

**GE-161L**

**Introduction to Information and Communication Technologies**

**Laboratory 07**

**Introduction to Microsoft ® Excel Spreadsheet – II**

**Version: 1.0.0**

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## Learning Objectives:

- Import data in Microsoft ® Excel
- Advanced Formulas in Microsoft ® Excel
- Macros
- Charts in Microsoft ® Excel
- PivotTable in Microsoft ® Excel
- Securing Workbook

## Resources Required:

- Computer / Laptop
- Microsoft ® Excel

## General Instructions:

- This is an individual lab, you are **NOT** allowed to discuss your solution with your colleagues, not even allowed to ask how is he/she doing, this may result into negative marking. You can **ONLY** discuss with your TAs or with course instructor.
- Your TAs will be available in the lab for your help. Alternatively, you can send your queries via email.

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## Background and Overview:

### What is Microsoft ® Excel?

Microsoft ® Excel is a commercial spreadsheet application that is produced and distributed by Microsoft for Microsoft ® Windows and Mac OS operating systems. It features the ability to perform basic calculations, use graphing tools, create pivot tables and create macros, among other useful features.

Microsoft ® Excel uses a collection of cells arranged into rows and columns to organize and manipulate data. The data could also be displayed using charts, histograms, and line graphs.

## Activities:

### Pre-Lab Activities:

#### Renaming worksheet:

- Double click the “**Sheet 2**” worksheet tab to select its name

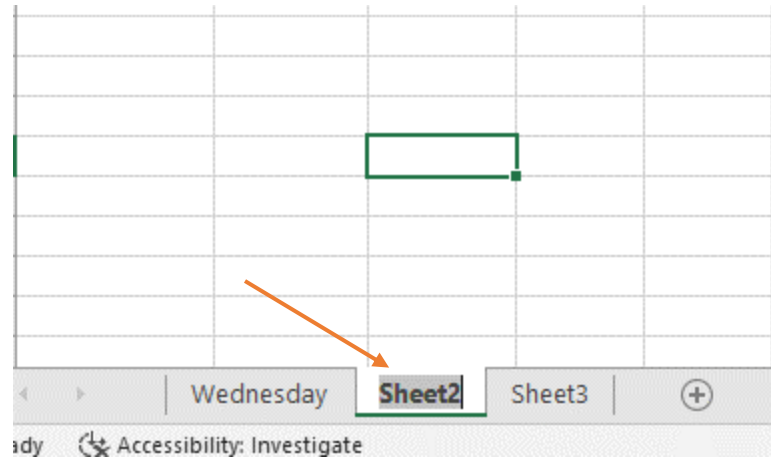


Fig. 1 (Renaming worksheet)

- Type “**Monday**” and press “**Enter**”. New name will appear on the tab.
- Repeat the steps for “**Sheet 3**” and name it “**Tuesday**”

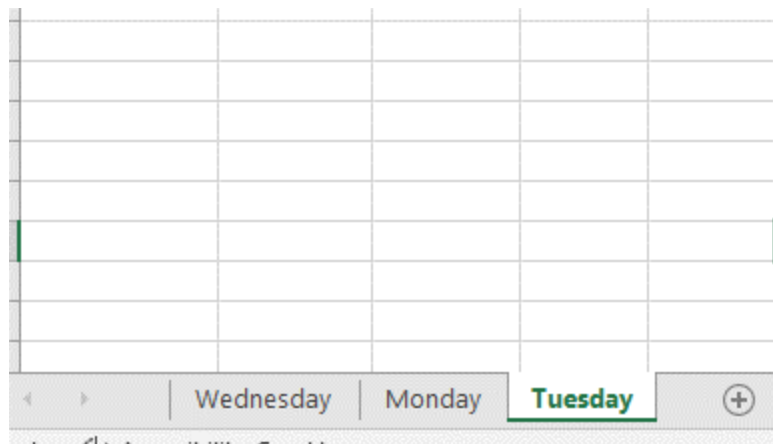


Fig. 2 (Renaming Worksheet)

#### Reposition worksheets:

- Click the “**Wednesday**” worksheet tab. On the Home tab, in the Cells group, click “**Format**”
- Click “**Move or Copy Sheet**”

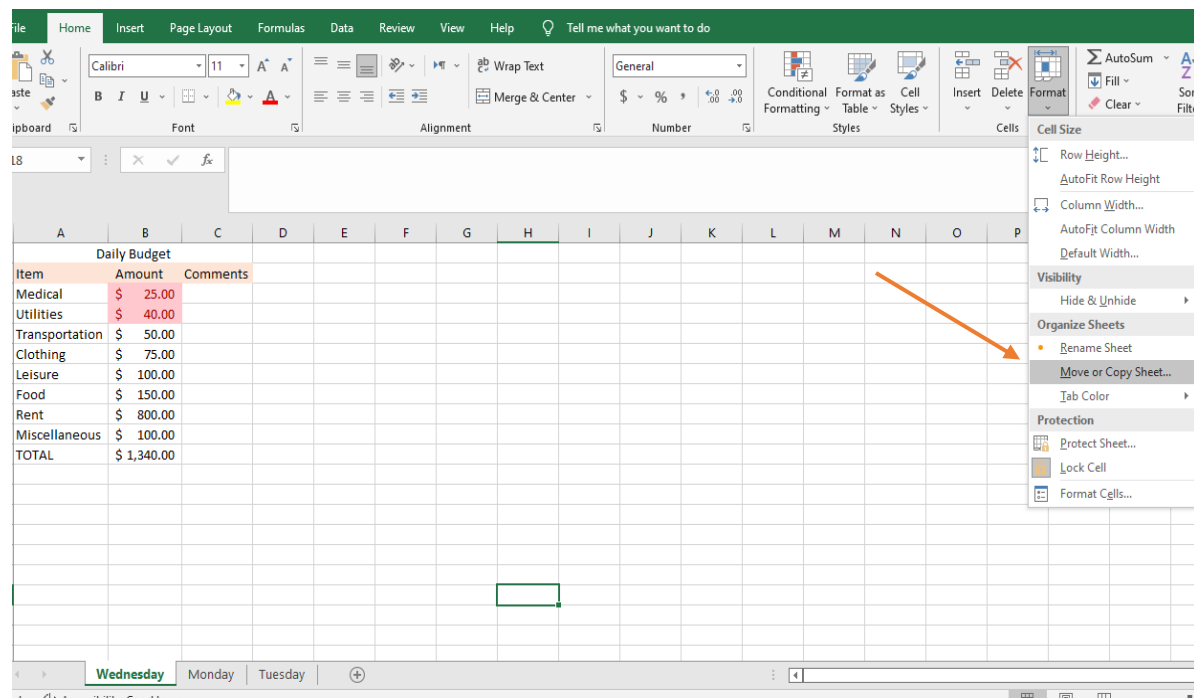


Fig. 3 (Reposition Worksheet)

