MONASH University

FIT1013 Digital Futures: IT for Business
Week 7: Date Variables and Repetition Structures

On completion of your study this week, you should aim to:

- Use Date and related variables
- Use VBA's date and time functions
- Implement repetition structures in VBA

GROUP OF EIGHT AUSTRALIA

Examples

Internal storage	Represents
567.0	20th July 1901
1299.0	22nd July 1903
0.3	7.12am
0.8	7.12pm
.5692	1.39.39pm
6788.673	1st August 1918, 4.09.07pm

Reserving date variables

Recall to reserve a procedure level variable:

Dim VariableName As DataType

Name of variable

Type of data the variable can store

To reserve a procedure level Date variable:

Dim VariableName As Date

e.g.

Dim dtmStart As Date
Dim dtmBirth As Date

Examples of Dim Statements that Reserve Date Variables

- Dim dtmPay as Date
- Dim dtmEmploy as Date
- Dim dtmStart as Date
- Dim dtmEnd as Date
- Dim dtmBirth as Date

Assigning a value to a date variable

Recall the assignment statement that assigns a value to a variable:

Variablename = value

Examples for date variables:

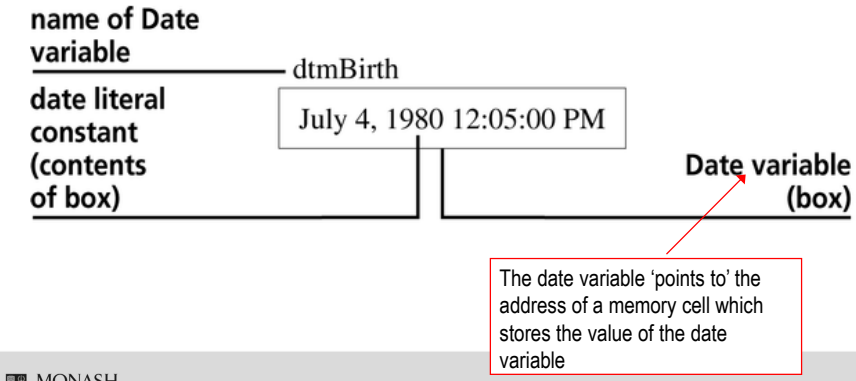
dtmBirth = #June 10, 1981#

dtmFinish = #6:48:07 PM#

Date variables store date literal constants….

Using an Assignment Statement to Assign a Value to a Date Variable

Illustration of date literal constant stored in a date variable



Using VBA's Date, Time, and Now Functions

In addition to assigning date literal constants to Date variables, you also can assign the value returned by VBA's Date, Time, and Now functions:

- VBA's **Date** function returns the system date, which is the date maintained by your computer's internal clock
- VBA's **Time** function returns the system time, which is the time maintained by your computer's internal clock
- VBA's **Now** function returns both the system date and time

The AssignDisplayDate Procedure

```
Public Sub AssignDisplayDate()
'declare date variables
Dim dtmCurDate As Date
Dim dtmCurTime As Date
Dim dtmCurDateTime As Date
'assign values to date variables
dtmCurDate = Date
dtmCurTime = Time
dtmCurDateTime = Now
'display contents of date variables
MsgBox Prompt:=dtmCurDate & vbNewLine _
   & dtmCurTime & vbNewLine & dtmCurDateTime
End Sub
```

reserves three Date variables named dtmDurDate, dtmCurTime, and dtmCurDateTime

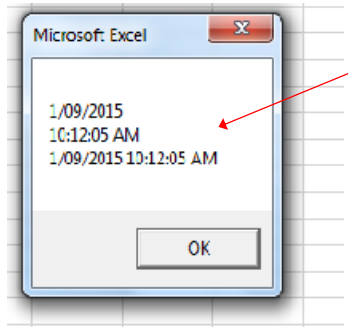
Assign values to the date variables using the **Date**, **Time** and **Now** functions

Use the underscore to indicate the code continues onto the next line

Display the values of the date variables using the MsgBox function

vbNewLine - Visual Basic Constant

Message Box Displayed by the AssignDisplayDate Procedure AssignDisplayDate.xls



Each date is displayed on a separate line

Using the Format Function

- Use the VBA **Format** function to control the appearance of dates and times
- The syntax of the Format function is:

  Format(Expression:=expression, Format:=format)

- In the syntax, **expression** specifies the number, date, time, or string whose appearance you want to format, and **format** is the name of a predefined VBA format
- E.g.

