Worksheet 8

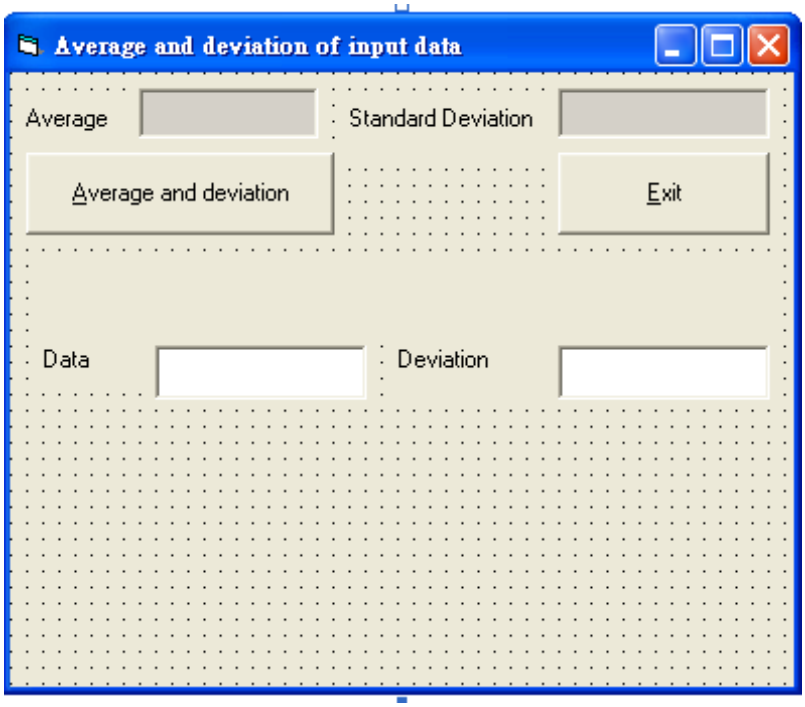
8.1 Try to walkthrough the following program and write down the expected results. Key-in the program and compare the results after execution. This program helps you to understand the use of one-dimensional arrays.

Step 1: *Create a form with two command buttons, three labels, two text boxes, two arrays of text boxes and two arrays of labels according to the properties table below*