- Move or Copy dialog will appear
- Select “(move to end)”. Then click “OK”

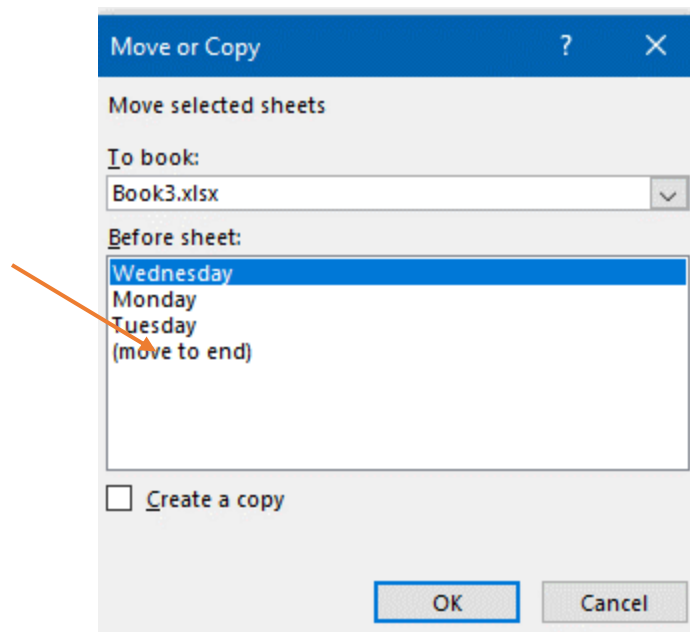


Fig. 4 (Move or Copy dialog)

**Wednesday** worksheet will be moved to the end of the tab.

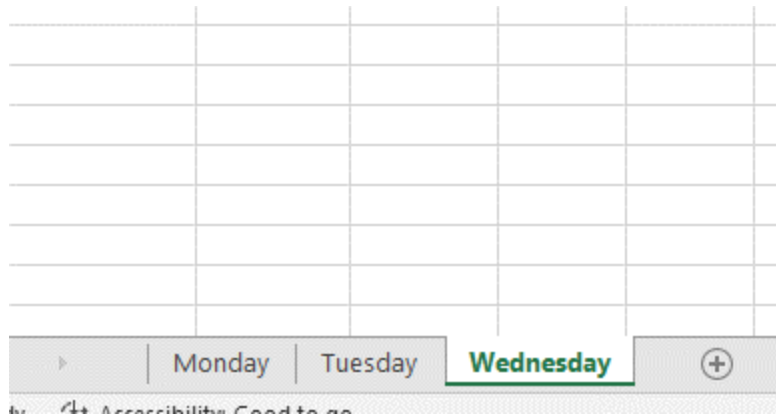


Fig. 5 (Reposition Worksheet)

**Change color of worksheet tab:**

- Right-click the **“Monday”** worksheet tab
- In the shortcut menu, click **“Tab Color”**

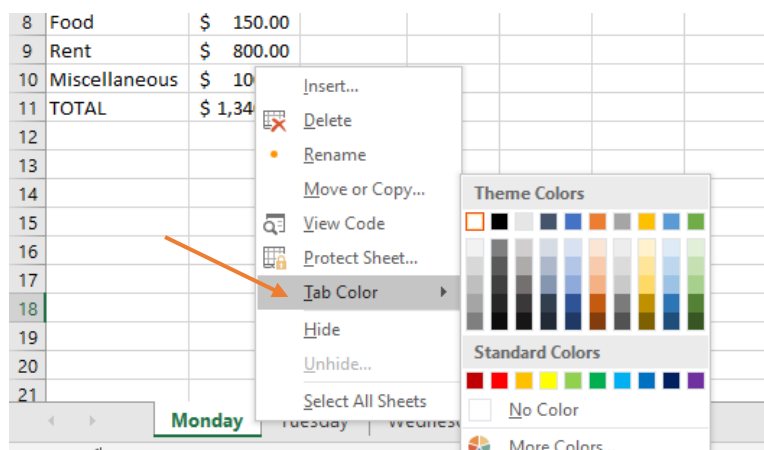


Fig. 6 (Tab Color)

- Select **“Red”** color
- Similarly change colors of **“Tuesday”** and **“Wednesday”** worksheets

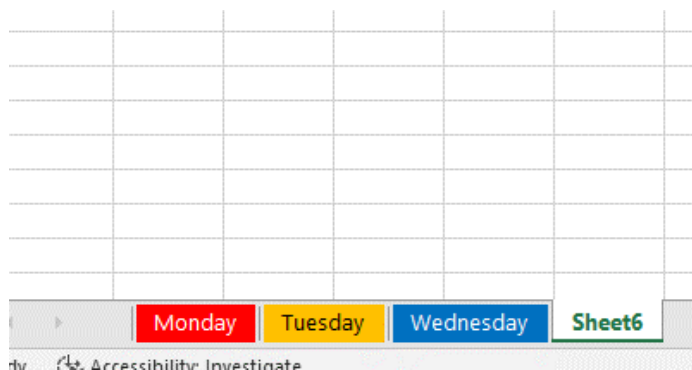


Fig. 7 (Tab Color)

**Hide/Unhide worksheets:**

- Right-click the **“Monday”** worksheet tab
- In the shortcut menu, click **“Hide”**

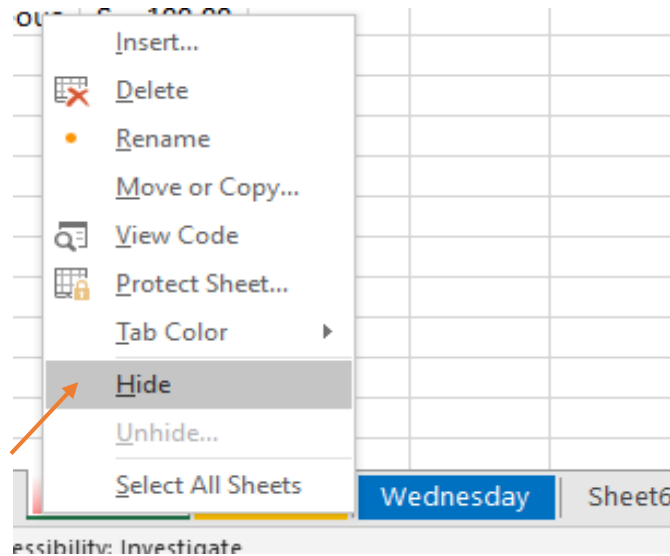


Fig. 8 (Hide worksheet)

