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11 Year's of Excellence

BASIC & ADVANCE EXCEL

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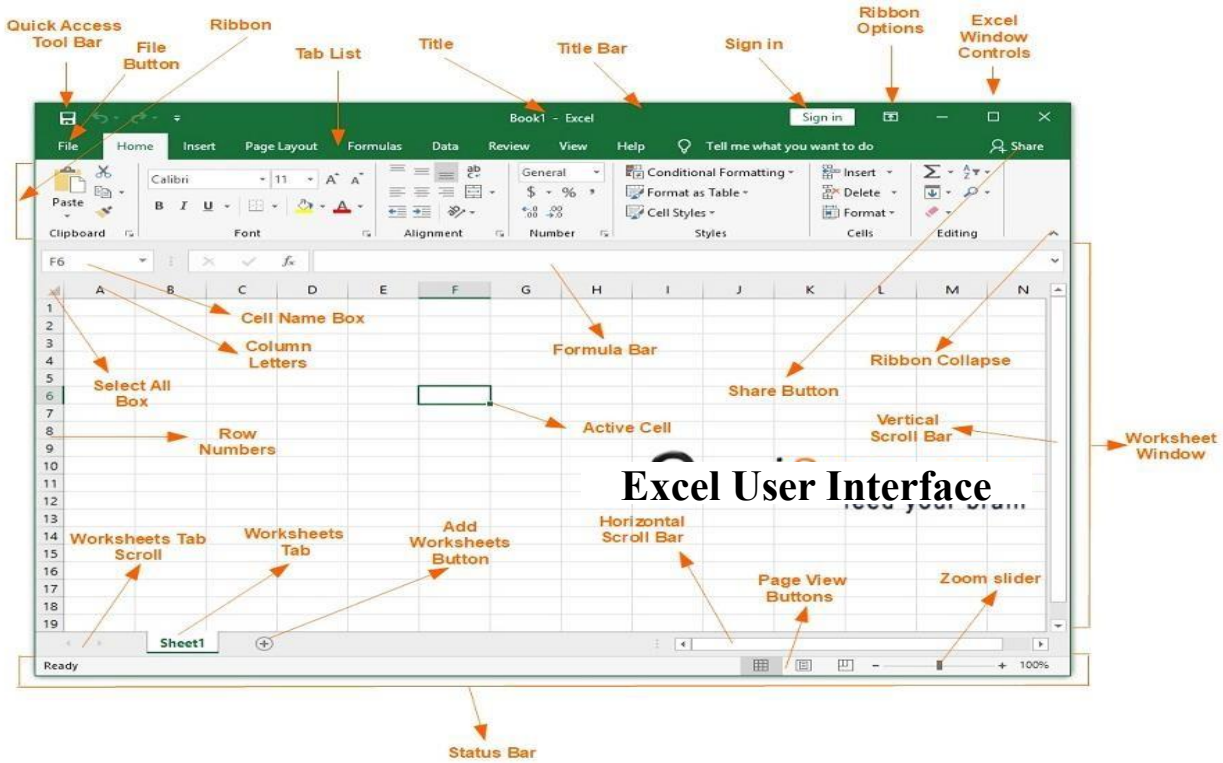
PARTS OF EXCEL



What is Microsoft Excel?

Microsoft Excel is a spreadsheet program that is used to record and analyze numerical data. A spreadsheet can be thought as a collection of columns and rows that form a table.

Rows and Columns: Alphabetical letters (A,B,C…) are usually assigned to columns and numbers (1,2,3…) are usually assigned to rows.
Cell: The point where a column and a row meet is called a cell. The address of a cell is given by the letter representing the column and the number representing a row. E.g.: A20, E12, D2 etc.

Cell Range: A group of cells is known as a cell range. Rather than a single cell address, you will refer to a cell range using the cell addresses of the first and last cells in the cell range, separated by a colon. For example, a cell range that included cells A1, A2, A3, A4, and A5 would be written as **A1:A5**.

Why learn Microsoft Excel?

We all deal with numbers in one way or the other. We all have daily expenses which we pay for from the monthly income that we earn. For one to spend wisely, they will need to know their income vs. expenditure. Microsoft Excel comes in handy when we want to record, analyze and store such numeric data.

