

**King Fahd University of Petroleum and Minerals**  
**MIS-105--- Introduction to Computer Applications**  
**Lab#4: Introction to Microsoft Excel**  
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**Spreadsheets in Decision Making: What If?**

### **Opening an Existing Workbook**

**Note:** Please download MS Excel Lab#3 and its Practice files from your course website <http://cim-ilyas>

- Start Excel.
- Click on the **File option** on the menu bar. You can also access it through **open button** on the tool bar.

**Note:** The shortcut keys for this action are **ctrl+O**

- Click on the **file name** you want to open.
- Click on the **open button**.

### **Using Functions**

A **function** is a predefined formula that accepts one or more arguments as input, performs the indicated calculation, then returns another value as output. e.g. **AVERAGE(A3:E3)**

Where:

**AVERAGE** is the function name for calculating the average.  
**A3:E3** is the argument.

**Note:** An argument/s is/are always given in parenthesis.

Excel has more than 100 different functions in various categories.

**Statistical Functions** like **AVERAGE, MAX, MIN** functions.

**Financial Functions** such as **PMT, FV** functions.

**Maths and Trigonometric Functions** like **INT, FLOOR, FACT, COS, SIN, PI, RAND** etc.

**Logical Functions** like **IF, AND, OR, NOT** etc.

**Text Functions** such as **LEN, LEFT, RIGHT** etc.

### **Statistical Functions**

The **MAX, MIN** and **AVERAGE** functions return the highest, lowest, and average values, respectively, from an argument list. The list may include individual cell references, ranges, numeric values, functions, or mathematical expressions (formulas). Consider figure1:

	A
1	70
2	80
3	90
4	
5	Study hard

Empty cell

Text value

Function	Value
=AVERAGE(A1:A3)	80
=AVERAGE(A1:A3,200)	110
=AVERAGE(A1:A4)	80
=AVERAGE(A1:A3,A5)	80
=MAX(A1:A3)	90
=MAX(A1:A3,200)	200
=MAX(A1:A4)	90
=MAX(A1:A3,A5)	90
=MIN(A1:A3)	70
=MIN(A1:A3,200)	70
=MIN(A1:A4)	70
=MIN(A1:A3,A5)	70
=COUNT(A1:A3)	3
=COUNT(A1:A3,200)	4
=COUNT(A1:A4)	3
=COUNT(A1:A3,A5)	3
=COUNTA(A1:A3)	3
=COUNTA(A1:A3,200)	4
=COUNTA(A1:A4)	3
=COUNTA(A1:A3,A5)	4

Empty and/or text values are not included in the computation

Empty and/or text values are not included in the computation (COUNT)

Empty cells and/or text values are not included in the computation (COUNTA)

Text values are included in the computation (COUNTA)

Figure1

## Arithmetic Expressions versus Functions

Many worksheet calculations such as an average or sum, can be performed in two ways. You can enter a formula such as  $=(A1+A2+A3)/3$ , or you can use the equivalent function  $=AVERAGE(A1:A3)$ . The use of function is generally preferable as shown in figure2.

The two worksheets in figure2a may appear equivalent, but the SUM function is superior to the arithmetic expression. This is true despite the fact that entries in cell A5 of both worksheets return a value of 100.

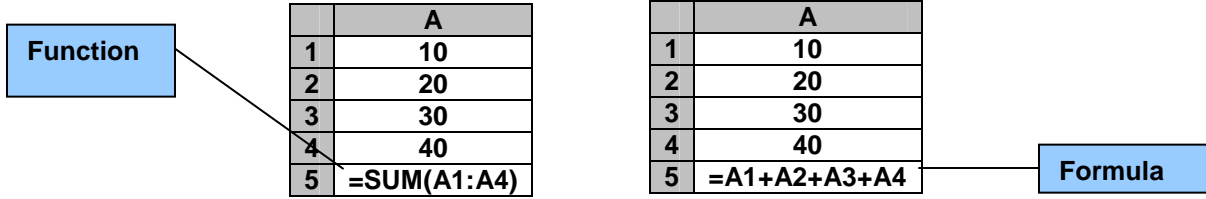


Figure2(a)