- Similarly, to unhide a worksheet, right click the worksheet tab
- In the shortcut menu, click **“Unhide”**

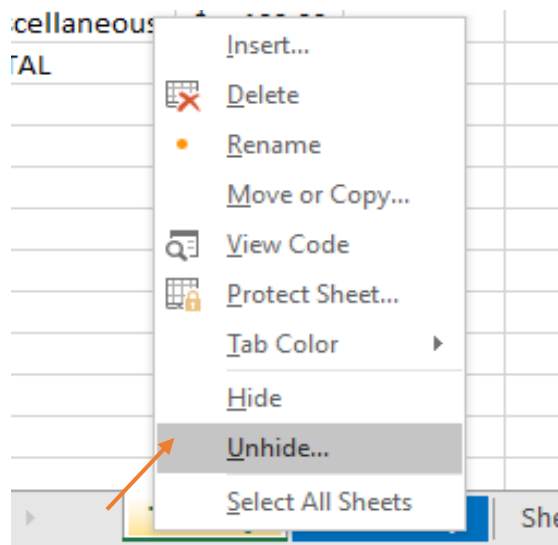


Fig. 9 (Unhide worksheet)

- Unhide dialog box will appear
- Select the worksheet you want to unhide
- Click **“OK”**

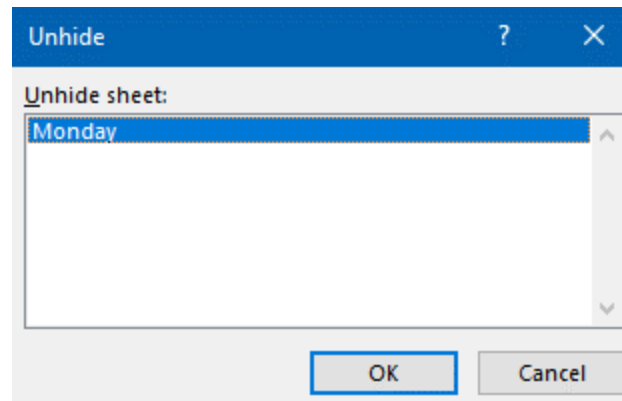


Fig. 10 (Unhide dialog)

**Task 01: Creating a Workbook****[Estimated 20 minutes / 20 marks]**

- Show your daily University time table
- Create a separate worksheet for each day
- Apply different colors to worksheet tabs
- Hide any two worksheets
- Save the document named **“Your Roll No”**
- Email the document named with your roll no like **“BSEF19M021”** to the respective TA.
- The subject of your email should be **“Your RollNo\_Pre-Lab07”**.



## In-Lab Activities:

### Importing data:

- Click the “Data” tab
- In the “Get External Data” group, click “From Text”

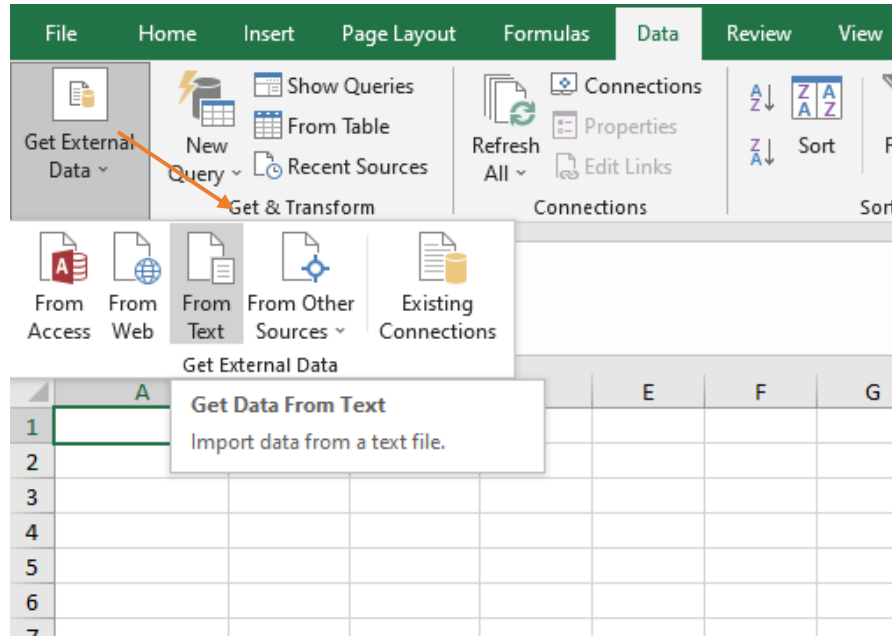


Fig. 11 (Importing data)

- In the “Text Import Wizard” dialog, choose the option that best describes your data
- Click “Next”