- One of the best uses of MS Excel is that you can analyze larger amounts of data to discover trends. With the help of graphs and charts, you can summarize the data and store it in an organized way so that whenever you want to see that data then you can easily see it.
- There are wonderful tools for sorting, filtering and searching which all the more make you work easy.
- It makes easy for you to solve complex mathematical problems in a much simpler way without much manual effort. There are so many formulas in MS Excel and by using these formulas you can implement lots of operations like finding sum, average, etc. on a large amount of data all at once.
- The chief use of MS Excel is that it provides security for excel files so people can keep their files safe. All the files of MS Excel can be kept password-protected through visual basic programming or directly within the excel file.
- It helps you in adding more sophistication to your data presentations which means that you can improve the data bars, you can highlight any specific items that you want to highlight and make your data much more presentable easily.
- You can represent data in the form of charts and graphs so it can help in identifying different trends. With the help of MS Excel, trend lines can be extended beyond graph and therefore, it helps one in analyzing the trends and patterns much easier. In business, it is very important to analyze the popularity of goods or the selling pattern that they follow to maximize sales.
- MS Excel helps in managing expenses.

Worksheet is a collection of rows and columns. When a row and a column meet, they form a cell. Cells are used to record data. Each cell is uniquely identified using a cell address. Columns are usually labelled with letters while rows are usually numbers.
Workbook is a collection of worksheets. By default, a workbook has three cells in Excel. You can delete or add more sheets to suit your requirements. By default, the sheets are named Sheet1, Sheet2 and so on and so forth. You can rename the sheet names to more meaningful names i.e. Daily Expenses, Monthly Budget, etc.

Understanding the Ribbon

- The ribbon provides shortcuts to commands in Excel. A command is an action that the user performs. An example of a command is creating a new document, printing a documenting, etc.
- **Ribbon start button** - it is used to access commands i.e. creating new documents, saving existing work, printing, accessing the options for customizing Excel, etc.
- **Ribbon tabs** – the tabs are used to group similar commands together. The home tab is used for basic commands such as formatting the data to make it more presentable, sorting and finding specific data within the spreadsheet.
- **Ribbon bar** – the bars are used to group similar commands together. As an example, the Alignment ribbon bar is used to group all the commands that are used to align data together.

Template: A template is a preformatted workbook designed for a specific purpose such as tracking sales or budgeting.
Merge cells A highly useful feature used by accountants is the merge facility which enables two or more neighboring cells to be merged into a single larger cell. There are a number of options, the two most common being:
Merge and center – Merges all selected cells into a single cell retaining only the contents of the upper-left most cell. The result is center/bottom aligned.
Merge across– Merges selected cells on a line by line basis, again retaining only the contents of the left-most cells. The result is left aligned.
Freeze panes (lock rows / columns) Freezing panes or splitting panes enables you to keep an area of a worksheet visible whilst you scroll to another area of the worksheet. The difference between freezing and splitting is that with freezing you continue to view just one view of the worksheet, whereas with splitting panes the screen effectively becomes either two or four views of the underlying worksheet.
Cloud computing: Cloud computing is the use of computing resources (both software and hardware) that are delivered as a service over a network – typically the internet. A recent trend has been for users to store files off-site rather than within their own computer and access their files via the internet. This has the benefit of users being able to access their files from any location (subject to an internet connection).

- ❑ **Freeze panes:** Reviewing a worksheet by holding the same columns & sliding others
- ❑ **SHIFT + F3** displays the function insert dialog window
- ❑ **SHIFT + F11** Creates (chart) a new worksheet
- ❑ **F2** Check formula and cell range covered
- ❑ **Alt + Enter** to insert a new line in the same cell
- ❑ **Ctrl + 0** to hide entire column
- ❑ **Ctrl + ;/ =TODAY()** to insert current date in a cell
- ☐ **=NOW()** to insert current date and time
- ☐ **=COUNTA()** counts non-empty cells
- ❑ **$** symbol specifies the fixed columns o rows

• We will now perform the calculations using the respective arithmetic operators. When performing calculations in Excel, you should always start with the equal (=) sign.

