VBA-Session 8

For….Next Loop

Looping is one of the most powerful programming techniques. A loop in Excel VBA enables you to loop through a range of cells with just a few codes lines.

- **Single Loop**

You can use a single loop to loop through a one-dimensional range of cells.

Place a command button on your worksheet and add the following code lines:

```
Dim i As Integer
For i = 1 To 6
   Cells(i, 1).Value = 100
Next i
```

Result when you click the command button on the sheet:

	A	B	C	D	E
1	100				
2	100				
3	100				
4	100				
5	100				
6	100				
7					
8					

Explanation: The code lines between For and Next will be executed six times. For i = 1, Excel VBA enters the value 100 into the cell at the intersection of row 1 and column 1. When Excel VBA reaches Next i, it increases i with 1 and jumps back to the For statement. For i = 2, Excel VBA enters the value 100 into the cell at the intersection of row 2 and column 1, etc.

Note: it is good practice to always indent (tab) the code between the words For and Next. This makes your code easier to read.

- **Double Loop**

You can use a double loop to loop through a two-dimensional range of cells.

Place a command button on your worksheet and add the following code lines:

```
Dim i As Integer, j As Integer

For i = 1 To 6

   For j = 1 To 2

      Cells(i, j).Value = 100

   Next j

Next i
```

Result when you click the command button on the sheet:

	A	B	C	D	E
1	100	100			
2	100	100			
3	100	100			
4	100	100			
5	100	100			
6	100	100			
7					
8					

Explanation: For i = 1 and j = 1, Excel VBA enters the value 100 into the cell at the intersection of row 1 and column 1. When Excel VBA reaches Next j, it increases j with 1 and jumps back to the For j statement. For i = 1 and j = 2, Excel VBA enters the value 100 into the cell at the intersection of row 1 and column 2. Next, Excel VBA ignores Next j because j only runs from 1 to 2. When Excel VBA reaches Next i, it increases i with 1 and jumps back to the For i statement. For i = 2 and j = 1, Excel VBA enters the value 100 into the cell at the intersection of row 2 and column 1, etc.

- **Triple Loop**

You can use a triple loop to loop through two-dimensional ranges on multiple Excel worksheets.

Place a command button on your worksheet and add the following code lines:

```
Dim c As Integer, i As Integer, j As Integer
For c = 1 To 3
   For i = 1 To 6
      For j = 1 To 2
         Worksheets(c).Cells(i, j).Value = 100
      Next j
   Next i
Next c
```

Explanation: The only change made compared to the code for the double loop is that we have added one more loop and added Worksheets(c). in front of Cells to get the two-dimensional range on the first sheet for c = 1, the second sheet for c = 2 and the third sheet for c = 3. Download the Excel file to see this result.

Do While Loop

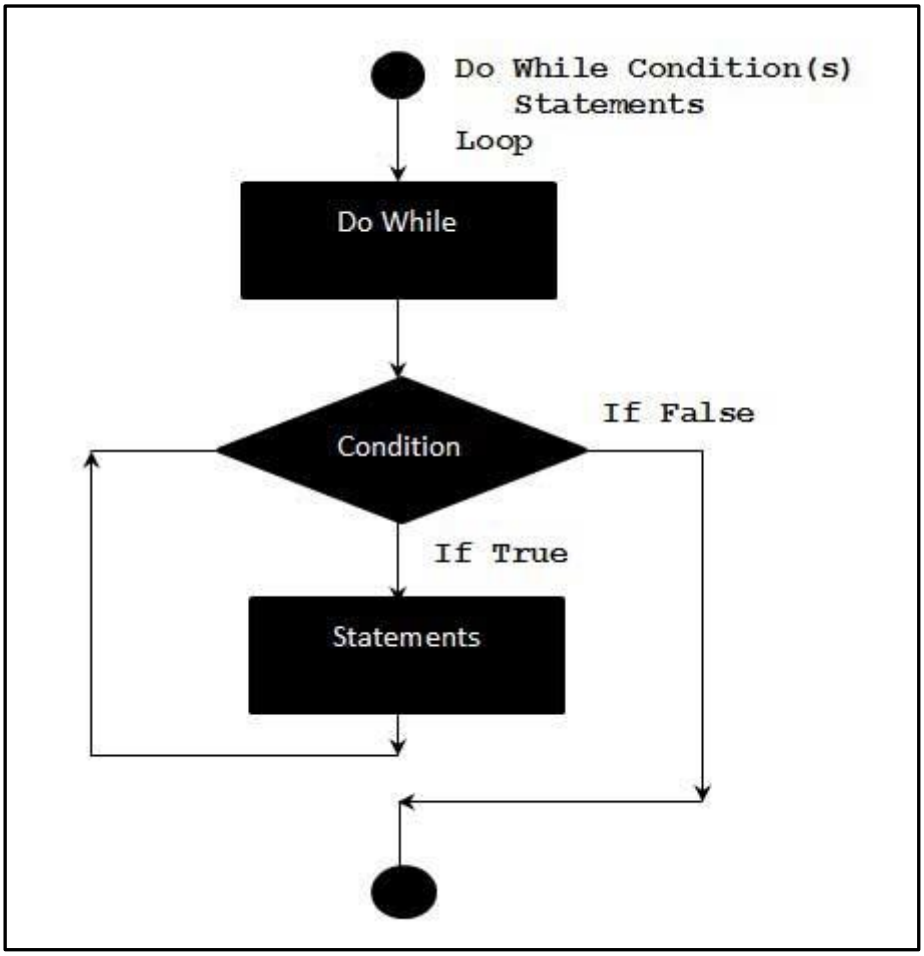
A **Do…While** loop is used when we want to repeat a set of statements as long as the condition is true. The condition may be checked at the beginning of the loop or at the end of the loop.