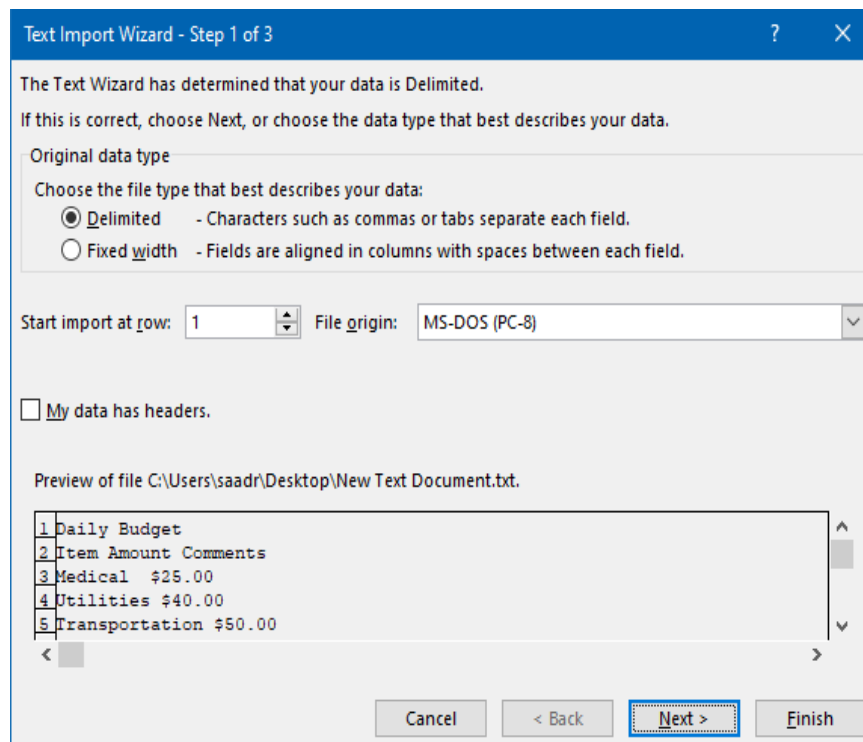


Fig. 12 (Text Import Wizard dialog)

- Select the delimiters, then click finish

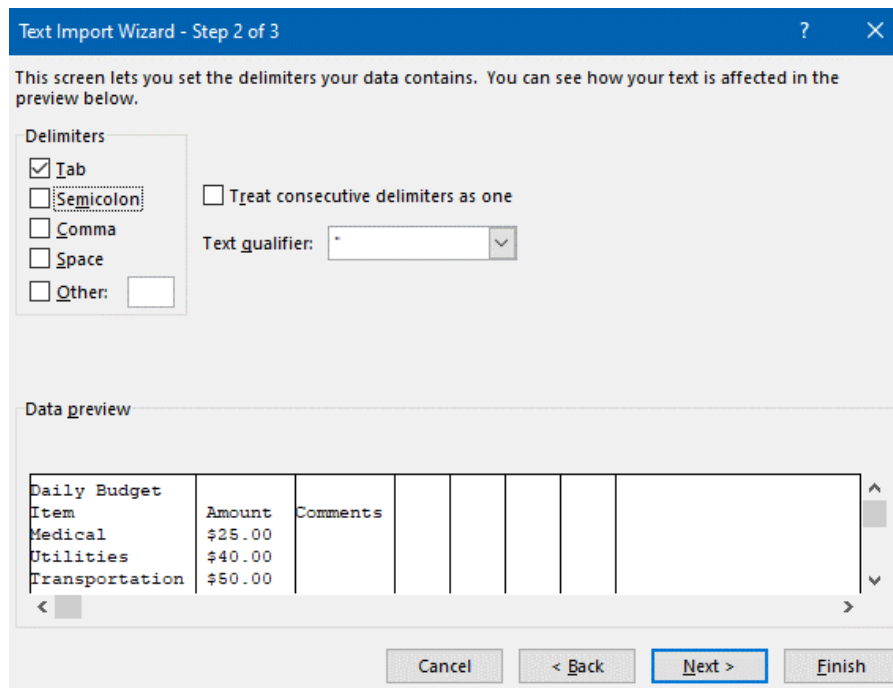


Fig. 13 (Text Import Wizard dialog)

Data from the text file will be added to your worksheet depending on the options you selected.

#### Allow specific values:

- Select a column C
- On the **“Data tab”**, in the **“Data Tools”** group, click **“Data Validation”**

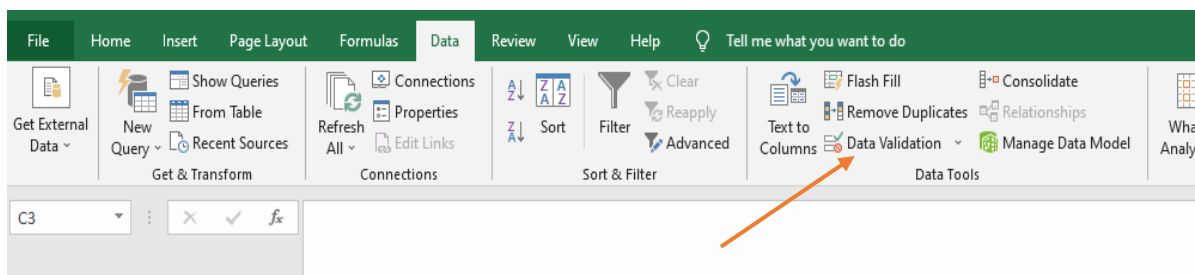


Fig. 14 (Data Validation)

- Data Validation dialog will appear. Select **“text length”** in allow tab
- Enter minimum value as **“5”**
- Enter minimum value as **“10”**
- Click **“OK”**

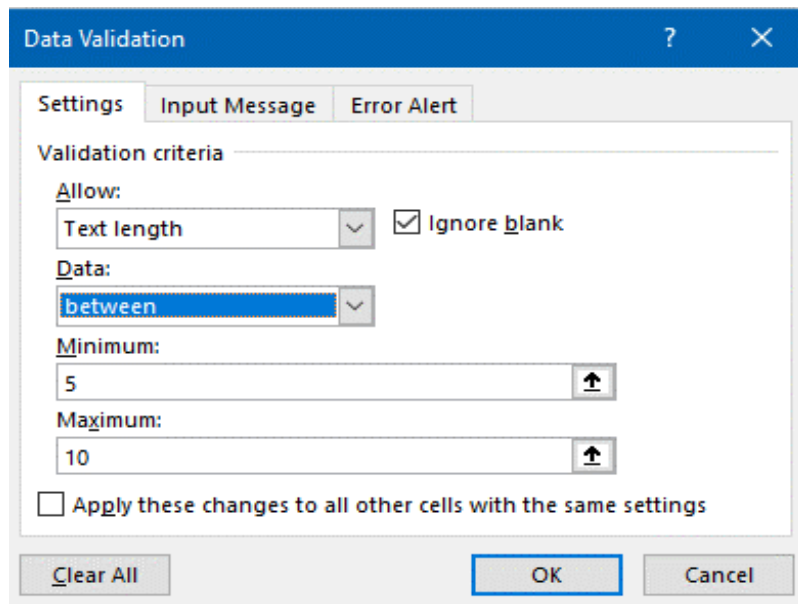


Fig. 15 (Data Validation dialog)

Now if you enter a value out of the range between 5 to 10, then an error message will appear.

