

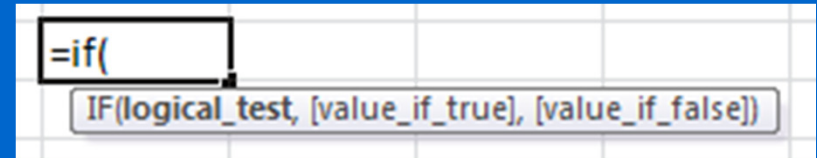
COMP1022Q

Introduction to Computing with Excel VBA

Making Basic Decisions in VBA

David Rossiter, Eddie Chan and Oz Lam

Using IF in a Cell



- Let's review the cell formula IF function we saw before

- IF (*condition* , *some code or value...*)

- Excel will test this condition

- Everything put here will be executed/returned if the result of the test is True
 - False will be returned if the result of the test is False

- For example:

IF (B4 > 3 , "Cell B4 is greater than 3!")

Using If in VBA

- Like the cell's IF function, the VBA If statement is also used to control the flow of the program based on a condition
- The VBA If statement looks like this:

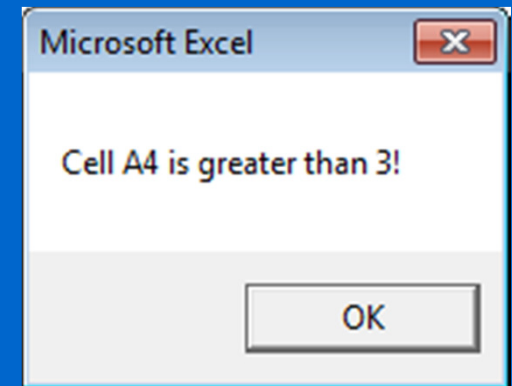
```
If condition Then
```

```
    some code
```

```
End If
```

- *Condition to be tested*

- *Everything put here will be executed if the result of the test is True, otherwise it is ignored*



- For example:

```
If Range("A4").Value > 3 Then
```

```
    MsgBox "Cell A4 is greater than 3!"
```

```
End If
```

Using VBA to Put Something in a Cell

- In another presentation, we describe how you can store something in a VBA variable
- Let's look at how you can put something into a cell using VBA, like this:

```
Range("D4").Value = something
```

 *The destination cell*

- For example, we can change the example in the previous slide to show the message in cell D4:

```
If Range("A4").Value > 3 Then
```

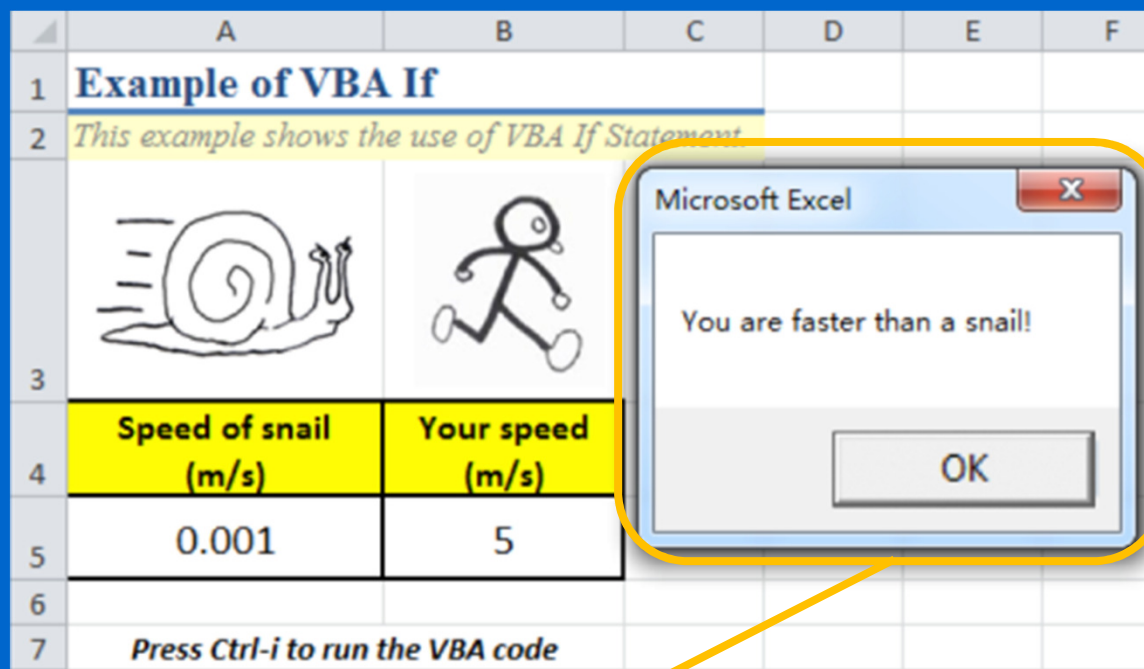
```
    Range("D4").Value = "Cell A4 is greater than 3!"
```

```
End If
```

