College of Information Technology
Information network department
Programming with Visual Basic
Second Semester
lecture 1
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Loops (Repetition) Structures

Visual Basic allows a procedure to be repeated as many times as long as the processor and memory could support. This is generally called looping. Looping is required when we need to process something repetitively until a certain condition is met. In Visual Basic, we have three types of Loops, they are
• For.....Next loop,
• Do loop

For....Next Loop

The format is:

For counter = Start **To** End **Step** [Increment]
One or more VB statements
Next [counter]

The arguments counter, start, end, and increment are all numeric. The increment argument can be either positive or negative. If increment is positive, start must be less than or equal to end or the statements in the loop will not execute. If increment is negative, start must be greater than or equal to end for the body of the loop to execute. If steps isn't set, then increment defaults to 1. In executing the For loop, visual basic:

1. Sets counter equal to start.
2. Tests to see if counter is greater than end. If so, visual basic exits the loop (if increment is negative, visual basic tests to see if counter is less than end).
3. Executes the statements.
4. Increments counter by 1 or by increment, if it's specified.
5. Repeats steps 2 through 4.

For Example:

1- For I=0 To 10 step 5
    Statements
    Next I

2- For counter = 100 To 0 Step -5
    Statements
   Next counter

Example : Design a form and write code to find the summation of numbers (from 0 to 100).
Solution:

```
Private Sub form_load()
Form1.show
Dim I As Integer,Total As Integer

For I = 0 To 100
```

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```
   Total= Total +I
  Next I
  Print "Total=";Total
End Sub
```

Example: Design a form and write code to find the summation of even numbers (from 0 to 100).

Solution:
```
Private Sub form_load()
 Form1.show
 Dim I As Integer,Total As Integer
 For I = 0 To 100 step 2
  Total= Total +I
 Next I
 Print "Total=";Total
End Sub
```

Example: Design a form and write code to find the summation of odd numbers (from 0 to 100).

Solution:
```
Private Sub form_load()
 Form1.show
 Dim I As Integer,Total As Integer
 For I = 0 To 100
   If I mod 2 =1 then Total= Total +I
 Next I
 Print "Total=";Total
End Sub
```
Example: Design a form and write code to find factorial of any entered number.

Solution:
```
Private Sub form_load()
 Form1.show
 Dim I As Integer, no as integer, fact  as integer
 no=val(inputbox("enter the number"))
 Fact=1
 For I=no to 1 step -1
   Fact=fact*I
 Next I
 Print "Factorial of";no;"=",fact
End sub
```

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Exercise: Write a program to solve the following sequential:

1- $Z = x + \dfrac{x}{x^2} + \dfrac{x}{x^4} + \dfrac{x}{x^6} + \ldots\ldots\ldots + \dfrac{x}{x^n}$

2- $Z = 1 - \dfrac{x}{x^3} + \dfrac{x}{x^5} - \dfrac{x}{x^7} + \dfrac{x}{x^9} - \ldots\ldots\ldots \dfrac{x}{x^n}$

3- $Z = 1 + \dfrac{x}{1!} + \dfrac{x^2}{2!} + \dfrac{x^3}{3!} + \cdots , \quad -\infty < x < \infty$