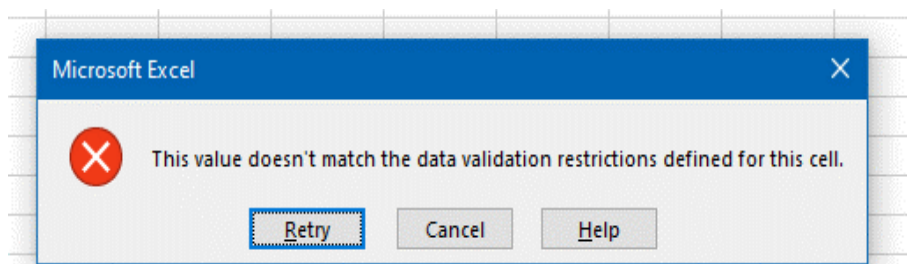


Fig. 16 (Error message)

### Macro in Microsoft ® Excel:

If you have tasks in Microsoft ® Excel that you do repeatedly, you can record a macro to automate those tasks. A macro is an action or a set of actions that you can run as many times as you want. When you create a macro, you are recording your mouse clicks and keystrokes.

#### Record a Macro:

- Click the “**View tab**” on the Ribbon
- Click “**Macros**” in the “**Macros group**”
- Select “**Record Macro**” from the drop-down list

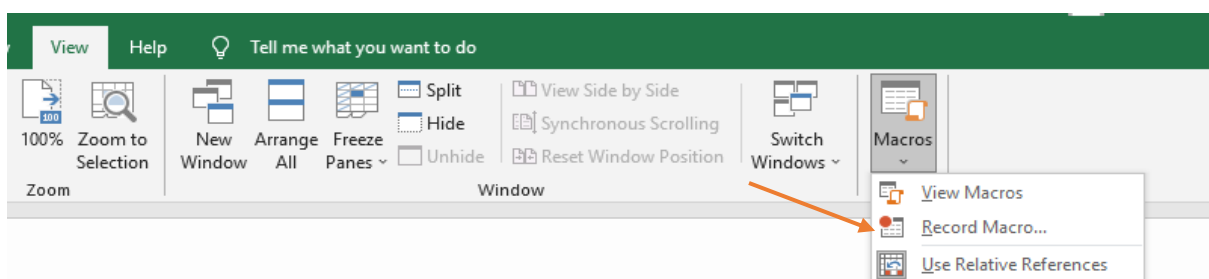


Fig. 17 (Macros)

The “**Record Macro**” dialog box appears.

- Type “**First Macro**” in Macro name box
- Click “**OK**”

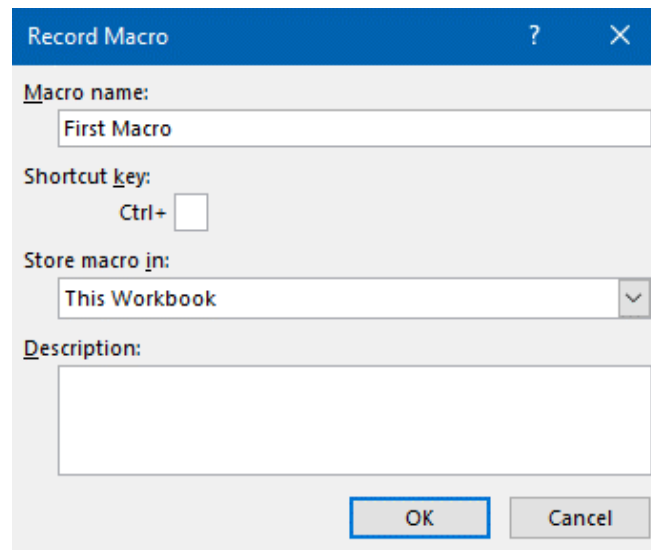


Fig. 18 (Record Macro dialog)

- Create a table
- Click the “**View tab**” on the Ribbon
- Click “**Macros**” in the “**Macros group**”
- Select “**Stop Recording**” from the drop-down list

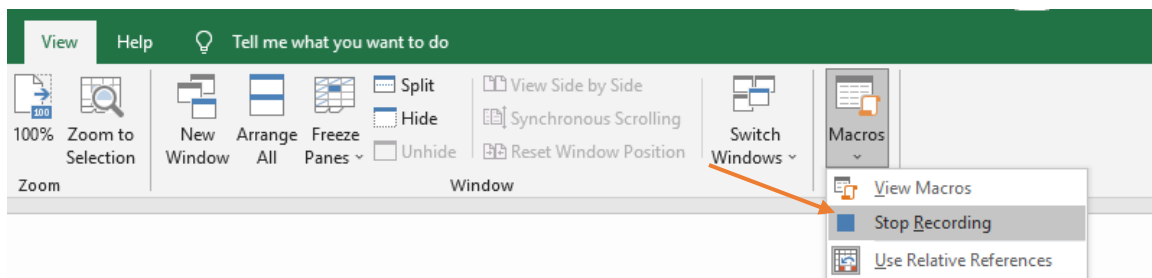


Fig. 19 (Macros)

### Running a Macro:

- Click the “**View tab**” on the Ribbon
- Click “**Macros**” in the “**Macros group**”
- Select “**View Macros**” from the drop-down list

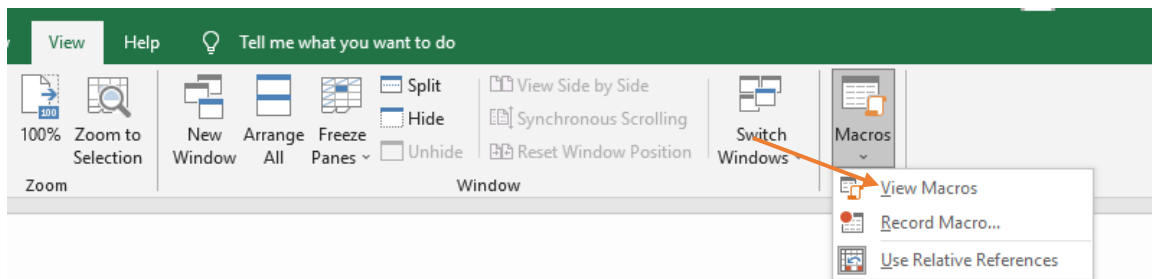


Fig. 20 (Macros)

