Label Control

Name: ProgressLabel

Position: (Left = 180, Top = 100)

Text: "Progress: 0%"

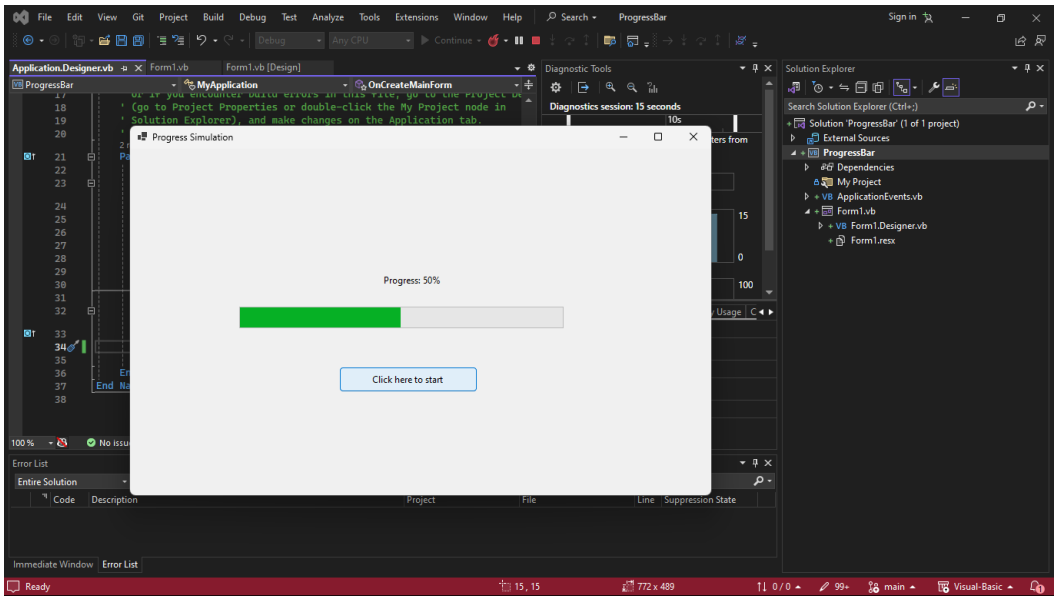
Timer Control:

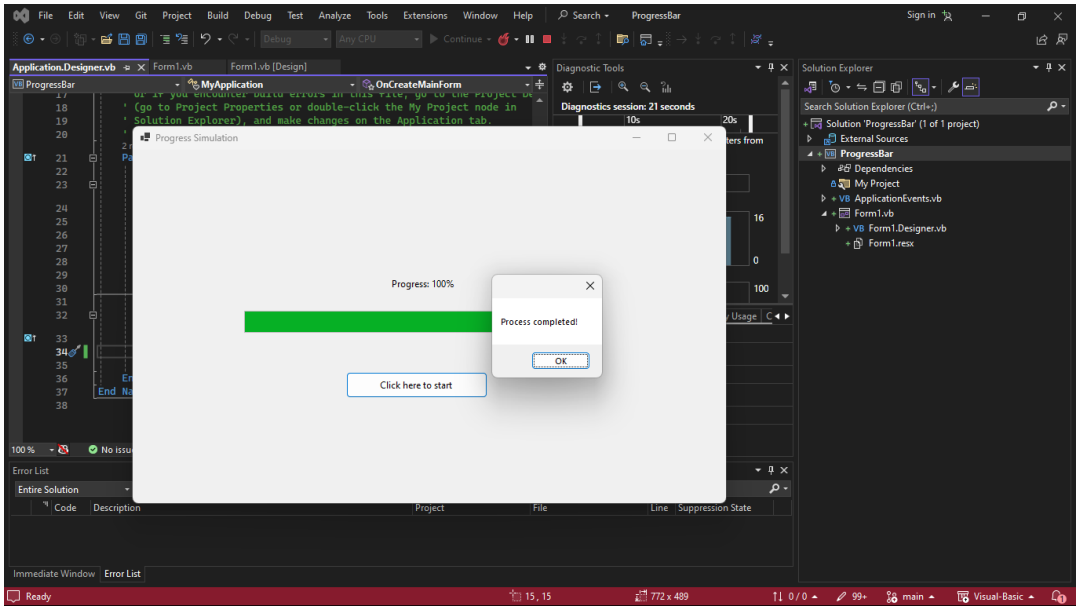
Name: SimulationTimer

Enabled: False

Interval: 1000 (1 second)

```
Public Class Form1
    Private Sub SimulationTimer_Tick(sender As Object, e As EventArgs) Handles SimulationTimer.Tick
        ProgressBar1.Value += 10

        Label1.Text = "Progress: " & ProgressBar1.Value & "%"

        ' Check if progress reaches 100%
        If ProgressBar1.Value = 100 Then
            ' Stop the timer
            SimulationTimer.Enabled = False
            MessageBox.Show("Process completed!")
        End If
    End Sub

    Private Sub StartButton_Click(sender As Object, e As EventArgs) Handles StartButton.Click
        SimulationTimer.Enabled = True

    End Sub
End Class
```