  Format(Expression:=#1/03/2004#, Format:="short date")

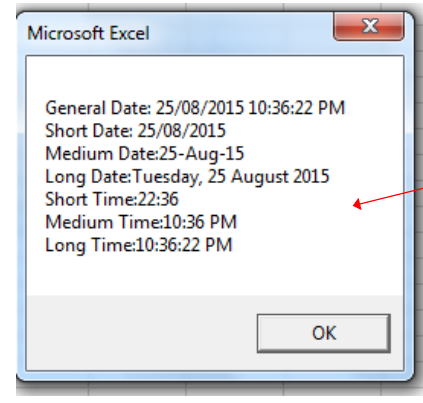
Using the Format Function

E.g. AssignDisplayDate.xls – see dateFormats() procedure

```
Public Sub dateFormats()
'declare date variables
Dim dtmEgDate As Date
'assign values to date variables
dtmEgDate = #2/18/1991 10:36:22 PM#
MsgBox Prompt:= _
   Format(Expression:=dtmEgDate, Format:="General Date") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Short Date") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Medium Date") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Long Date") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Short Time") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Medium Time") & vbNewLine _
   & Format(Expression:=dtmEgDate, Format:="Long Time")
End Sub
```

Note different date formats

Results of Date Format function



Note different date formats

Using Dates and Times in Calculations

- You may need to include date and time calculations in your procedures
- VBA provides two functions called **DateAdd** and **DateDiff** that you can use to perform calculations involving dates and times
- The **DateAdd** function allows you to add a specified time interval to a date or time, and it returns the new date or time
- The **DateDiff** function allows you to determine the time interval that occurs between two dates

The DateAdd function

Syntax:

DateAdd(Interval:=*interval*, **Number:=***number*, **Date:=***date*)

Interval specifies the time units: e.g. hours, minutes, years etc..

Number specifies how many time units to add on to the date. Can be positive or negative

Date argument – can be any format

Adds 3 days to the value of the date variable dtmEgDate

E.g.

DateAdd(interval:="d", Number:=3, Date:=dtmEgDate)

AssignDisplayDate.xls – see DateAddEg() procedure

Valid Settings for the Interval Argument

interval setting	Description
"yyyy"	Year
"q"	Quarter
"m"	Month
"y"	Day of year
"d"	Day
"w"	Weekday
"ww"	Week
"h"	Hour
"n"	Minute
"s"	Second

Examples of the DateAdd Function

DateAdd function and result
`dtmNew = DateAdd(Interval:="yyyy", Number:=2, Date:=#1/1/2001#)` Result: Assigns 1/1/2003 to the dtmNew variable
`dtmDue = DateAdd(Interval:="d", Number:=15, Date:=dtmInvDate)` Result: If the dtmInvDate variable contains 1/1/2002, then 1/16/2002 is assigned to the dtmDue variable
`dtmFinish = DateAdd(Interval:="h", Number:=4, Date:=Time)` Result: If the current time is 3:54:11 PM, then 7:54:11 PM is assigned to the dtmFinish variable

`MsgBox Prompt:=DateAdd(Interval:="n", Number:=-5, _`
`Date:=#10:25:00 AM#)`
Result: Displays 10:20:00 AM in a message box

Using Dates and Times in Calculations

- The **DateDiff** function allows you to determine the time interval that occurs between two dates
- Unlike the **DateAdd** function, which returns either a future or past date or time, the **DateDiff** function returns an integer that represents the number of time intervals between two specified dates or times

The DateDiff function

Syntax

DateDiff(Interval:=*interval*, **Date1:=***date1*, **Date2:=***date2*)

Interval specifies the time units: e.g. hours, minutes, years etc..

date1 and *date2* : dates needed in the calculation.

E.g.

```
MsgBox prompt:="Date diff: " & DateDiff("yyyy",
#2/18/1991#, #1/27/2015 10:36:22 PM #)
```


Examples of the DateDiff Function

DateDiff function and result
`MsgBox Prompt:=DateDiff(Interval:="yyyy", Date1:=#1/1/2001#, _ Date2:=#1/1/2003#)` Result: Displays 2 in a message box
`MsgBox Prompt:=DateDiff(Interval:="yyyy", Date1:=#1/1/2003#, _ Date2:=#1/1/2001#)` Result: Displays -2 in a message box
`intDay = DateDiff(Interval:="d", Date1:=dtmInvDate, _ Date2:=dtmDue)` Result: If the dtmInvDate variable contains 1/1/2002 and the dtmDue variable contains 1/31/2002, then 30 is assigned to the intDay variable
`intHour = DateDiff(Interval:="h", Date1:=#3:54:11 PM#, _ Date2:=Time)` Result: If the current time is 7:54:00 PM, then 4 is assigned to the intHour variable
`MsgBox Prompt:=DateDiff(Interval:="n", Date1:=#10:25:00 AM#, _ Date2:=#10:20:00 AM#)` Result: Displays -5 in a message box

Examples of Using the DateValue and TimeValue Functions to Convert Strings to Dates and Times