- Click the Macro name in the Macro dialog box
- Click the “RUN” button

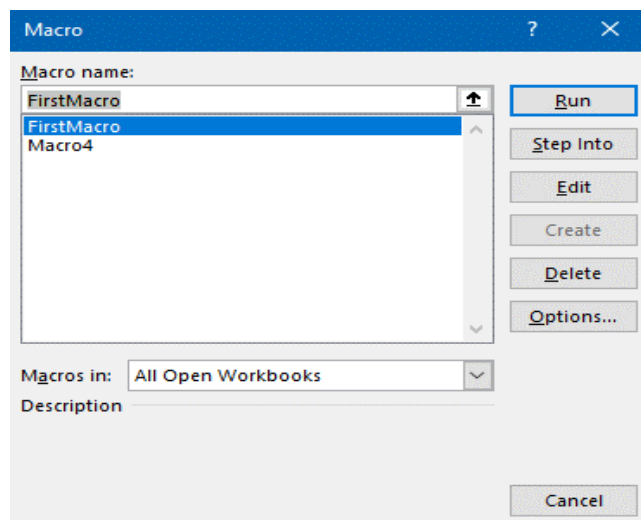


Fig. 21 (Macro)

**Advanced Formulas :**

Function	Syntax
<b>SUMIF</b>	SUMIF (Range, Criteria, Sum_range)
<b>SUMIFS</b>	SUMIFS (Sum_range, Criteria_range1, Criteria1, Criteria_range2, Criteria2, ...)
<b>COUNTIF</b>	COUNTIF (Range, Criteria)
<b>COUNTIFS</b>	COUNTIFS (Criteria_range1, Criteria1, Criteria_range2, Criteria2, ...)
<b>AVERAGEIF</b>	AVERAGEIF (Range, Criteria, Average_range)
<b>AVERAGEIFS</b>	AVERAGEIFS (Average_range, Criteria_range1, Criteria1, Criteria_range2, Criteria2, ...)
<b>VLOOKUP</b>	VLOOKUP (Lookup_value, Table_array, Col_index_num, Range_lookup)
<b>HLOOKUP</b>	HLOOKUP (Lookup_value, Table_array, Row_index_num, Range_lookup)
<b>IF</b>	IF (Logical_test, Value_if_true, Value_if_false)
<b>AND</b>	AND (Logical1, Logical2, ...)
<b>OR</b>	OR (Logical1, Logical2, ...)
<b>LEFT</b>	LEFT (Text, Num_chars)
<b>RIGHT</b>	RIGHT (Text, Num_chars)
<b>MID</b>	MID (Text, Start_num, Num_chars)
<b>TRIM</b>	TRIM (Text)
<b>PROPER</b>	PROPER (Text)
<b>UPPER</b>	UPPER (Text)
<b>LOWER</b>	LOWER (Text)
<b>CONCATENATE</b>	CONCATENATE (Text1, Text2, ...)

### SUMIF Function:

The SUMIF function is used to sum the values in a range that meet a specific criteria. For example, suppose that in a column that contains numbers, you want to sum only the values that are less than 300000. You can use the following formula: `=SUMIF(C3:C6,"<300000")`. It will result the sum of all those values which are less than 300000 in cells C3, C4, C5 and C6.

- Click the “**Formulas Tab**” and then in the “**Function Library**” group, click “**Math & Trig**”. Scroll to and click “**SUMIF**”

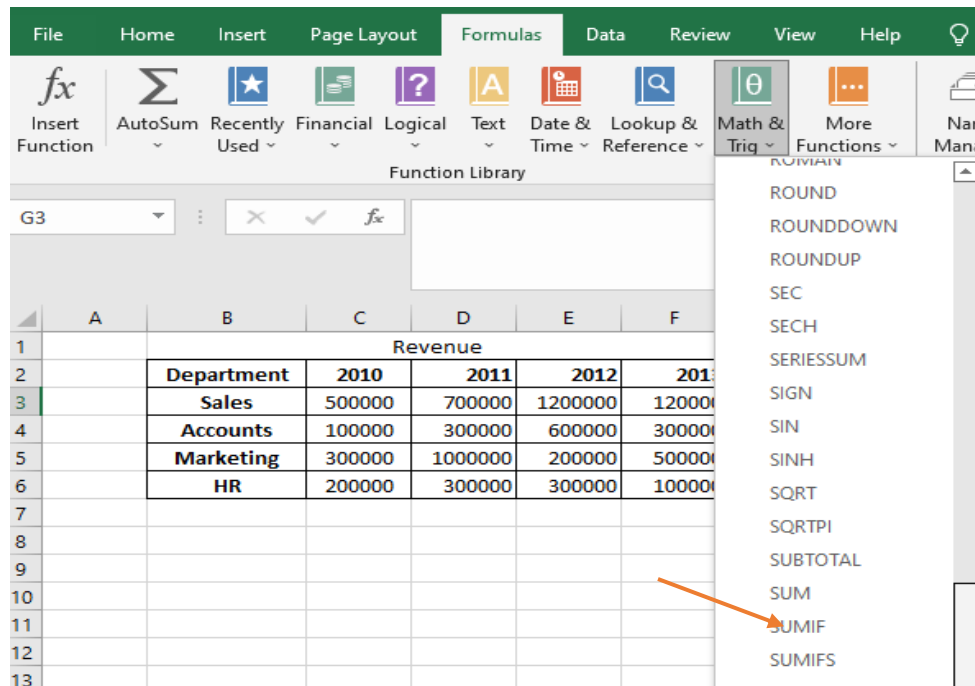


Fig. 22 (SUMIF Function)

The Function Arguments dialog box opens with text boxes for the arguments, a description of the formula, and a description of each argument