► **FORMULA IN EXCEL:** is an expression that operates on values in a range of cell addresses and operators. For example, =A1+A2+A3, which finds the sum of the range of values from cell A1 to cell A3. An example of a formula made up of discrete values like =6*3. =A2 * D2 / 2
Mistakes to avoid: Remember the rules of Brackets of Division, Multiplication, Addition, & Subtraction (**BODMAS**). This means expressions are brackets are evaluated first. For arithmetic operators, the division is evaluated first followed by multiplication then addition and subtraction is the last one to be evaluated. Using this rule, we can rewrite the above formula as =(A2 * D2) / 2. This will ensure that A2 and D2 are first evaluated then divided by two.
Excel spreadsheet formulas usually work with numeric data; you can take advantage of data validation to specify the type of data that should be accepted by a cell i.e. numbers only.
To ensure that you are working with the correct cell addresses referenced in the formulas, you can press F2 on the keyboard. This will highlight the cell addresses used in the formula, and you can cross check to ensure they are the desired cell addresses.
When you are working with many rows, you can use serial numbers for all the rows and have a record count at the bottom of the sheet. You should compare the serial number count with the record total to ensure that your formulas included all the rows.

► **FUNCTION IN EXCEL:** is a predefined formula that is used for specific values in a particular order. Function is used for quick tasks like finding the sum, count, average, maximum value, and minimum values for a range of cells. For example, cell A3 below contains the SUM function which calculates the sum of the range A1:A2.
SUM for summation of a range of numbers
AVERAGE for calculating the average of a given range of numbers
COUNT for counting the number of items in a given range
Importance Of Functions: Functions increase user productivity when working with excel. Let's say you would like to get the grand total for the above home supplies budget. To make it simpler, you can use a formula to get the grand total. Using a formula, you would have to reference the cells E4 through to E8 one by one. You would have to use the following formula.
= E4 + E5 + E6 + E7 + E8
With a function, you would write the above formula as
=SUM (E4:E8)
As you can see it is much more efficient to use a function to get the sum than using the formula which will have to reference a lot of cells.

► Important symbol in excel:

Symbol	Name	Description
=	Equal to	Every Excel Formula must begins with Equal to symbol (=). Example:=A1+A5
()	Parentheses	All Arguments of the Excel Functions specified between the Parentheses. Example:=COUNTIF(A1:A5,5)
()	Parentheses	Expressions specified in the Parentheses will be evaluated first. Parentheses changes the order of the evaluation in Excel Formula. Example: =25+(35*2)+5
*	Asterisk	Wild card operator to denote all values in a List. (Multify) Example: =COUNTIF(A1:A5,"*")
,	Comma	List of the Arguments of a Function Separated by Comma in Excel Formula. Example: =COUNTIF(A1:A5,">" &B1)
&	Ampersand	Concatenate Operator to connect two strings into one in Excel Formula. Example: ="Total: "&SUM(B2:B25)
$	Dollar	Makes Cell Reference as Absolute in Excel Formula. (Freeze the range) Example:=SUM($B$2:$B$25)
!	Exclamation	Sheet Names and Table Names Followed by ! Symbol in Excel Formula. Example: =SUM(Sheet2!B2:B25)
[]	Square Brackets	Uses to refer the Field Name of the Table (List Object) in Excel Formula. Example:=SUM(Table1[Column1])
{}	Curly Brackets	Denote the Array formula in Excel. Example: {=MAX(A1:A5-G1:G5)}
:	Colon	Creates references to all cells between two references (Create a range). Example: =SUM(B2:B25)
,	Comma	Union Operator will combine the multiple references into One. Example: =SUM(A2:A25, B2:B25)
(space)	Space	Intersection Operator will create common reference of two references. Example: =SUM(A2:A10 A5:A25)
""	Blank	Blank
" "	Space	When we use space.
?	Question marks	When we wnt to represent as a single character.
~	Tilde	When we represent single chracter in formula.
#	Hash	When we represent numeric.
*	Astrisk/Star	When we represent to text.
@	At/ At the rate	Represent text in custom format.
^	Carret	It's a symbol of cube.
>		Greater than
<		Less than
>=		Greater than or equal
<=		Less than or equal
<>		Not equal
+	Plus/Sum	Add all the values in a cell range.
-	Minus/Hyphen	Deduct the value from a cell range.
/	Divided/Slash	Divide the value of a cell or cell range.