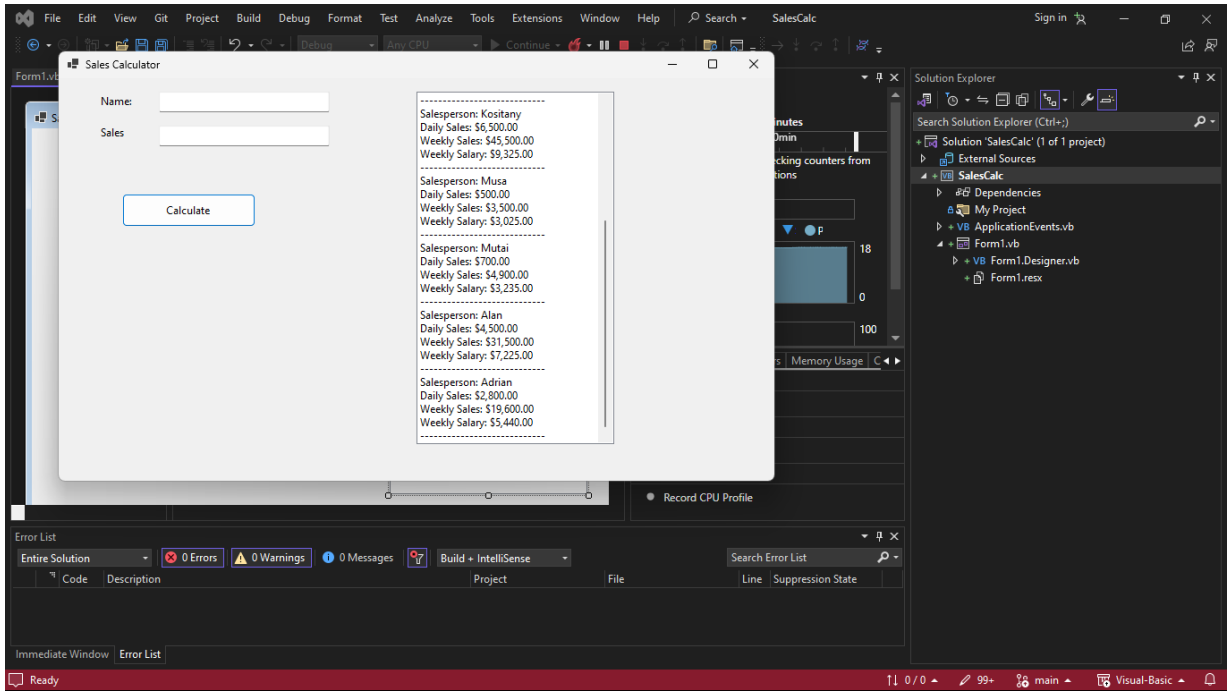


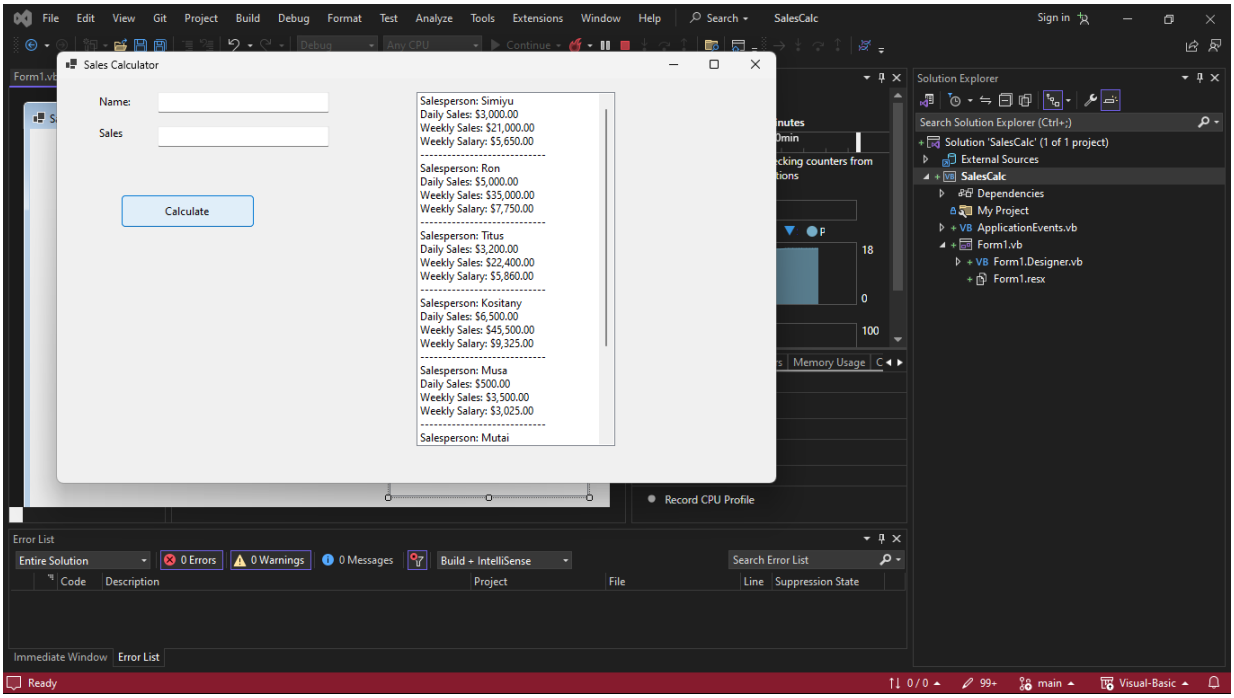


*6. A salesperson earns a weekly base salary plus a commission when sales are at above quota. Using arrays, write a Visual Basic program that allows the user to input the salesperson name and the daily sales, and then calculates the weekly sale and the commission for ten salespersons. The commission is paid if the weekly sale is greater than the set quota. Your program should display the salesperson name, daily sales, weekly sales and weekly salary using a list box control. Use constants to establish the weekly base pay, the quota, and the commission rate as 2500, 1000 and 0.15 respectively. Commission is calculated as shown below. Design your GUI. Commission = Commission_rate * Weekly_sale*

```
Public Class SalesCalculatorForm
    Const weeklyBasePay As Decimal = 2500
```

```
    Const quota As Decimal = 1000
    Const commissionRate As Decimal = 0.15

    Private Sub CalculateButton_Click(sender As Object, e As EventArgs) Handles CalculateButton.Click
        Dim salespersonName As String = NameTextBox.Text
        Dim dailySales As Decimal

        If Decimal.TryParse(SalesTextBox.Text, dailySales) Then
            Dim weeklySales As Decimal = dailySales * 7
            Dim weeklySalary As Decimal = weeklyBasePay

            If weeklySales > quota Then
                Dim commission As Decimal = commissionRate * weeklySales
                weeklySalary += commission
            End If

            ResultListBox.Items.Add($"Salesperson: {salespersonName}")
            ResultListBox.Items.Add($"Daily Sales: {dailySales:C}")
            ResultListBox.Items.Add($"Weekly Sales: {weeklySales:C}")