The Structure

Following is the syntax of a **Do…While** loop in VBA.

```
Do While condition
   [statement 1]
   [statement 2]
   ...
   [statement n]
   [Exit Do]
   [statement 1]
   [statement 2]
   ...
   [statement n]
Loop
```

Flow Diagram



Example (Do… While Loop):

The following example uses **Do…while** loop to check the condition at the beginning of the loop. The statements inside the loop are executed, only if the condition becomes True.

```
Sub show_while( )
  Do While i < 5
    i = i + 1
    msgbox "The value of i is : " & i
  Loop
End Sub
```

When the above code is executed, it prints the following output in a message box.

```
The value of i is : 1
The value of i is : 2
The value of i is : 3
The value of i is : 4
The value of i is : 5
```

Alternate Structure

There is also an alternate structure for **Do…while** loop which checks the condition at the end of the loop. The major difference between these two structures is explained in the following example.

```
Do
  [statement 1]
  [statement 2]
  ...
  [statement n]
  [Exit Do]
  [statement 1]
  [statement 2]
  ...
  [statement n]
Loop While condition
```

Example 1 (Do While)

The following example uses **Do…While** loop to check the condition at the end of the loop. The Statements inside the loop are executed at least once, even if the condition is False.

```
Sub show_while_do( )
  i = 10
  Do
    i = i + 1
    MsgBox "The value of i is : " & i
  Loop While i < 3
End Sub
```

When the above code is executed, it prints the following output in a message box.

```
The value of i is : 11
```

Example 2:

1. Place a command button on your worksheet and add the following code lines:

```
Dim i As Integer
i = 1
Do While i < 6
   Cells(i, 1).Value = 20
   i = i + 1
Loop
```

Result when you click the command button on the sheet:

	A	B	C	D	E
1	20				
2	20				
3	20				
4	20				
5	20				
6					
7					
8					

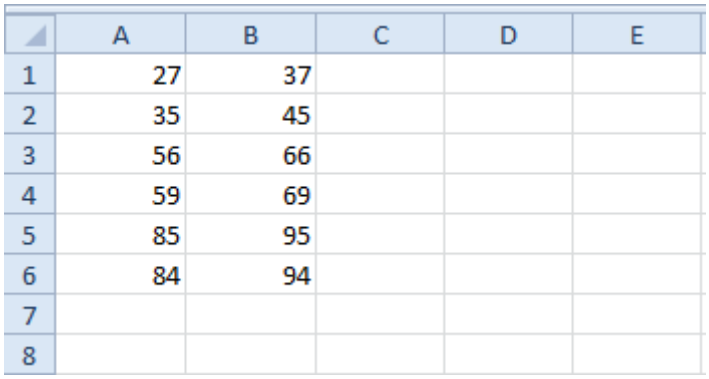
2. Enter some numbers in column A.