Ctrl + A = Select all
Ctrl + B = Bold
Ctrl + C = Copy
Ctrl + D = Fill down
Ctrl + E = Flash
Ctrl + F = Find
Ctrl + G = Go to
Ctrl + H = Replace
Ctrl + I = Italic
Ctrl + J = (Nothing)
Ctrl + K = Hyperlink
Ctrl + L = Insert table
Ctrl + M = (Nothing)
Ctrl + N = Create New workbook
Ctrl + O = Open workbook
Ctrl + P = Print
Ctrl + Q = (Nothing)
Ctrl + R = Fill right
Ctrl + S = Save
Ctrl + T = Insert table
Ctrl + U = underline
Ctrl + V = paste
Ctrl + W = Closing Workbook
Ctrl + X = Cut
Ctrl + Y = Redo
Ctrl + Z = Undo

F1	Help
F2	Edit Mode
F3	Paste Name Formula
F4	Repeat Action
F5	Go To
F6	Next Pane
F7	Spell Check
F8	Extended Selection
F9	Calculate All
F10	Activate Menu
F11	New Chart
F12	Save As

Commor Function

FUNCTION	DESCRIPTION	USAGE
SUM	Adds all the values in a range of cells	=SUM(E4:E8)
MIN	Finds the minimum value in a range of cells	=MIN(E4:E8)
MAX	Finds the maximum value in a range of cells	=MAX(E4:E8)
AVERAGE	Calculates the average value in a range of cells	=AVERAGE(E4:E8)
COUNT	Counts the number of cells in a range of cells	=COUNT(E4:E8)
COUNTA	The COUNTA function counts cells that contain values, including numbers, text, logical, errors, and empty text ("").	=COUNTA(A1:A10)
COUNTIF	To count the number of cells that meet a criterion;	=COUNTIF(B2:B5,">55")
LEN	Returns the number of characters in a string text	=LEN(B7)
SUMIF	Adds all the values in a range of cells that meet a specified criteria. =SUMIF(range,criteria, [sum_range])	=SUMIF(D4:D8,">=1000″,C4:C8)
AVERAGEIF	Calculates the average value in a range of cells that meet the specified criteria. =AVERAGEIF(range,criteria,[average_range])	=AVERAGEIF(F4:F8,"Yes",E4:E8)
DAYS	Returns the number of days between two dates	=DAYS(D4,C4)
NOW	Returns the current system date and time	=NOW()
MEDIAN	To calculate median	=MEDIAN(C2:C8)
MODE	To calculate mode	=MODE(C2:C8)
CONCAT	CONCAT function combines the text from multiple ranges and/or strings	=CONCAT(B2," ", C2)
SEPARTE		

Date Tin e Functions:

FUNCTION	DESCRIPTION	USAGE
DATE	Returns the number that represents the date in exc el code	=DATE(2015,2,4)
DAYS	Find the number of days between two dates	=DAYS(D6,C6)
MONTH	Returns the month from a date value	=MONTH("4/2/2015")
MINUTE	Returns the minutes from a time value	=MINUTE("12:31")
YEAR	Returns the year from a date value	=YEAR("04/02/2015")

Numeric Functions:

FUNCTION	DESCRIPTION	USAGE
ISNUMBER	Returns True if the supplied value is numeric and False if it is not numeric	=ISNUMBER(A3)
RAND	Generates a random number between 0 and 1	=RAND()
ROUND	Rounds off a decimal value to the specified number of decimal points	=ROUND(3.14455,2)
MEDIAN	Returns the number in the middle of the set of given numbers	=MEDIAN(3,4,5,2,5)
PI	Returns the value of Math Function PI(π)	=PI()
POWER	Returns the result of a number raised to a power. **POWER(number, power)**	=POWER(2,4)
MOD	Returns the Remainder when you divide two numbers	=MOD(10,3)
ROMAN	Converts a number to roman numerals	=ROMAN(1984)

