

Chapter 9

Looping

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- ❖ Understanding and using Do...Loop
 - ❖ Understanding and using While...End while Loop
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Visual Basic 2010 allows a procedure to repeat many times as long as the processor could support. We call this looping. Looping is required when we need to process something repetitively until a certain condition is met. For example, we can design a program that adds a series of numbers until it exceed a certain value, or a program that asks the user to enter data repeatedly until he or she keys in the word 'Finish'. In Visual Basic 2010, we have three types of Loops, they are the **For...Next** loop, the **Do loop** and the **While...End while** loop

9.1 For...Next Loop

The format is:

For counter=startNumber to endNumber (Step increment)

 One or more VB statements

Next

Sometimes the user might want to get out from the loop before the whole repetitive process is completed. The command to use is **Exit For**. To exit a For....Next Loop, you can place the Exit For statement within the loop; and it is normally used together with the If.....Then... statement. For its application, you can refer to Example 9.1 d.

Example 9.1 a

Dim counter as Integer

For counter=1 to 10

 ListBox1.Items.Add (counter)

Next

* The program will enter number 1 to 10 into the Listbox.

Example 9.1b

```
Dim counter , sum As Integer
For counter=1 to 100 step 10
sum+=counter
ListBox1.Items.Add (sum)
Next
```

* The program will calculate the sum of the numbers as follows:

sum=0+10+20+30+40+.....

Example 9.1c

```
Dim counter, sum As Integer
sum = 1000
For counter = 100 To 5 Step -5
sum - = counter
ListBox1.Items.Add(sum)
Next
```

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*Notice that increment can be negative.

The program will compute the subtraction as follows:

1000-100-95-90-.....

Example 9.1d

```
Dim n as Integer
For n=1 to 10

If n>6 then
Exit For
End If
Else
ListBox1.Items.Add ( n)
Next
End If
Next
```

The process will stop when n is greater than 6.

9.2 Do Loop

The formats are

- a) Do While condition
 Block of one or more VB statements
 Loop
- b) Do
 Block of one or more VB statements
 Loop While condition
- c) Do Until condition
 Block of one or more VB statements
 Loop
- d) Do
 Block of one or more VB statements
 Loop Until condition

* Exiting the Loop

Sometime we need exit to exit a loop prematurely because of a certain condition is fulfilled. The syntax we use is Exit Do. Let us examine the following example

Example 9.2(a)

```
Do while counter <=1000
    TextBox1.Text=counter
    counter +=1
Loop
```

* The above example will keep on adding until counter >1000.

The above example can be rewritten as

```
Do
    TextBox1.Text=counter
    counter+=1
Loop until counter>1000
```

Example 9.2(b)

```

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
Dim sum, n As Integer
Do
n += 1
sum += n
ListBox1.Items.Add(n & vbTab & sum)
If n = 100 Then
Exit Do
End If
Loop Sub

```

In the above Example, we find the summation of $1+2+3+4+\dots+100$. In the design stage, you need to insert a ListBox into the form for displaying the output, named List1. The program uses the **AddItem** method to populate the ListBox. The statement `ListBox1.Items.Add (n & vbTab & sum)` will display the headings in the ListBox, where it uses the `vbTab` function to create a space between the headings `n` and `sum`.

9.3 While ...End While Loop

The structure of a While....End While is very similar to the Do Loop. It takes the following format:

```

While condition
    Statements
End While

```

Example 9.3

```

Dim sum, n As Integer
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
Dim sum, n As Integer
While n <> 100
n += 1
sum = sum + n
ListBox1.Items.Add(n & vbTab & sum)
End While
End Sub

```

Summary

- In section 9.1, you learned how to write code for the For...Next loop. The loop stops when a condition is met. You also learned how to use Exit For to exit the loop.
- In section 9.2, you learned how to write code for the Do loop procedure. It includes the use of the While keyword to set the condition for stopping the loop. You also learned how to use Exit Do to exit the loop.
- In section 9.3, you learned how to write code for the While...End While loop. You also learned that the loop stops when a condition is met.