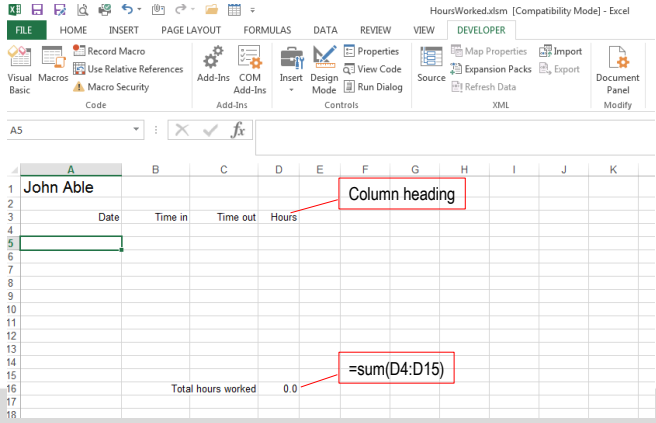
DateValue function	Result
`dtmShip = DateValue(Date:="3/5/2002")`	Converts the "3/5/2002" string to a date, and then assigns the resulting date, 3/5/2002, to the dtmShip Date variable
`dtmBirth = DateValue(Date:=strBirth)`	Assuming the strBirth variable contains the string "October 11, 1950", the statement converts the string to a date and then assigns the result, 10/11/1950, to the dtmBirth Date variable
TimeValue function	**Result**
`dtmIn = TimeValue(Time:="5:30pm")`	Converts the "5:30pm" string to a time, and then assigns the resulting time, 5:30:00 PM, to the dtmIn Date variable
`dtmOut = TimeValue(Time:=strOut)`	Assuming the strOut variable contains the string "3:45am", the statement converts the string to a time and then assigns the result, 3:45:00 AM, to the dtmOut Date variable

Excel Example: Creating the CalcHours Macro Procedure

This exercise involves:

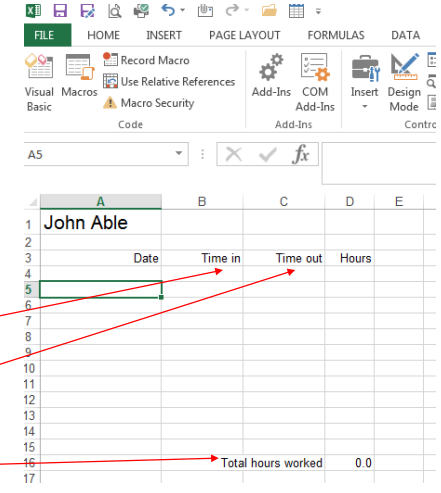
- Finding the total number of hours worked each day
- Calculating the total hours worked per fortnight for each employee

Hours Worked.xls



Pseudocode for the CalcHours Procedure

1. Use the **InputBox** function to prompt the user to enter the **starting time**. Store the response in a string variable named **strIn**
2. Use the **InputBox** function to prompt the user to enter the **ending time**. Store the response in a string variable named **strOut**
3. Use the **TimeValue** function to convert the string stored in **strIn** to a time, then assign the result to a date variable named **dtmIn**
4. Use the **TimeValue** function to convert the string stored in **strOut** to a time, then assign the result to a date variable named **dtmOut**
5. assign the system date to the active cell in column A
6. assign the starting time (stored in **dtmIn**) to the cell located one column to the right of the active cell. I.e. in column B
7. assign the ending time (stored in **dtmOut**) to the cell located two columns to the right of the active cell. I.e. in column C
8. use the **DateDiff** function to calculate the number of hours worked. Assign the result to the cell located three columns to the right



Creating the CalcHours Macro Procedure

Declare string and object vars, set the object variables:

```
Public Sub CalcHours()
 'declare variables and assign address to object variable
   Dim strIn As String
   Dim strOut As String
   Dim dtmIn As Date
   Dim dtmOut As Date
   Dim rngActive As Range
   Set rngActive = Application.ActiveCell
End Sub
```

User entered times are Stored as strings

The date variables are used to store the actual times in the 'time' format

ActiveCell Returns a Range object that represents the active cell in the active window

This range variable stores the active cell Address in the worksheet

Partially Completed CalcHours Procedure

```
Public Sub CalcHours()
   'declare variables and assign address to object variable
   Dim strIn As String, strOut As String, dtmIn As Date, dtmOut As D
   Dim rngActive As Range
   Set rngActive = Application.ActiveCell
   'enter starting and ending time
   strIn = InputBox(prompt:="Enter the starting time:", _
      Title:="Start Time", Default:=#9:00:00 AM#)
   strOut = InputBox(prompt:="Enter the ending time:", _
      Title:="End Time", Default:=#5:00:00 PM#)
   'convert strings to times
   dtmIn = TimeValue(Time:=strIn)
   dtmOut = TimeValue(Time:=strOut)
   'assign values to worksheet cells
   rngActive.Value = Date
End Sub
```

Prompts user for Start/Finish time and stores response in strIn/strOut

Convert the string values to Dates (times)

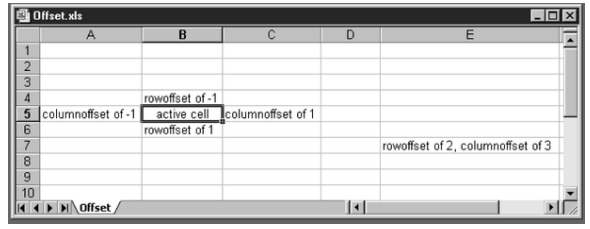
Assign the System Date to the active cell