	A	B	C	D
1				
2				
3				
4	5			Cell A4 is greater than 3!
5				

An Example of VBA If 1/2

- If your speed is faster than that of a snail, this example will pop up a message showing "You are faster than a snail!"





```
If Range("B5").Value > Range("A5").Value Then  
➡ MsgBox "You are faster than a snail!"  
End If
```



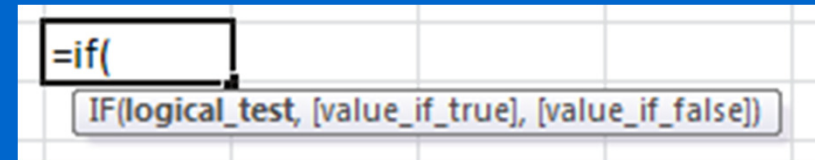
An Example of VBA If 2/2

- If your speed is slower than or equal to that of the snail, it will do nothing

	A	B	C
1	Example of VBA If		
2	<i>This example shows the use of VBA If Statement.</i>		
3			
4	Speed of snail (m/s)	Your speed (m/s)	
5	0.001	0.0005	
6			
7	<i>Press Ctrl-i to run the VBA code</i>		

```
If Range("B5").Value > Range("A5").Value Then X  
    MsgBox "You are faster than a snail!"  
End If
```

The Extended If in Cell Formulas



- Here is a reminder of the extended IF we discussed previously:

IF (*condition* , *code1 or value1...* , *code2 or value2...*)

- Excel will test this condition*
- Everything put here will be executed/returned if the result of the test is True*
- Everything put here will be executed/returned if the result of the test is False*

- For example:

IF (B4 > 3 ,
"Cell B4 is greater than 3!" ,
"Cell B4 is smaller than or equal to 3!")

The VBA If...Else... Statement

- The equivalent VBA structure looks more friendly:

```
If condition Then
```

```
    code1
```

```
Else
```

```
    code2
```

```
End If
```

- Condition will be tested*

- Everything put here will be executed if the result of the test is True*

- Everything put here will be executed if the result of the test is False*

- For example:

```
IF Range("B4") > 3 Then
```

```
    MsgBox "Cell B4 is greater than 3"
```



```
Else
```

```
    MsgBox "Cell B4 is smaller than or equal to 3!"
```

```
End If
```


An Example of VBA If...Else... 1/2

- If the money in your pocket is more than or equal to the cost of the chocolate, this example will pop up a message showing "I have enough money to buy chocolate! Yea!!" - else *see next slide*

	A	B	C	D	E	F	G	H	
1	The VBA If...Else...								
2	This example shows the VBA If...Else... Statement								
3									
4	Money in Pocket	Cost of Chocolate							
5	12	10							
6									
7	Press Ctrl-i to run the VBA code								

Microsoft Excel



I have enough money to buy chocolate! Yea!!