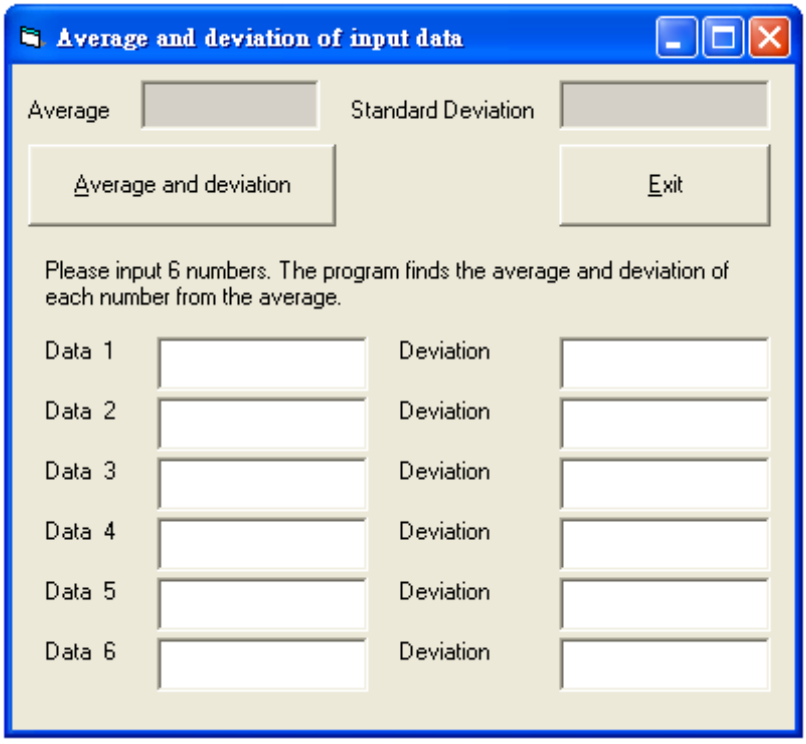
Properties Table

Object	Property	Setting
Form	Name Caption	frmDeviation Average and deviation of input data
Label	Name Caption	lblAverage Average.
Label	Name Caption	lblSD Standard Deviation
Label	Name Caption	lblMessage
Text box	Name Text Background color Font ForeColor	txtAverage (empty) &H80000000& Arial red
Text box	Name Text Background color Font ForeColor	txtSD (empty) &H80000000& Arial red
Command Button	Name Caption	cmdCompute &Average and deviation
Command Button	Name Caption	cmdExit &Exit
Array of labels	Name Caption Index	lblData Data 0
Array of labels	Name Caption Index	lblDeviation Deviation 0
Array of text boxes	Name Text Index	txtData (empty) 0
Array of text boxes	Name Text Index	txtDeviation (empty) 0

Layout



Only the first elements of the arrays are created during design time and the remaining elements are created at run time. Suppose the user requests six input data at run time, the form will appear as follows.



Step 2 : *Declare a form variable NumOfdata and add codes for the procedure Form_Load*

```
Dim NumOfData As Single

Private Sub Form_Load()
    Dim i As Integer
    Prompt = “Enter the number of data (1 - 20) to be inputed"
        NumOfData = Val(InputBox(Prompt, "Number of data"))
        lblMessage.Caption = "Please input " & NumOfData _ &
                             " numbers. The program finds the average " _
                             & "and deviation of each number from the average."
    For i = 1 To NumOfData - 1
        Load lblData(i)
        Load lblDeviation(i)
        Load txtData(i)
        Load txtDeviation(i)
        lblData(i).Top = lblData(i - 1).Top + txtData(0).Height + 50
        txtData(i).Top = txtData(i - 1).Top + txtData(0).Height + 50
        lblDeviation(i).Top = lblDeviation(i - 1).Top + txtDeviation(0).Height + 50
        txtDeviation(i).Top = txtDeviation(i - 1).Top + txtDeviation(0).Height + 50
        lblData(i).Caption = lblData(i).Caption & Str(i + 1)
        lblData(i).Visible = True
        lblDeviation(i).Visible = True
        txtData(i).Visible = True
        txtDeviation(i).Visible = True
    Next i
    lblData(0).Caption = lblData(0).Caption & " 1"
    frmDeviation.Height = txtDeviation(NumOfData - 1).Top
                          + 3 * txtDeviation(0).Height

End Sub
```

Step 3 : *Add codes for the events*
cmdCompute_Click()
cmdExit

Codes for **cmdExit**

```
Private Sub cmdExit_Click()
    End
End Sub
```

Codes for **cmdCompute**

```
Private Sub cmdCompute_Click()
    Dim Sum As Double
    Dim i As Integer
    Dim SumOfSquares As Double, Average As Double, SD As Double
    frm1 = "@@@@@@@@"


    Sum = 0
    SumOfSquares = 0
    For i = 1 To NumOfData
            Sum = Sum + Val(txtData(i - 1).Text)
            SumOfSquares = SumOfSquares
                    + Val(txtData(i - 1).Text) * Val(txtData(i - 1).Text)
    Next i

    Average = Sum / NumOfData
    SD = Sqr(SumOfSquares / NumOfData - Average * Average)
    txtAverage.Text = Format(FormatNumber(Average, 2), frm1)
    txtSD.Text = Format(FormatNumber(SD, 2), frm1)

    For i = 1 To NumOfData
        txtDeviation(i - 1).Text = Format(FormatNumber(Val(txtData(i - 1))
                                    - Average, 2), frm1)
    Next i

End Sub
```

Step 4 : *Execution*

Enter ***6*** for the number of data
Enter the following data in the array of text boxes for data input
12 24 26.4 25.8 34 2
Click the **Average and deviation** command button.
Try other sets of data.
Terminate the program by clicking the **Exit** button.