The Offset Property of the Range object

- You can use a Range object's **Offset** property to refer to a cell located a certain number of rows or columns away from the range itself
- The syntax of the Offset property is
  rangeObject.Offset([rowOffset] [,columnOffset])
- You use a **positive** rowOffset to refer to rows found below the rangeObject, and you use a **negative** rowOffset to refer to rows above the rangeObject
- You use a **positive** columnOffset to refer to columns found to the right of the rangeObject, and you use a **negative** columnOffset to refer to columns to the left of the rangeObject

Illustration of the Offset Property

For example:
If rangeObject (I.e. active cell) is B5 then
rowOffset of 1 refers to B6
rowOffset of –1 refers to B4
columnOffset of 1 refers to C5
columnOffset of –1 refers to A5
What does rangeObject.Offset(2,3) refer to?



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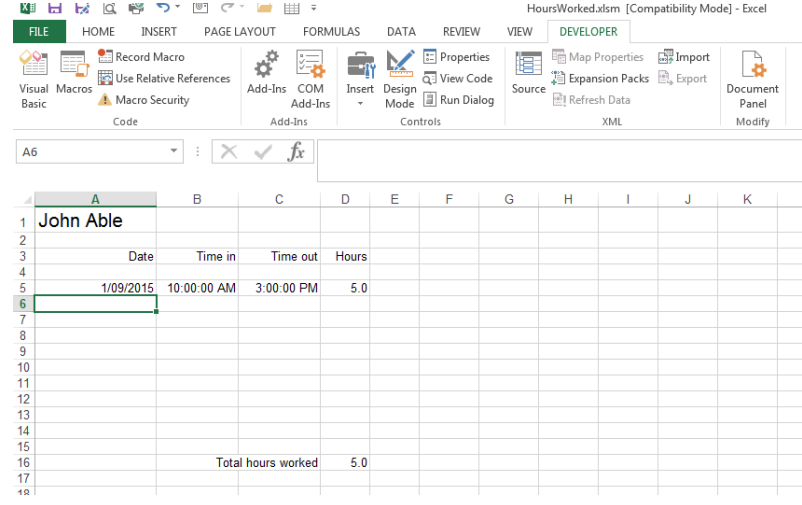
Completed CalcHours Procedure

```
Public Sub CalcHours()
  'declare variables and assign address to object variable
  Dim strIn As String, strOut As String, dtmIn As Date, dtmOut As Date
  Dim rngActive As Range
  Set rngActive = Application.ActiveCell
  'enter starting and ending time
  strIn = InputBox(prompt:="Enter the starting time:", _
     Title:="Start Time", Default:=#9:00:00 AM#)
  strOut = InputBox(prompt:="Enter the ending time:", _
     Title:="End Time", Default:=#5:00:00 PM#)
  'convert strings to times
  dtmIn = TimeValue(Time:=strIn)
  dtmOut = TimeValue(Time:=strOut)
  'assign values to worksheet cells
  rngActive.Value = Date
  rngActive.Offset(columnoffset:=1).Value = dtmIn
  rngActive.Offset(columnoffset:=2).Value = dtmOut
  rngActive.Offset(columnoffset:=3).Value = _
     DateDiff(interval:="n", date1:=dtmIn, date2:=dtmOut) / 60
End Sub
```

Assigns the time values To the respective cells In the worksheet

Worksheet after running the procedure



The IsDate() function

To check whether the InputBox function has returned a valid date use the IsDate function.

Syntax:

IsDate(*expression*)

The required *expression* argument is a Variant containing a date expression or string expression recognizable as a date or time.

IsDate returns either True or False depending on whether the *expression* represents a valid date.

IsDate() example

```
Dim strDate1 As String
Dim dtmDate2 As Date
Dim strDate3 As String
Dim blnCheck As Boolean
strDate1 = "February 12, 2010"
dtmDate2 = #2/12/2009#
strDate3 = "Hello"
blnCheck = IsDate(strDate1)
Debug.Print blnCheck 'returns True
blnCheck = IsDate(dtmDate2)
Debug.Print blnCheck 'returns True
blnCheck = IsDate(strDate3)
Debug.Print blnCheck 'returns false
```

A string representing a date

A valid date

A string

Updated CalcHours procedure

Hours Worked.xls

```
'enter starting and ending time
  strIn = InputBox(prompt:="Enter the starting time:", _
    Title:="Start Time", Default:=#9:00:00 AM#)
  Debug.Print IsDate(strIn)
  strOut = InputBox(prompt:="Enter the ending time:", _
    Title:="End Time", Default:=#5:00:00 PM#)
  Debug.Print IsDate(strOut)
  If Not (IsDate(strIn)) Or Not (IsDate(strOut)) Then
    MsgBox ("invalid times")
  Else
  'convert strings to times
    dtmIn = TimeValue(Time:=strIn)
    dtmOut = TimeValue(Time:=strOut)
  'assign values to worksheet cells
    rngActive.Value = Date
    rngActive.Offset(columnoffset:=1).Value = dtmIn
    rngActive.Offset(columnoffset:=2).Value = dtmOut
    rngActive.Offset(columnoffset:=3).Value = _
      DateDiff(interval:="n", date1:=dtmIn, date2:=dtmOut) / 60
  End If
End Sub
```