	A	B	C	D	E
1	27				
2	35				
3	56				
4	59				
5	85				
6	84				
7					
8					

3. Place a command button on your worksheet and add the following code lines:

```
Dim i As Integer

i = 1

Do While Cells(i, 1).Value < > ""

   Cells(i, 2).Value = Cells(i, 1).Value + 10

   i = i + 1

Loop
```

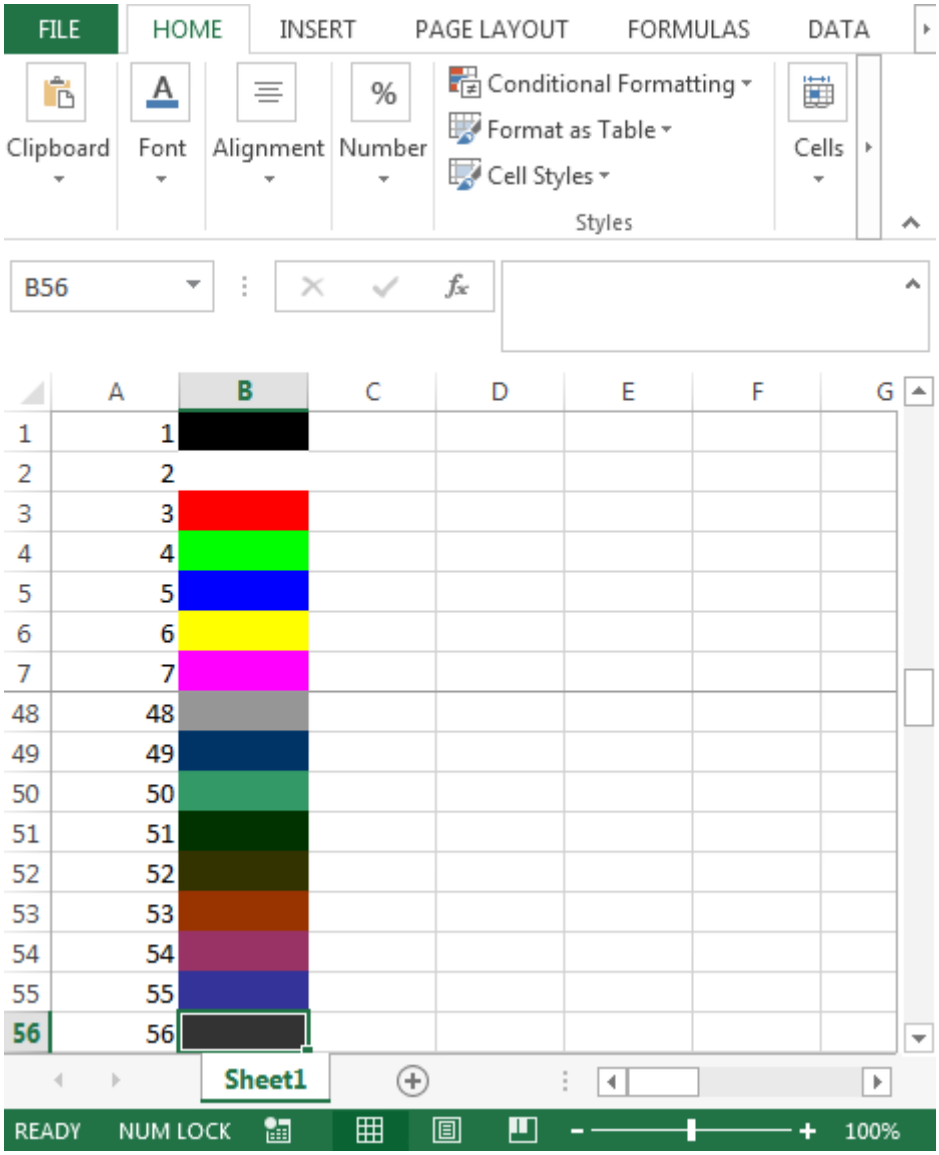
Result when you click the command button on the sheet:



	A	B	C	D	E
1	27	37			
2	35	45			
3	56	66			
4	59	69			
5	85	95			
6	84	94			
7					
8					

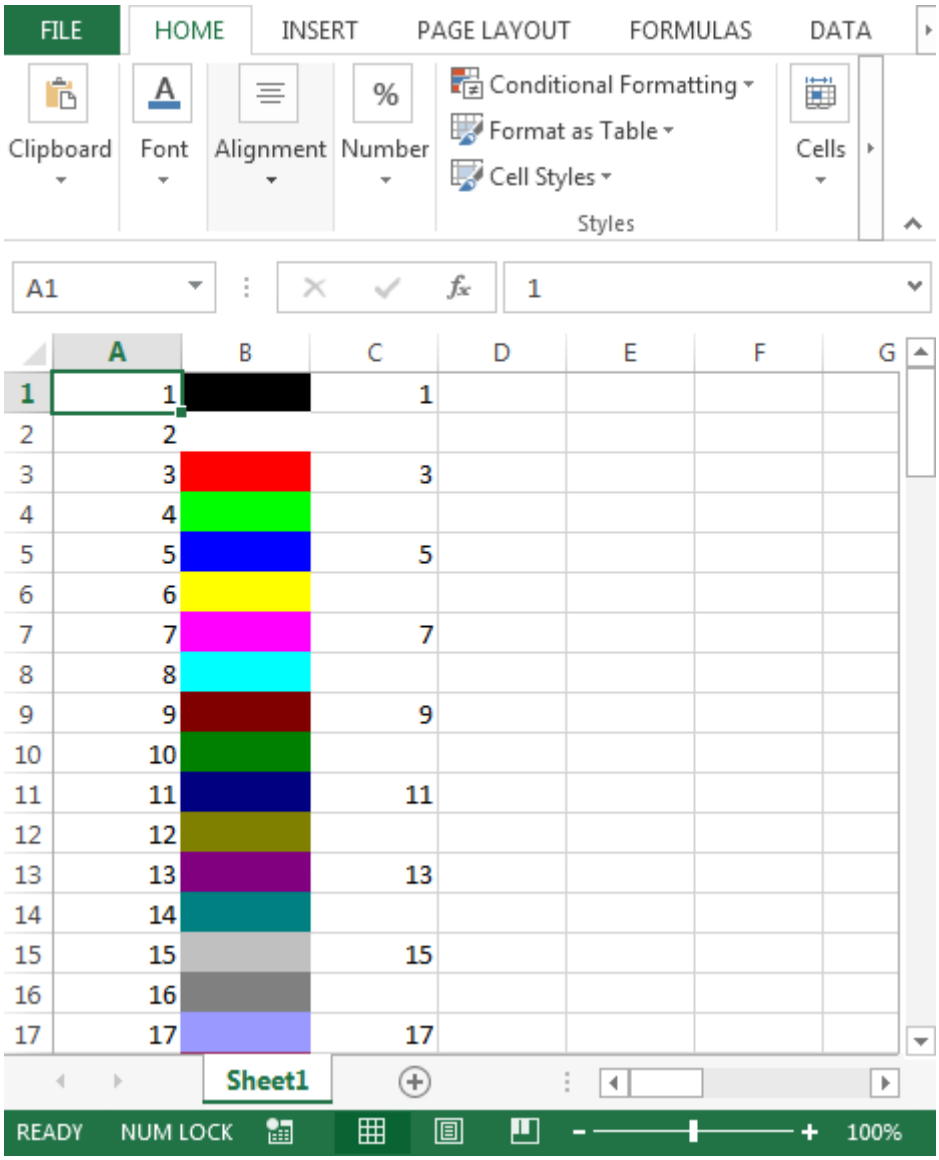
Example 3 (For….Next):

```
Sub Loop3( )

Dim X As Integer

   For X = 1 To 56

      Range("B" & X).Interior.ColorIndex = X

   Next X

End Sub
```



- **Step in For Loop**

```
Sub Loop4( )

Dim X As Integer

   For X = 1 To 50 Step 2

      Range("C" & X).Value = X

   Next X

End Sub
```