OK

```
If Range("A5") >= Range("B5") Then ✓  
    ➡ MsgBox "I have enough money to buy chocolate! Yea!!"  
Else  
    MsgBox "No chocolate for me today :("  
End If
```

An Example of VBA If...Else... 2/2

- If the money in your pocket is less than the cost of the chocolate, it will pop up a message showing "No chocolate for me today :(")

	A	B	C	D	E	F
1	The VBA If...Else...					
2	<i>This example shows the VBA If...Else... Statement</i>					
3						
4	Money in Pocket	Cost of Chocolate				
5	8	10				
6						
7	<i>Press Ctrl-i to run the VBA code</i>					

Microsoft Excel

No chocolate for me today :(

OK

```
If Range("A5") >= Range("B5") Then ✗  
    MsgBox "I have enough money to buy chocolate! Yea!!"  
Else  
    ➡ MsgBox "No chocolate for me today :("  
End If
```

Nested IF in Cell Formulas

- Here is a reminder of the nested IF we discussed previously:

IF (*condition1* , *code1 or value1...* ,
IF (*condition2* , *code2 or value2...* , *code3 or value3...*))

- Excel will test this condition first*
- Everything put here will be considered if the result of the first test is False*
- Excel will test this condition if the result of the first test is False*
- Everything put here will be executed/returned if the results of both of the tests are False*

- For example:

IF (B4 > 3 , "Cell B4 is greater than 3!" ,
IF (B4 < 3 , "Cell B4 is smaller than 3!" ,
"Cell B4 is equal to 3!"))

The VBA If...ElseIf...Else... Statement

- In VBA, we can do the same thing like this:

- IF **condition1** Then
 code1

- ElseIf **condition2** Then
 code2

- Else

- code3**

- EndIf

- **condition1** will be tested first
- Everything put here will be considered if **condition1** test result is False
- **condition2** will be tested if **condition1** test result is False
- Everything put here will be executed if the results of both tests are False

- IF **Range("B4").Value > 3** Then
 MsgBox "Cell B4 is greater than 3!"

- ElseIf **Range("B4").Value < 3** Then

- MsgBox "Cell B4 is smaller than 3!"




- Else

- MsgBox "Cell B4 is equal to 3!"**

- EndIf

VBA If...ElseIf...Else... Example 1/3

- If the money in your pocket is more than or equal to the cost of the big bar of chocolate, this example will pop up a message showing "I have enough money to buy a big bar of chocolate! Yea!!" - else *see next slide*

	A	B	C
1	VBA If...ElseIf...Else...		
2	This example shows the use of VBA If...ElseIf...Else... Statement		
3			
4	Money in Pocket	Cost of Big Bar of Chocolate	Cost of Small Bar of Chocolate
5	50	10	5
6			
7	Press Ctrl-I to run the VBA code		

Microsoft Excel




I have enough money to buy a big bar of chocolate! Yea!!

OK

```
If Range("A5").Value >= Range("B5").Value Then ✓  
➡ MsgBox "I have enough money to buy a big bar of chocolate! Yea!!"  
ElseIf Range("A5").Value >= Range("C5").Value Then  
    MsgBox "I have enough money to buy a small bar of chocolate!"  
Else  
    MsgBox "No chocolate for me today :("  
End If
```

VBA If...ElseIf...Else... Example 2/3

- If the money in your pocket is less than the cost of the big bar of chocolate but is more than or equal to the cost of the small bar of chocolate, it will pop up a message showing "I have enough money to buy a small bar of chocolate!" - else *see next slide*

	A	B	C	D	E	F	G	H	I	J
1	VBA If...ElseIf...Else...									
2	This example shows the use of VBA If...ElseIf...Else... Statement									
3										
4	Money in Pocket	Cost of Big Bar of Chocolate	Cost of Small Bar of Chocolate							
5	6	10	5							
6										
7	Press Ctrl-I to run the VBA code									

Microsoft Excel




I have enough money to buy a small bar of chocolate!