Repetition Structures

Programmers use the **repetition structure**, also called **looping** or **iteration**, to direct the computer to repeat one or more instructions either a precise number of times or until some condition is met

Example 1	Example 2
Repeat two times: apply shampoo to wet hair lather rinse	Pour 8 ounces of milk into a glass Pour 2 teaspoons of chocolate syrup into the glass Repeat the following until milk and syrup are mixed thoroughly: stir

VBA Forms of the Repetition Structure

- Do While
- Do Until
- For Next
  - For…Next
  - For Each…Next
- The With statement

Repetition: Do Loops

- For repeating an action many times
- **Do While Loop, Do Until Loop**
- 2 versions of each – perform a test at start or a test at end (pretest, posttest)
- **Do While**: Included code executed while condition is true
- **Do Until**: Included code executed while condition is false
- Make sure the condition is such that it will fail eventually – I.e. avoid infinite loops.

Syntax of the Do While Loops

Start with **Do While**

If condition is true, the loop instructions are performed (pretest loop)

Do While *condition*
  [*loop instructions*]
  [Exit Do]
  [*loop instructions*]
Loop

End with **Loop**

Exit Do forces an exit from loop

Start with **Do**

Do
  [*loop instructions*]
  [Exit Do]
  [*loop instructions*]
Loop While *condition*

End with **Loop While**

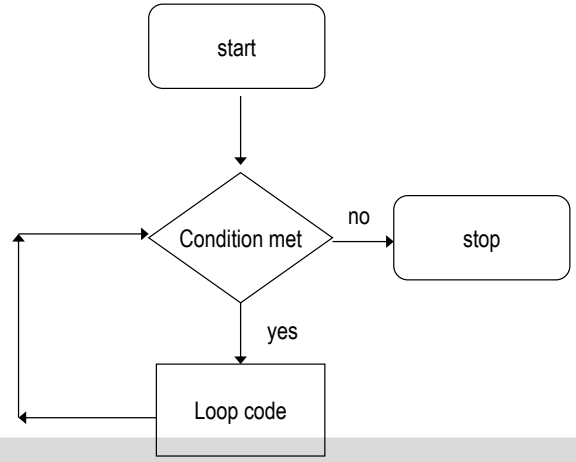
If condition is true, the loop instructions are repeated (posttest loop)

condition must evaluate to true or false
condition can contain variables, constants, properties, functions, mathematical operators, relational operators, and logical operators

Do While loop (pretest)

Syntax:

Do While <*condition*>
  VBA code
  [Exit Do]
  VBA code
Loop



Do While loop E.g.1

Not logical operator

Condition uses the IsEmpty() function to check if the active cell is empty

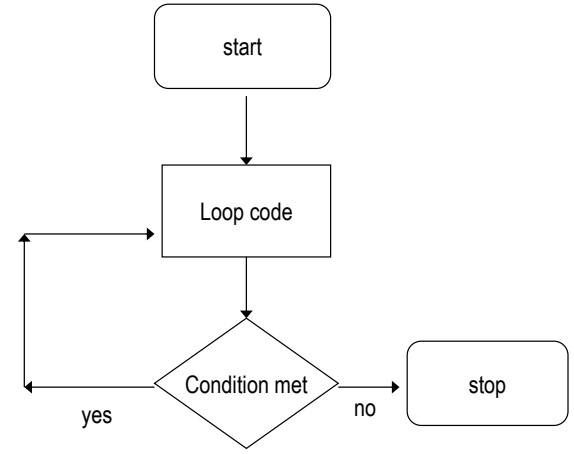
```
Do While Not IsEmpty(ActiveCell)
    'if the active cell is not empty, put 0 in it, otherwise stop
    ActiveCell.Value = 0
    'then move down one cell
    ActiveCell.Offset(1, 0).Select
Loop
```

Loop section

Do While loop (posttest)

Syntax:

Do
    VBA code
    [Exit Do]
    VBA code
Loop While
    <*condition*>



Do While loop E.g. 2

```
Do
    'Put 0 in the active cell
    ActiveCell.Value = 0
    'then move down one cell
    ActiveCell.Offset(1, 0).Select
    'If the active cell is empty, stop, otherwise continue looping
Loop While Not IsEmpty(ActiveCell)
```

Loop section

condition

Not logical operator

Syntax of the Do Until Loops

Start with **Do Until**

If condition is false, the loop instructions are performed (pretest loop)