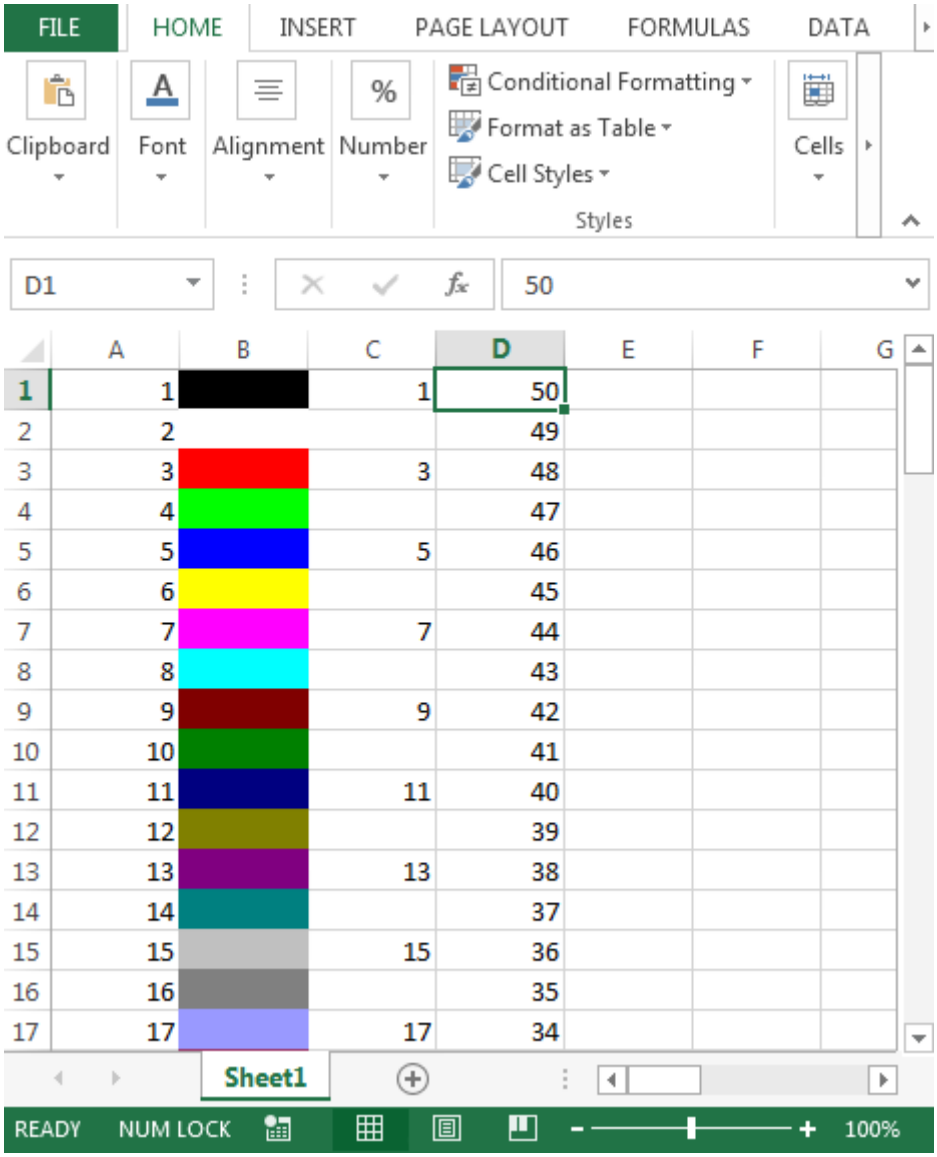


- **For Loop in Reverse with STEP Instruction**

It is not necessary that counter in the For loop will only move from low to higher values; instead, For loop can run backwards, too i.e. high to lower values.

Even though the Step value is forward 1 by default, however, it can be set to a number in reverse order.