String functions:

FUNC.	DESCRIPTION	USAGE	COMMENT
LEFT	Returns a number of specified characters from the start (left-hand side) of a string	=LEFT("GURU99",4)	Left 4 Characters of "GURU99"
RIGHT	Returns a number of specified characters from the end (right-hand side) of a string	=RIGHT("GURU99", 2)	Right 2 Characters of "GURU99"
MID	Retrieves a number of characters from the middle of a string from a specified start position and length. **=MID (text, start_num, num_chars)**	=MID("GURU99",2,3)	Retrieving Characters 2 to 5
ISTEXT	Returns True if the supplied parameter is Text	=ISTEXT(value)	value – The value to check.
FIND	Returns the starting position of a text string within another text string. This function is case-sensitive. **=FIND(find_text, within_text, [start_num])**	=FIND("oo","Roofing",1)	Find oo in "Roofing", Result is 2
REPLACE	Replaces part of a string with another specified string. **=REPLACE (old_text, start_num, num_chars, new_text)**	=REPLACE("Roofing",2,2,"xx")	Replace "oo" with "xx"

Logical Functions: are used in spreadsheets to test whether a situation is true or false. Depending on the result of that test, you can then elect to do one thing or another. These decisions can be used to display information, perform different calculations, or to perform further tests. Such as: =IF(Condition,x,y)

► The IF Function

The **IF** function is the key logical function used for decision making. It takes the format:
=IF(condition, true, false)
For example, you could use the following formula:
=IF(B2 > 400, "High", "Low") where,
B2 > 400 is the condition being tested
(this could be translated as "Is the value in cell B2 greater than 400?")
"High" is the text to display if B2 is greater than 400 (the result of the test is **yes** or **TRUE**)
"Low" is the text to display if B2 is less than or equal to 400 (the result of the test is **no** or **FALSE**)

► The AND Function

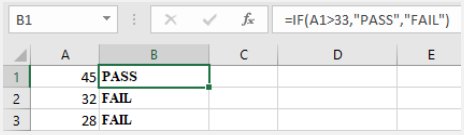
The **AND** function is used to compare more than one condition. It returns TRUE only if all of the conditions are met, and takes the format:
=AND(condition1, condition2,…)
For example, you could use the following formula:
=AND(B2 > 400, C2 < 300) where,
B2 > 400 is the first condition being tested
C2 < 300 is the second condition being tested
This will only return the result **TRUE** if the value in cell B2 is greater than 400 and the value in cell C2 is less than 300. In all other situations, the result will be **FALSE**.

► The OR Function

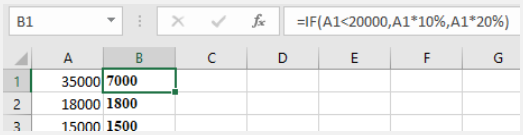
The **OR** function is also used to compare more than one condition. It returns TRUE if any of the conditions are met, and takes the format:
=OR(condition1, condition2,…)
For example, you could use the following formula:
=OR(B2 > 400, C2 < 300) where,
B2 > 400 is the first condition being tested
C2 < 300 is the second condition being tested
This will return the result **TRUE** if either the value in cell B2 is greater than 400 or the value in cell C2 is less than 300. The result will be **FALSE** only if neither of the conditions is met.

Example:

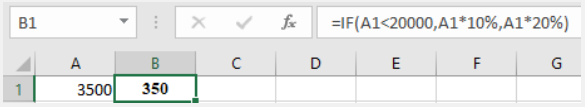
=IF(A1>33,"PASS","FAIL")



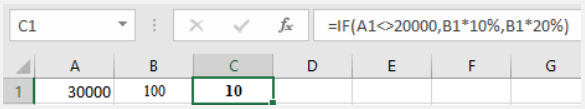
=IF(A1<20000,E5*10%,E5*20%)



Suppose, the value of cell A1 in MS Excel sheet is 3500. If we apply the formula =IF(A1<20000,A1*10%,A1*20%) what will be the result?



Suppose cells A1 and B1 contain the values 30000 and 100, respectively. If we apply the formula =IF(A1<>20000,B1*10%,B1*20%), what will be the result in C1?