Do Until *condition*
    [*loop instructions*]
    [Exit Do]
    [*loop instructions*]
Loop

End with **Loop**

Exit Do forces an exit from loop

Start with **Do**

Do
    [*loop instructions*]
    [Exit Do]
    [*loop instructions*]
Loop Until *condition*

End with **Loop Until**

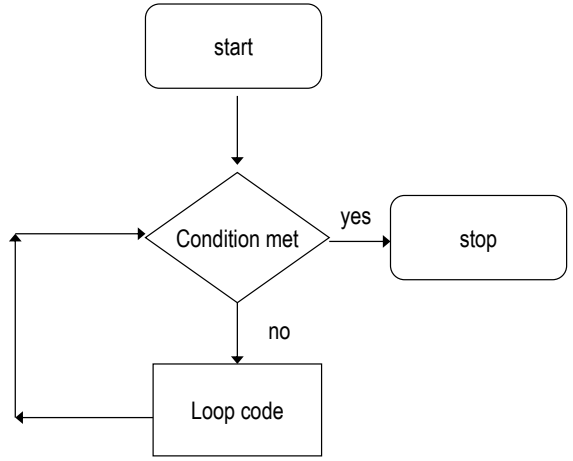
If condition is false, the loop instructions are repeated (posttest loop)

- *condition* must evaluate to true or false
- *condition* can contain variables, constants, properties, functions, mathematical operators, relational operators, and logical operators

Do Until loop (pretest)

Syntax:

```
Do Until
    <condition>
    VBA code
    [Exit Do]
    VBA code
Loop
```



Example 1 of Do Until (pretest loop)

```
Do Until IsEmpty(ActiveCell)
    ActiveCell.Value = 0
    ActiveCell.Offset(1, 0).Select
Loop
```

condition

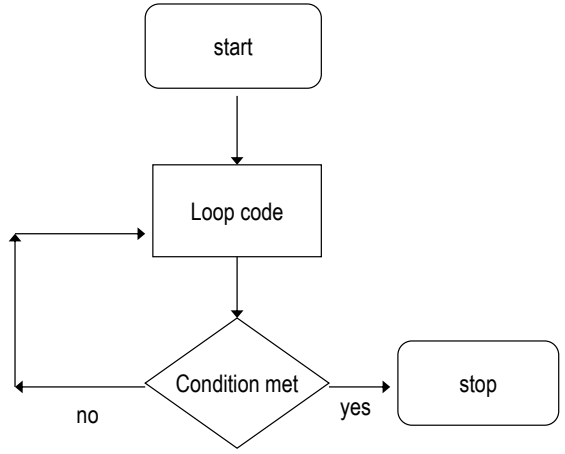
Loop section

Loop repeats until the condition is true

Do Until loop (posttest)

Syntax:

```
Do
    VBA code
    [Exit Do]
    VBA code
Loop Until
    <condition>
```



Example 2 of Do Until (posttest loop)

```
Do
    ActiveCell.Value = 0
    ActiveCell.Offset(1, 0).Select
Loop Until IsEmpty(ActiveCell)
```

Loop section

condition

Loop repeats until the condition is true

Summary: Do While and Do Until Loops

- In the Do While loop, the instructions are processed only when the condition evaluates to true; the loop stops when the condition evaluates to false
- The condition can be evaluated at the start or the end of the loop

- In the Do Until loop, the instructions are processed only when the condition evaluates to false; the loop stops when the condition evaluates to true
- The condition can be evaluated at the start or the end of the loop

Evaluating the condition:

If the condition is evaluated at the start of the loop this is called a **pretest** loop

If the condition is evaluated at the end of the loop this is called a **posttest** loop

The For…Next Statement

- You can use the VBA **For…Next** statement to include a repetition structure in a procedure
- The **For…Next** statement begins with the **For** clause and ends with the **Next** clause
- You can use the **Exit For** statement to exit the **For…Next** loop prematurely
- You can nest **For…Next** statements, which means that you can place one **For…Next** statement within another **For…Next** statement
- In the syntax, ***counter*** is the name of the numeric variable that will be used to keep track of the number of times the loop instructions are processed

Syntax:

For *counter* = *startvalue* To *endvalue* [Step *stepvalue*]
[instructions you want repeated]
[Exit For]
[instructions you want repeated]
Next *counter*

Example 1 of For…Next

```
Dim intCount As Integer
Dim strCity As string
For intCount = 1 To 3 Step 1
   strCity = InputBox(Prompt:="Enter the city", Title:="City")
   MsgBox Prompt:=strCity & " is city number " & intCount, _
    Buttons:=vbOKOnly + vbInformation, Title:="City Number"
Next intCount
```

intCount – the counter

Task to repeat

ForNextEgs.xlsm (ForEg1)

Example 2 of For…Next

```
Dim intCount As Integer
Dim wksX As Worksheet
For intCount = 1 To ActiveWorkbook.Worksheets.Count
   Set wksX = ActiveWorkbook.Worksheets(intCount)
   wksX.PrintPreview
Next intCount
```