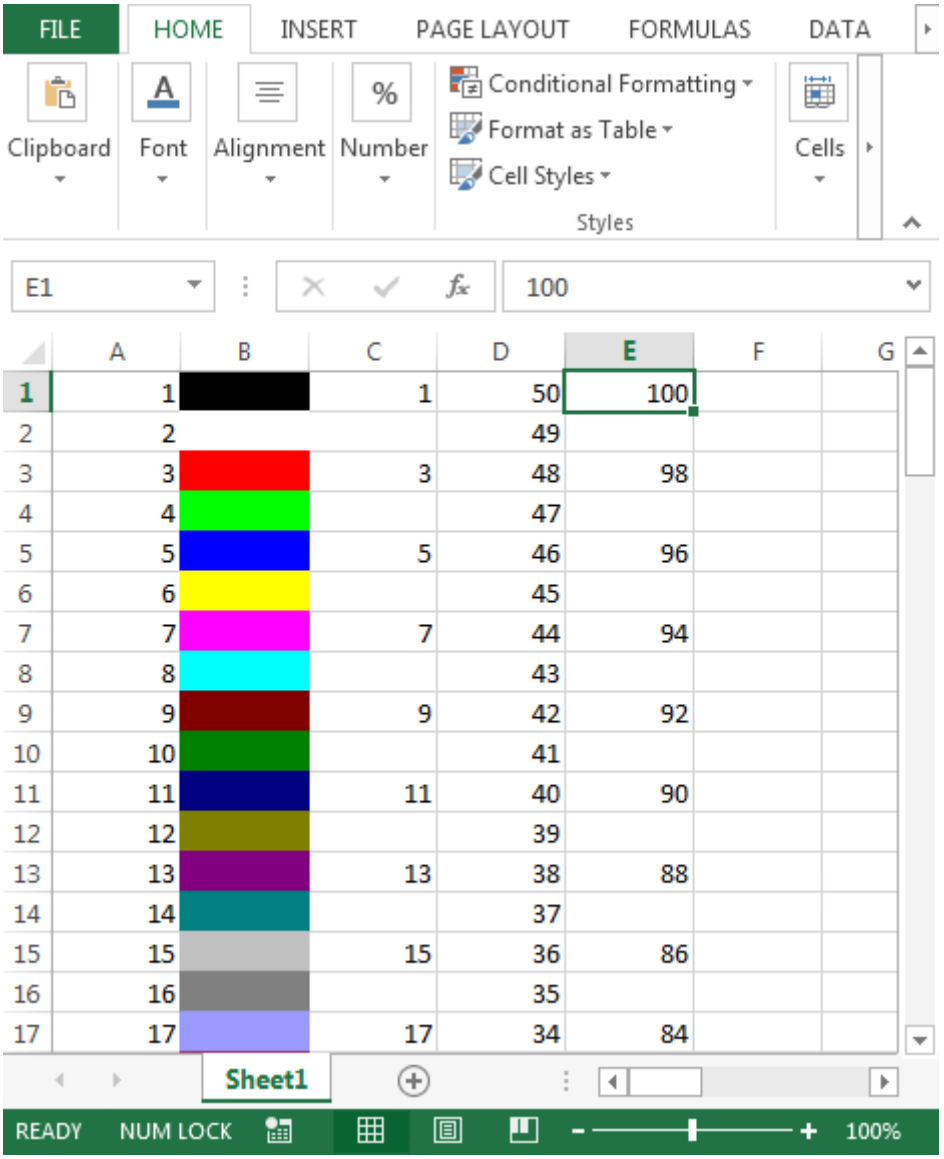
```
Sub Loop5()

Dim X As Integer, Row As Integer

Row = 1

   For X = 50 To 0 Step -1

      Range("D" & Row).Value = X

      Row = Row + 1

   Next X

End Sub
```



- **Fills every second cell in Reverse with STEP -2**

In the above For loop example, we can use the Step and order to see if the For loop works in forward or backward direction.

```
Sub Loop6( )
Dim X As Integer, Row As Integer
Row = 1
   For X = 100 To 0 Step -2
      Range("E" &amp;amp; Row).Value = X
      Row = Row + 2
   Next X
End Sub
```