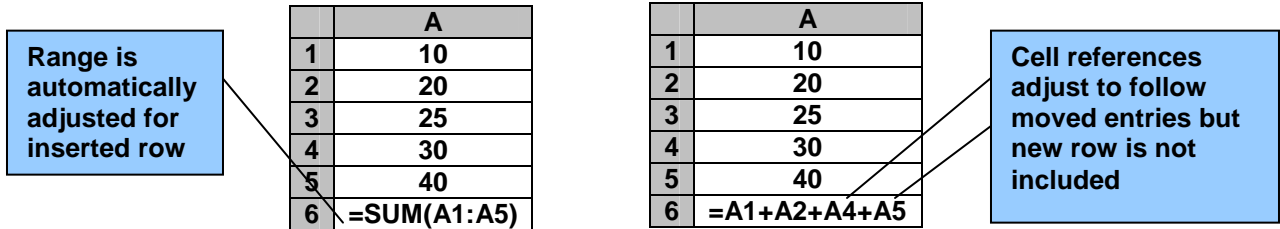


Figure2(b)

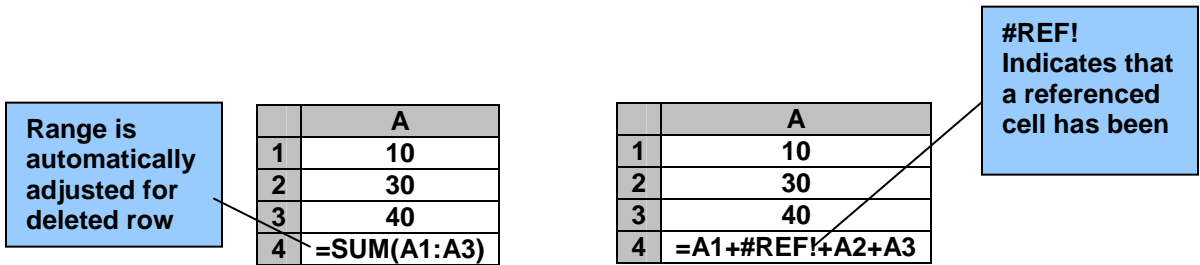


Figure2(c)

**Go to a specific cell**  
 One way is to click in the Name box (to left of the formula bar), enter the cell reference (e.g. H9), and press enter key. You can also pull down the edit menu and click the Go To command (or press the F5 key) to display the Go To dialog box, enter the name of the cell in the Reference text box, then press enter to go directly to the cell.

**Decision Making**

**IF Function**

The *IF function* enables decision making to be implemented within a worksheet. It has three arguments: a condition that is either true or false, the value if the condition is true, and the value if the condition is false. Consider

=IF(condition, value-if-true, value-if-false)

The condition includes one of the six *relational operators* as shown figure3.

Operator	Description
=	<i>Equal to</i>
<>	<i>Not Equal to</i>
<	<i>Less than</i>
>	<i>Greater than</i>
<=	<i>Less than or equal to</i>
>=	<i>Greater than or equal to</i>

Figure3

Now consider figure4 (a) and (b).

	A	B	C
1	10	15	April
2	10	30	May

Figure4(a)

IF Function	Evaluation	Result
=IF(A1=A2,1000,2000)	10 is equal to 10:TRUE	1000
=IF(A1<>A2,1000,2000)	10 is equal to 10:FALSE	2000
=IF(A1<>A2,B1,B2)	10 is not equal to 10:FALSE	30
=IF(A1<B2,MAX(B1:B2),MIN(B1:B2))	10 is less than 30:TRUE	30
=IF(A1<A2,B1+10,B1-10)	10 is less than 10:FALSE	5
=IF(A1=A2,C1,C2)	10 is equal to 10:TRUE	April
=IF(SUM(A1:A2)>20,"Go","Hold")	10+10 is greater than 20: FALSE	Hold