Number of sheets in the active workbook

For…Next loop Repeats instructions for all objects in a collection – i.e. the Worksheets collection for the Activeworkbook

ForNextEgs.xlsm
(ForEg2)

Example 3 of For…Next

```
Dim intCount As Integer
Dim wksX As Worksheet
For intCount = 1 To ActiveWorkbook.Worksheets.Count
   Set wksX = ActiveWorkbook.Worksheets(intCount)
   If UCase(wksX.Name) = "SHEET2" Then
         wksX.PrintPreview
         Exit For
    End If
Next intCount
```

The For Next loop is exited prematurely if the name of the sheet is Sheet2

The For Each…Next Statement

- You can also use the VBA **For Each…Next** statement to repeat a group of instructions for each **object in a collection**
- In the syntax, ***element*** is the name of the object variable used to refer to each object in the collection, and ***group*** is the name of the collection in which the object is contained
- The **For Each** clause first verifies that the ***group*** contains at least one object

Example 4: For Each

```
Dim wksX As Worksheet
For Each wksX In ActiveWorkbook.Worksheets
   wksX.PrintPreview
Next wksX
```

For Each loop Repeats instructions for all objects in a collection – i.e. the Worksheets collection for the Activeworkbook

The **For Each** clause:

- Checks to see the group contains at least one object
- If none, loop instructions are skipped
- If at least one object is in the group:

1. The address of the object is assigned to the object variable and the loop instructions are processed
2. The Next clause checks to see if there is another object in the group; if so 1. is repeated

- 2. is repeated until all objects are processed
- The loop can be exited prematurely using **Exit For**

Comparison between For…Next and For Each

For…Next loop

```
Dim intCount As Integer
Dim wksX As Worksheet
For intCount = 1 To _
   ActiveWorkbook.Worksheets.Coun
   t
   Set wksX =
   ActiveWorkbook.Worksheets(intCo
   unt)
   wksX.PrintPreview
Next intCount
```

For Each loop Same task

```
Dim wksX As Worksheet
For Each wksX In
   ActiveWorkbook.Worksheets
   wksX.PrintPreview
Next wksX
```

Example 5: For Each

```
Dim wksX As Worksheet
For Each wksX In ActiveWorkbook.Worksheets
   If UCase(wksX.Name) = "SHEET2" Then
      wksX.PrintPreview
      Exit For
   End If
Next wksX
```

For Each loop including Exit For statement

Comparison between For…Next and For Each

```
Dim intCount As Integer
Dim wksX As Worksheet
For intCount = 1 To
    ActiveWorkbook.Worksheets.Count
   Set wksX =
    ActiveWorkbook.Worksheets(intCount)
    If UCase(wksX.Name) = "SHEET2" Then
          wksX.PrintPreview
          Exit For
      End If
Next intCount
Dim wksX As Worksheet
For Each wksX In ActiveWorkbook.Worksheets
   If UCase(wksX.Name) = "SHEET2" Then
      wksX.PrintPreview
      Exit For
   End If
Next wksX
```

For…N loop

For Each loop more efficient:
- Less variables
- Set statement not necessary

For Each loop Same task

Using For Each…. To access all cells in a range e.g.1

Declare 2 Range variables, one points at the range of interest, the other is used to access all cells in the range

```
Public Sub ForEachCell()
Dim rngCell As Range
Dim rngNumbers As Range
Set rngNumbers = Application.ActiveWorkbook.Worksheets("Sheet1")._
      Range("Number_Area")
For Each rngCell In rngNumbers
   rngCell.Value = 1
Next rngCell
End Sub
```

Looks at every cell in a range

ForNextEgs.xlsm (ForEachCell())

Using For Each…. To access all cells in a range e.g.2

```
Public Sub ForEachCell_2()
Dim rngCell As Range
Dim rngNumbers As Range
Set rngNumbers = Application.ActiveWorkbook.Worksheets("Sheet1")._
    Range("Number_Area")
For Each rngCell In rngNumbers
   If rngCell.Value = 1 Then
   MsgBox "address = " & rngCell.Address
   End If
Next rngCell
End Sub
```

Looks at every cell in a range. Provides the address if the entry = 1

ForNextEgs_2.xlsm (ForEachCell2())

The With Statement

The **With** statement provides a convenient way of accessing the properties and methods of a single object

Syntax:

With *object*

[statements]

End With

Start with **With**

object is the name of the object whose properties or methods you want to access

finish with **End With**

Example 6: With Statement

Accessing the properties and methods of wksJuly (an Excel worksheet object)

```
Dim wksJuly As Worksheet
Set wksJuly = Application.Workbooks(1).Worksheets(1)
With wksJuly
    .Range("B1").Value = "Bonus"
    .Range("B2:B29").Formula = "=A2 * .1"
    .Name = "July Bonus"
    MsgBox prompt:="The sheet's name is " & .Name, _
        Buttons:=vbOKOnly + vbInformation, Title:="Name"
    .PrintPreview
End With
```