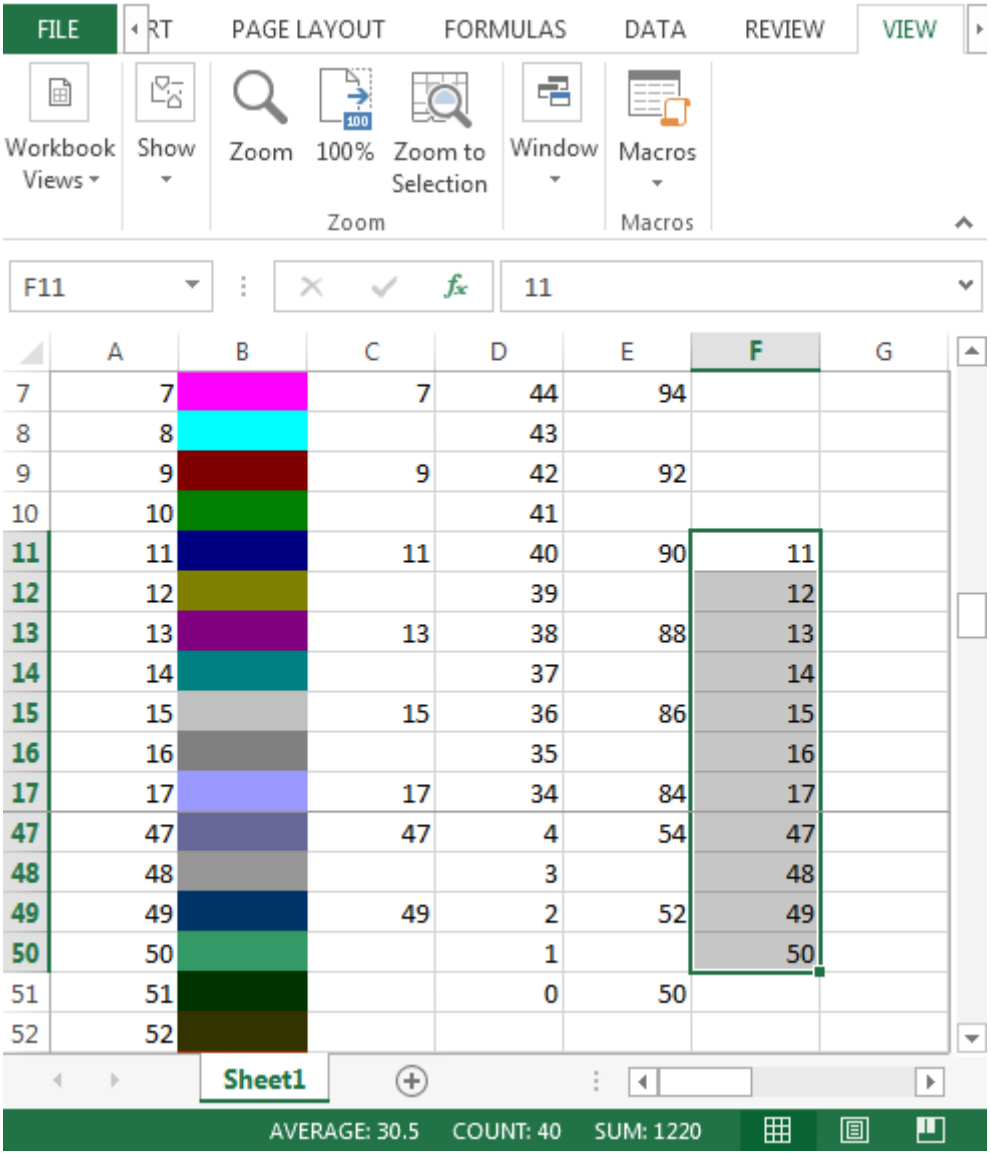


	A	B	C	D	E	F	G
1	1		1	50	100		
2	2			49			
3	3		3	48	98		
4	4			47			
5	5		5	46	96		
6	6			45			
7	7		7	44	94		
8	8			43			
9	9		9	42	92		
10	10			41			
11	11		11	40	90		
12	12			39			
13	13		13	38	88		
14	14			37			
15	15		15	36	86		
16	16			35			
17	17		17	34	84		

- **For Loop with IF condition: Fills cells starting from specific cell:**

This will fill the cells from cell F11 with value 11 till X meets the IF condition

```
Sub Loop7( )
Dim X As Integer
   For X = 11 To 100
      Range("F" & X).Value = X
         If X = 50 Then
            MsgBox ("Bye Bye")
            Exit For
         End If
   Next X
End Sub
```


FILE
PAGE LAYOUT
FORMULAS
DATA
REVIEW
VIEW
Workbook Views
Show
Zoom
100%
Zoom to Selection
Window
Macros
Zoom
Macros
F11
11
A B C D E F G
7 7 7 44 94
8 8 43
9 9 9 42 92
10 10 41
11 11 11 40 90 11
12 12 39 12
13 13 13 38 88 13
14 14 37 14
15 15 15 36 86 15
16 16 35 16
17 17 17 34 84 17
47 47 47 4 54 47
48 48 3 48
49 49 49 2 52 49
50 50 1 50
51 51 0 50
52 52
Sheet1
AVERAGE: 30.5
COUNT: 40
SUM: 1220