VLOOKUP function

The VLOOKUP function is used to perform a vertical look up in the left most column and return a value in the same row from a column that you specify. Let's explain this in a layman's language. The home supplies budget has a serial number column that uniquely identifies each item in the budget. Suppose you have the item serial number, and you would like to know the item description, you can use the VLOOKUP function. Here is how the VLOOKUP function would work.

=VLOOKUP (C12, A4:B8, 2, FALSE)

HERE,

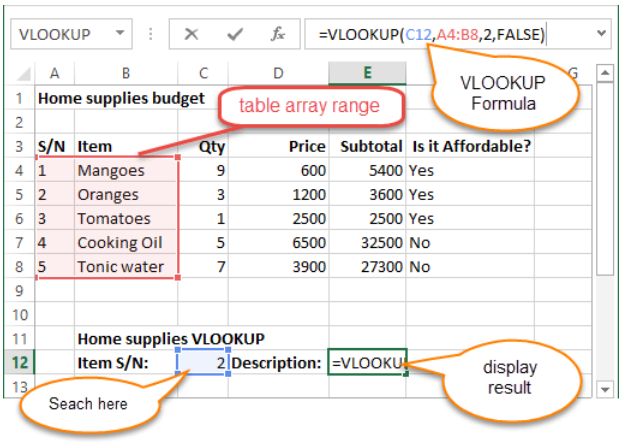
"=VLOOKUP" calls the vertical lookup function

"C12" specifies the value to be looked up in the left most column

"A4:B8" specifies the table array with the data

"2" specifies the column number with the row value to be returned by the VLOOKUP function

"FALSE," tells the VLOOKUP function that we are looking for an exact match of the supplied look up value

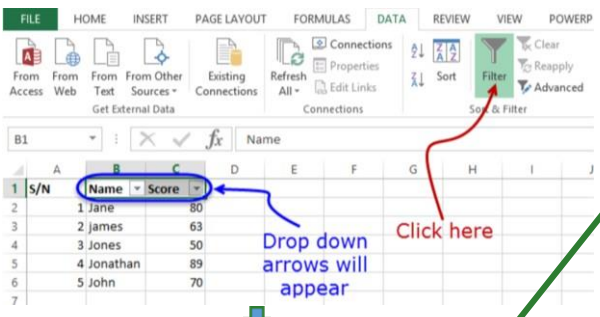


	A	B	C	D	E
1	Home supplies budget				
2					
3	S/N	Item	Qty	Price	Subtotal	Is it Affordable?
4	1	Mangoes	9	600	5400	Yes
5	2	Oranges	3	1200	3600	Yes
6	3	Tomatoes	1	2500	2500	Yes
7	4	Cooking Oil	5	6500	32500	No
8	5	Tonic water	7	3900	27300	No
9					
10					
11		Home supplies VLOOKUP			
12		Item S/N:	2	Description:	=VLOOKU
13					

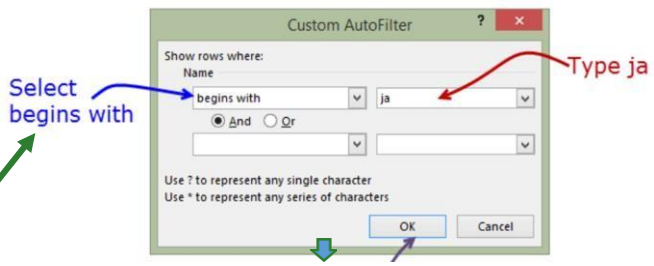
Data Filters

Use AutoFilter or built-in comparison operators like "greater than" and "top 10" in Excel to show the data you want and hide the rest. Once you filter data in a range of cells or table, you can either reapply a filter to get up-to-date results, or clear a filter to redisplay all of the data.