ForNextEgs.xlsm

worksheet object variable

Inserts "Bonus" into cell B1 of wksJuly

Inserts formula into cells B1:B29 of wksJuly

Note properties and methods are prefaced with ".", but the name of the object variable is not needed

Changes the name of wksJuly to "July Bonus"

Applies PrintPreview method to wksJuly

Provides a message with the name of wksJuly

The MsgBox Function

The syntax of the MsgBox function:

MsgBox (*Prompt, [Buttons], [Title]*)

prompt is the message in the dialog box

Buttons is the type of button that appears on the message box

title is the text in the title bar

The MsgBox Function

E.g. MsgBox function:

prompt is the message in the dialog box

intButton = MsgBox (Prompt:= "File Saved",_
Buttons:=vbOKOnly+vbInformation, Title:="Saved")

Buttons determines the type/s of button/s, appearance of icon and default button that appears on the message box

title is the text in the title bar

Syntax and Examples of the MsgBox Statement and the MsgBox Function

MsgBox statement

MsgBox Prompt:=*prompt*[, **Buttons:=***buttons*[, **Title:=***title*]

```
MsgBox Prompt:="File saved.", _
        Buttons:=vbOKOnly + vbInformation, Title:="Saved"
```

notice the parentheses

MsgBox function

MsgBox(Prompt:=*prompt*[, **Buttons:=***buttons*[, **Title:=***title*])

```
intButton = MsgBox(Prompt:="Do you want to continue?", _
    Buttons:=vbYesNo + vbExclamation + vbDefaultButton1, _
    Title:="Continue")
```


Valid Settings for the buttons Argument

Group 1: which buttons are displayed

Group 2: type of message icon

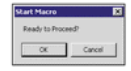
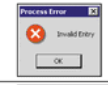
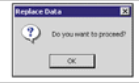
Group 3: which button is default

Settings for the MsgBox's *buttons* argument			
	Constant	Value	Description
Group 1	vbOKOnly	0	Display OK button only
	vbOKCancel	1	Display OK and Cancel buttons
	vbAbortRetryIgnore	2	Display Abort, Retry, and Ignore buttons
	vbYesNoCancel	3	Display Yes, No, and Cancel buttons
	vbYesNo	4	Display Yes and No buttons
	vbRetryCancel	5	Display Retry and Cancel buttons
Group 2	vbCritical	16	Display Critical Message icon
	vbQuestion	32	Display Warning Query icon
	vbExclamation	48	Display Warning Message icon
	vbInformation	64	Display Information Message icon
Group 3	vbDefaultButton1	0	First button is default
	vbDefaultButton2	256	Second button is default
	vbDefaultButton3	512	Third button is default
	vbDefaultButton4	768	Fourth button is default

Message Box *Button* arguments

Example Button arguments

VALUES OF THE BUTTON PARAMETER

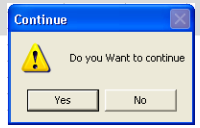
Button	Description	Example
vbOKOnly	OK button only	
vbOKCancel	OK and Cancel buttons	
vbCritical	Critical message	
vbQuestion	Warning query	
vbExclamation	Warning message	
vbInformation	Information message	

MsgBox Function's Buttons

Values returned by the MsgBox function		
Button	Constant	Numeric value
OK	vbOK	1
Cancel	vbCancel	2
Abort	vbAbort	3
Retry	vbRetry	4
Ignore	vbIgnore	5
Yes	vbYes	6
No	vbNo	7

Values returned by the MsgBox function

Example 1

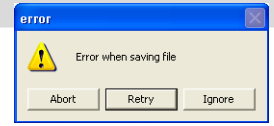



```
Dim intResponse As Integer
intResponse = MsgBox(Prompt:="Do you Want to continue", _
Buttons:=vbYesNo + vbExclamation + vbDefaultButton1, _ Title:="Continue")
If intResponse = vbYes Then
   [instructions to process when Yes button is selected]
Else
   [instructions to process when No button is selected]
End If
```

MsgBoxEgs.xls

- If the user selects the Yes button, the MsgBox function returns the integer 6, represented by the intrinsic constant vbYes

Example 2




```
Dim intButton As Integer
intButton = MsgBox(prompt:="Error when saving file", Buttons:=vbAbortRetryIgnore +
    vbExclamation + vbDefaultButton2, Title:="error")
Select Case intButton
Case vbAbort
   [instructions to process when vbAbort button is selected]
Case vbRetry
   [instructions to process when vbRetry button is selected]
Case vbIgnore
   [instructions to process when vbIgnore button is selected]
End Select
```

MsgBoxEgs.xls

e.g.If the user selects the Retry button, the MsgBox function returns the integer 4, represented by the intrinsic constant vbRetry

Summary

To display VBA's predefined message box, and then return a value that indicates which button was selected in the message box:

Use the MsgBox function:

MsgBox (*Prompt, [Buttons], [Title]*)