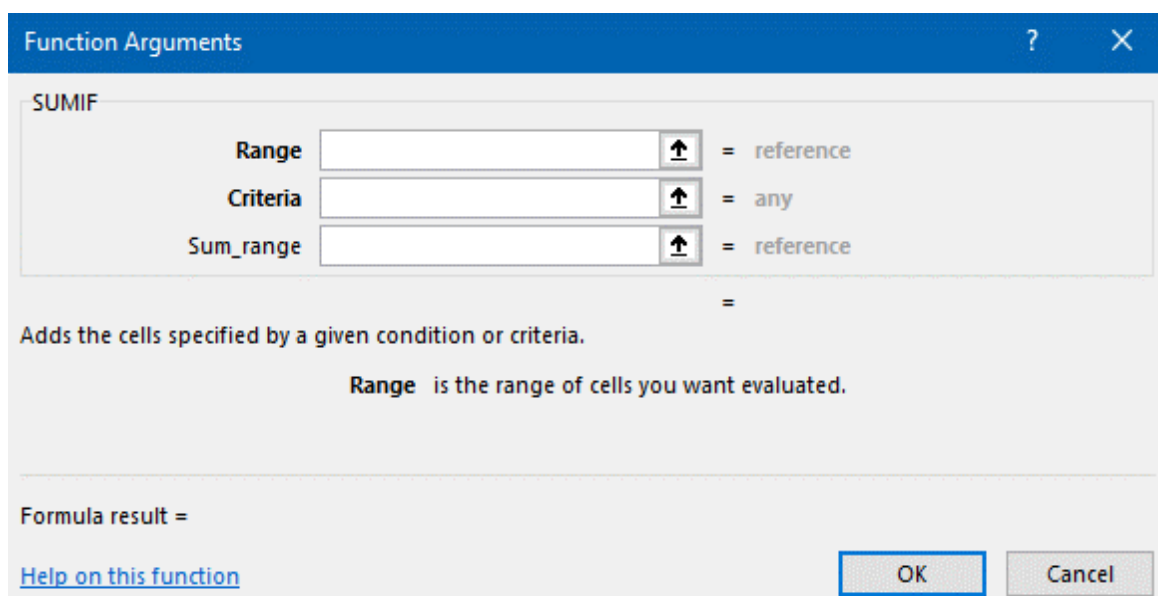


Fig. 23 (Function Arguments dialog)

- In “**Range**” box, select the cell range **C3:C6**. Press “**Enter**”. By doing this, you apply the cell range that the formula will use in the calculation
- In the “**Criteria**” box, type “**< 300000**” and then press “**Tab**”. “**Sum\_range**” is not bold, that means this is optional
- Click “**OK**”

**Function Arguments**

**SUMIF**

Range: C3:C6 = {500000;100000;300000;200000}

Criteria: "<300000" = "<300000"

Sum\_range: = reference

= 300000

Adds the cells specified by a given condition or criteria.

Sum\_range are the actual cells to sum. If omitted, the cells in range are used.

Formula result = 300000

[Help on this function](#) OK Cancel

Fig. 24 (Function Arguments dialog)

Result will be displayed in the active cell.

	A	B	C	D	E	F	G
1			Revenue				
2		Department	2010	2011	2012	2013	
3		Sales	500000	700000	1200000	120000	
4		Accounts	100000	300000	600000	300000	
5		Marketing	300000	1000000	200000	500000	
6		HR	200000	300000	300000	100000	
7			300000				
8							
9							

Fig. 25 (SUMIF Function)

### COUNTIF Function:

COUNTIF function is used to count the number of cells that meet a criterion; for example, to count the number of times the Revenue was more than 400000.

- Click the “**Formulas Tab**” and then in the “**Function Library**” group, click “**More Functions**”. In “**Statistical**” group, scroll to and click “**COUNTIF**”

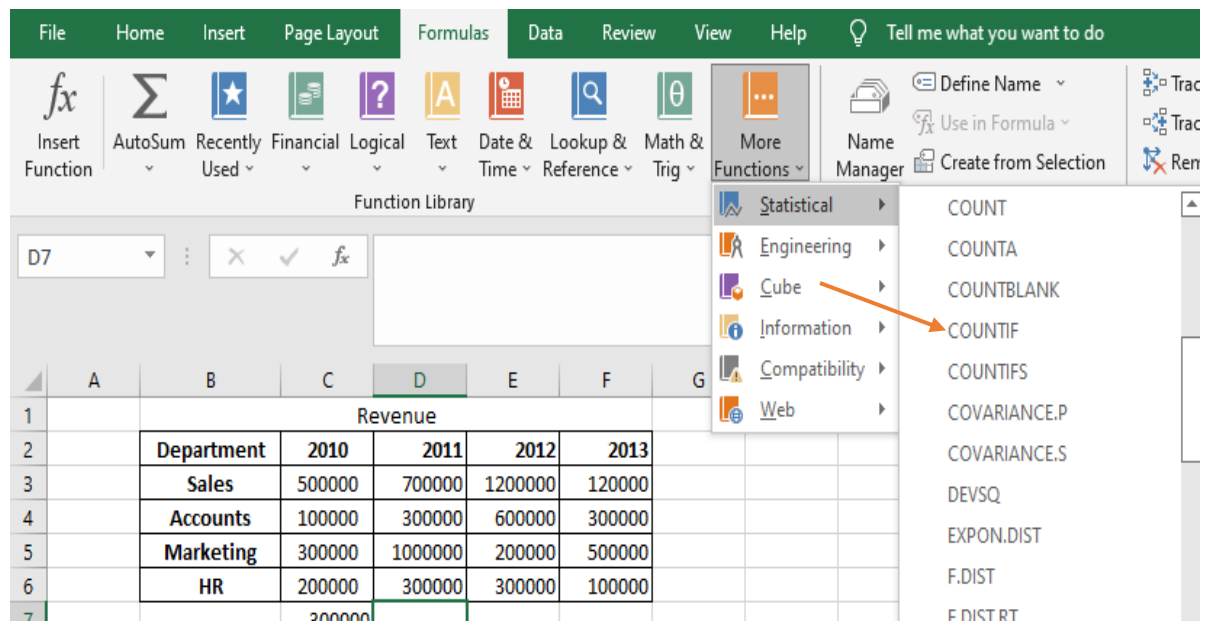


Fig. 26 (COUNTIF Function)