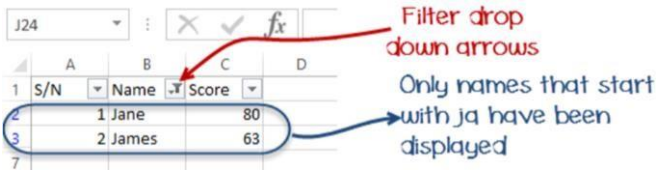
- Data filters allow us to get data that matches our desired criteria.
- Let's say we want to show the results of all the students whose names start with "ja" or get scores that are less than, greater than or equal to a certain value, we can use filters to get such data.
- Select the name and scores columns as shown below-



- Click on the Name **Filter**
- Select **text filters**
- Select **begins with**
- You will get the following window.



- Enter "**ja**" and click on "**OK**" button
- You should be able to see only the results for Jane and James.



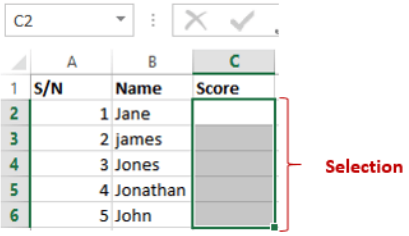
	A	B	C	D
1	S/N	Name	Score	
2	1	Jane	80	
3	2	James	63	
7				

Data validation

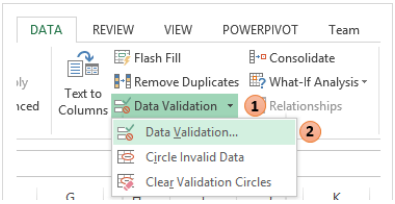
Data validation is very important in the sense that it helps us avoid mistakes that can be avoided. Let's assume you are recording student exam marks and you know the minimum is 0 and the maximum is 100. You can take advantage of validation features to ensure that only values between 0 and 100 are entered. Add a new sheet in your workbook by clicking on the plus button at the bottom of the worksheet.
Add a column for S/N, Name and Score. Your sheet should look as follows:

S/N	Name	Score
1	Jane	
2	James	
3	Jones	
4	Jonathan	
5	John	

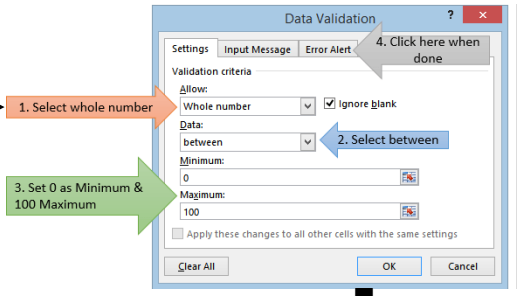
- Click on the **DATA** tab
- Select the cells C2 to C6 (The cells that will be used to record the scores)



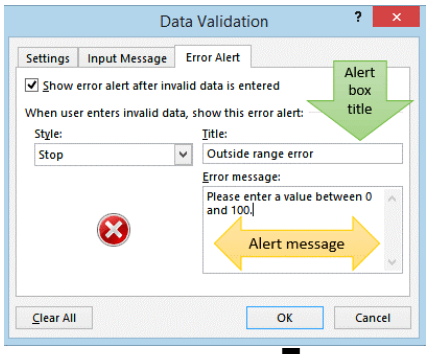
- Click on **Data validation** drop down list.
- Click on **Data validation**.



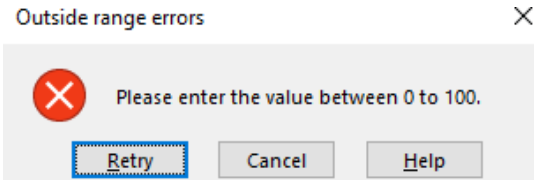
- You will get the following dialogue window



- Click on **Error Alert tab**
- Enter the **alert title and message as shown in the diagram below**.

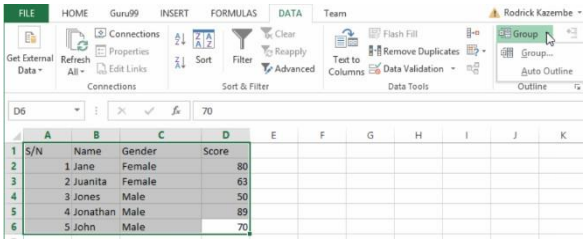


- Click on **OK button**
- Try to enter a score greater than 100. You will get the following **error message**



Group and Ungroup

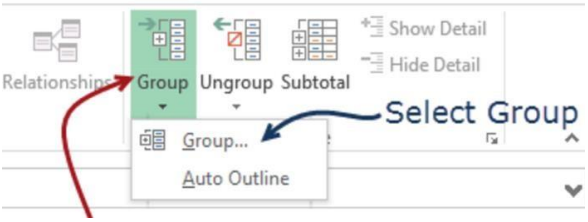
- Groups allow to view easily and hide unnecessary details from either columns or rows. In addition to that, we can also use groups to analyze data that belongs to a common category.
- Let's illustrate this with an example. We will use the student scores example above.