            ResultListBox.Items.Add($"Weekly Salary: {weeklySalary:C}")
            ResultListBox.Items.Add("----------------------------")
        Else
            MessageBox.Show("Invalid input for daily sales. Please enter a valid number.", "Error",
MessageBoxButtons.OK, MessageBoxIcon.Error)
        End If

        ' Clear input fields after calculation
        NameTextBox.Clear()
        SalesTextBox.Clear()
    End Sub
End Class
```


Sales Calculator
Name:
Sales
Calculate
Salesperson: Kositany
Daily Sales: $6,500.00
Weekly Sales: $45,500.00
Weekly Salary: $9,325.00
Salesperson: Musa
Daily Sales: $500.00
Weekly Sales: $3,500.00
Weekly Salary: $3,025.00
Salesperson: Mutai
Daily Sales: $700.00
Weekly Sales: $4,900.00
Weekly Salary: $3,235.00
Salesperson: Alan
Daily Sales: $4,500.00
Weekly Sales: $31,500.00
Weekly Salary: $7,225.00
Salesperson: Adrian
Daily Sales: $2,800.00
Weekly Sales: $19,600.00
Weekly Salary: $5,440.00
Solution Explorer
Solution 'SalesCalc' (1 of 1 project)
SalesCalc
Form1.vb
Form1.Designer.vb
Form1.resx
Error List
Ready


Sales Calculator
Name:
Sales
Calculate
Salesperson: Simiyu
Daily Sales: $3,000.00
Weekly Sales: $21,000.00
Weekly Salary: $5,650.00
Salesperson: Ron
Daily Sales: $5,000.00
Weekly Sales: $35,000.00
Weekly Salary: $7,750.00
Salesperson: Titus
Daily Sales: $3,200.00
Weekly Sales: $22,400.00
Weekly Salary: $5,860.00
Salesperson: Kositany
Daily Sales: $6,500.00
Weekly Sales: $45,500.00
Weekly Salary: $9,325.00
Salesperson: Musa
Daily Sales: $500.00
Weekly Sales: $3,500.00
Weekly Salary: $3,025.00
Salesperson: Mutai
Solution Explorer
Solution 'SalesCalc' (1 of 1 project)
SalesCalc
Form1.vb
Form1.Designer.vb
Form1.resx
Error List
Ready