OK

```
If Range("A5").Value >= Range("B5").Value Then ✗  
    MsgBox "I have enough money to buy a big bar of chocolate! Yea!!"  
ElseIf Range("A5").Value >= Range("C5").Value Then ✓  
    ➡ MsgBox "I have enough money to buy a small bar of chocolate!"  
Else  
    MsgBox "No chocolate for me today :("  
End If
```

VBA If...ElseIf...Else... Example 3/3

- If the money in your pocket is less than the cost of both the big and small bar of chocolate, it will pop up a message showing "No chocolate for me today :(")

	A	B	C	D	E	F	G
1	VBA If...ElseIf...Else...						
2	This example shows the use of VBA If...ElseIf...Else... Statement						
3							
4	Money in Pocket	Cost of Big Bar of Chocolate	Cost of Small Bar of Chocolate				
5	1	10	5				
6							
7	Press Ctrl-i to run the VBA code						

```
If Range("A5").Value >= Range("B5").Value Then X  
    MsgBox "I have enough money to buy a big bar of chocolate! Yea!!"  
ElseIf Range("A5").Value >= Range("C5").Value Then X  
    MsgBox "I have enough money to buy a small bar of chocolate!"  
Else  
    ➡ MsgBox "No chocolate for me today :(" )  
End If
```

Making the Chinese Discount Example Using VBA

	A	B	C	D	E	F	G
4	<i>Here is the English sign:</i>						
5	Up to 80 % off						
6							
7	<i>This is the Chinese equivalent:</i>						
8	低至 折						
9							
10	<i>Press Ctrl-i to update the Chinese number</i>						

- In this example, we will use VBA instead of cell functions to update the result cell
- To run the VBA, we will use a keyboard shortcut

The VBA Code

- Here is the VBA code:

```
Sub update_chinese_discount_number()
```

```
Dim ArabicDiscount As Integer  
Dim ChineseDiscount As String
```

Create two variables

```
ArabicDiscount = Range("B5").Value
```


Initialize this variable
with the English
discount value held in
cell B5

```
ChineseDiscount = ""
```


Initialize this variable
with an empty string



*Continued on
the next slide*




```
If ArabicDiscount = 10 Then
    ChineseDiscount = "九"
ElseIf ArabicDiscount = 20 Then
    ChineseDiscount = "八"
ElseIf ArabicDiscount = 30 Then
    ChineseDiscount = "七"
ElseIf ArabicDiscount = 40 Then
    ChineseDiscount = "六"
ElseIf ArabicDiscount = 50 Then
    ChineseDiscount = "五"
ElseIf ArabicDiscount = 60 Then
    ChineseDiscount = "四"
ElseIf ArabicDiscount = 70 Then
    ChineseDiscount = "三"
ElseIf ArabicDiscount = 80 Then
    ChineseDiscount = "二"
ElseIf ArabicDiscount = 90 Then
    ChineseDiscount = "一"
```



Go through
all the
possibilities

- You can see the code shown on the left uses Chinese characters
- However, in the actual code the Chinese characters have to be entered using the ChrW() function, e.g. you have to use ChrW(19968) to represent '一' in the code
- This is because the VBA editor does not support Chinese



```
' Update cell D8
' with the output
Range("D8").Value = _
    ChineseDiscount
```

End Sub

```
Else
    MsgBox "Invalid discount percentage"
End If
```



If all the previous
tests fail, this code
will be executed

Example Results

- Here are three example results:

The image displays three examples of a spreadsheet application used for converting English discount signs into Chinese. Each example shows a sign with two Adidas logos and a pair of shoes. The sign text is converted from English to Chinese, and the Chinese text is displayed in a large font. The first example shows a sign with 'Up to 80 % off' and '低至二折' (Lowest 20% off). The second example shows a sign with 'Up to 60 % off' and '低至四折' (Lowest 40% off). The third example shows a sign with 'Up to 65 % off' and '低至折' (Lowest discount). A dialog box in the third example indicates an 'Invalid discount percentage'.

English Sign	Chinese Sign
Up to 80 % off	低至二折
Up to 60 % off	低至四折
Up to 65 % off	低至折

This is 2 in Chinese

This is 4 in Chinese