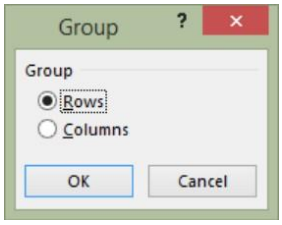
- Right click on the score and select insert column. Name the name column gender.
- Change James to Juanita. Put female for Janet and Juanita. Put male for the rest of the students. You sheet should look as follows.

	A	B	C	D	E
1	S/N	Name	Gender	Score	
2	1	Jane	Female	80	
3	2	Juanita	Female	63	
4	3	Jones	Male	50	
5	4	Jonathan	Male	89	
6	5	John	Male	70	

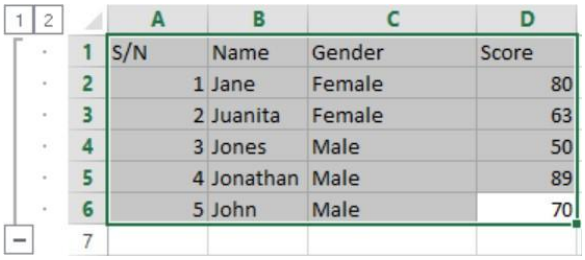
- We will now group the females together and display their average score and do the same for the males.
- Click on **DATA** tab on the ribbon
- Select all the columns and rows with data
- Click on **Group drop down button** as shown in the image below



- You will get the following window- and click on **OK**

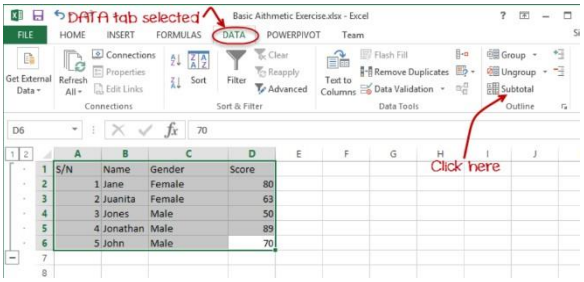


- We will now calculate the average scores for females and males
- Select the **whole data** as shown below

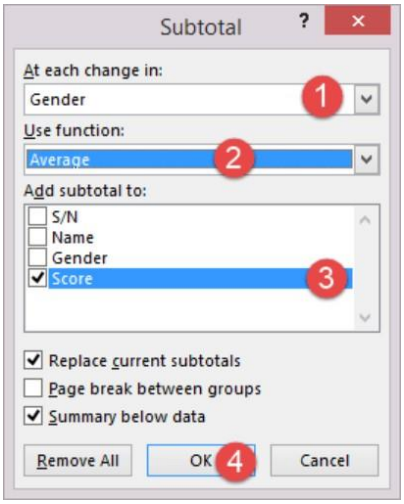


	A	B	C	D
1	S/N	Name	Gender	Score
2	1	Jane	Female	80
3	2	Juanita	Female	63
4	3	Jones	Male	50
5	4	Jonathan	Male	89
6	5	John	Male	70
7				

Click on Subtotal drop down button under **DATA tab**



You will get the following window-



- Set "At each change" into **gender**
- Set "Use function" to **average**
- Select "**Add subtotal**" to Score
- Click on "**OK**" button

	A	B	C	D	E
1	S/N	Name	Gender	Score	
2	1	Jane	Female	80	
3	2	Juanita	Female	63	
4			Female Average	71.5	
5	3	Jones	Male	50	
6	4	Jonathan	Male	89	
7	5	John	Male	70	
8			Male Average	69.66667	
9			Grand Average	70.4	