The Function Arguments dialog box opens with text boxes for the arguments

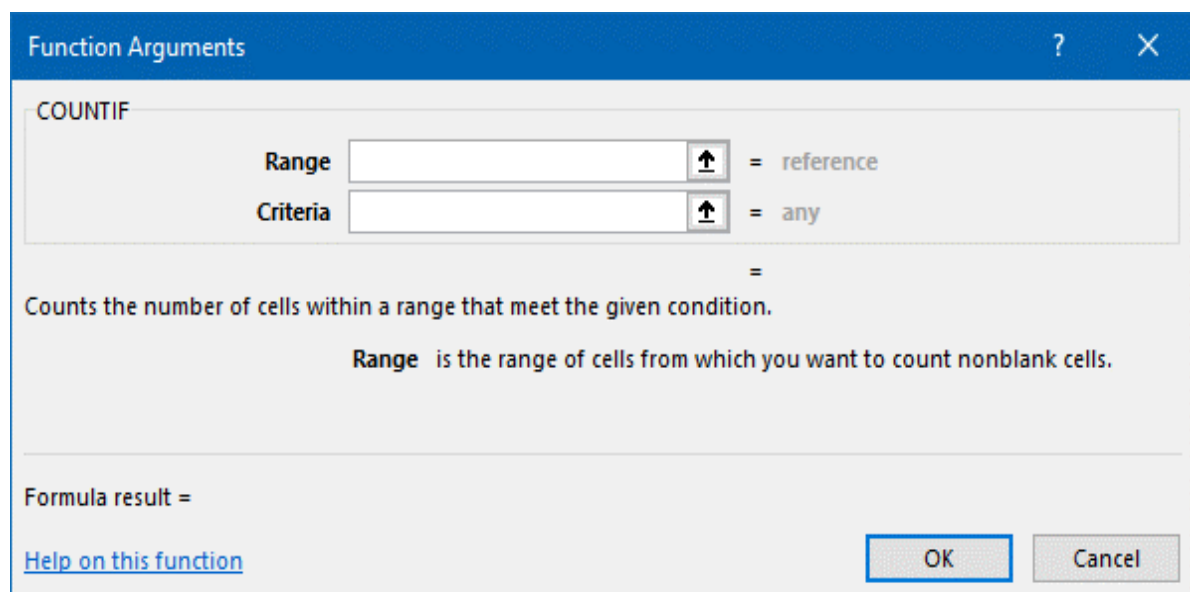


Fig. 27 (Function Arguments dialog)

- In “Range” box, select the cell range **D3:D6**. Press “Enter”. By doing this, you apply the cell range that the formula will use in the calculation
- In the “Criteria” box, type “> 400000”
- Click “OK”



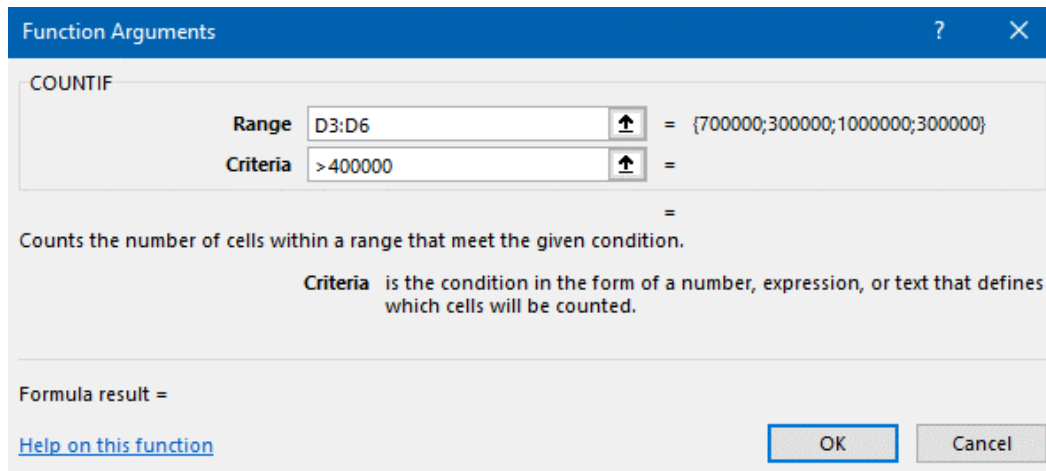


Fig. 28 (Function Arguments dialog)

Result will be displayed in the active cell.

	A	B	C	D	E	F
1		Revenue				
2		Department	2010	2011	2012	2013
3		Sales	500000	700000	1200000	120000
4		Accounts	100000	300000	600000	300000
5		Marketing	300000	1000000	200000	500000
6		HR	200000	300000	300000	100000
7			300000	2		

Fig. 29 (COUNTIF Function)

### IF Function:

The IF function is one of the most popular functions in Excel, and it allows you to make logical comparisons between a value and what you expect. So an IF statement can have two results. The first result is if your comparison is True, the second if your comparison is False.

- Click the “**Formulas Tab**” and then in the “**Function Library**” group, click “**Logical**”. Click “**IF**”

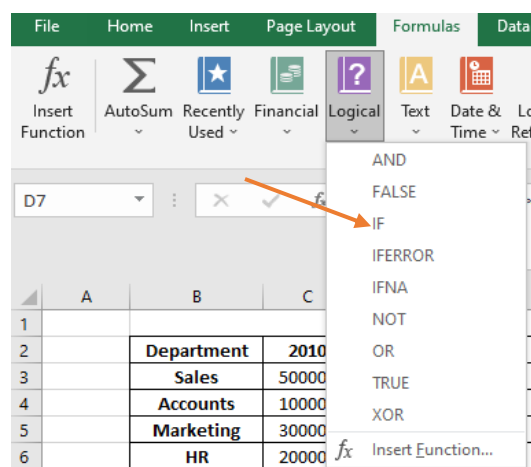


Fig. 30 (IF Function)

The Function Arguments dialog box opens with text boxes for the arguments.

**Function Arguments**

IF

Logical\_test = logical

Value\_if\_true = any

Value\_if\_false = any

=

Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Logical\_test is any value or expression that can be evaluated to TRUE or FALSE.

Formula result =

[Help on this function](#) OK Cancel

Fig. 31 (Function Arguments dialog)

- In “**Logical\_test**” box, type **C3 > D3**. Press “**Enter**”. This component defines whether the sales of 2010 are more than 2011 and vice versa
- In the “**Value\_if\_true**” box, type “**More sales in 2010**” and then press “**Tab**”
- In the “**Value\_if\_false**” box, type “**More sales in 2011**” and then press “**Tab**” and Click “**OK**”

**Function Arguments**

IF

Logical\_test = FALSE

Value\_if\_true = "More sales in 2010"

Value\_if\_false = "More sales in 2011"

= "More sales in 2011"

Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Value\_if\_false is the value that is returned if Logical\_test is FALSE. If omitted, FALSE is returned.

Formula result = More sales in 2011

[Help on this function](#) OK Cancel

Fig. 32 (Function Arguments dialog)

Result will be displayed in the active cell.

	A	B	C	D	E	F	G
1		Revenue					
2		Department	2010	2011	2012	2013	
3		Sales	500000	700000	1200000	120000	More sales in 2011
4		Accounts	100000	300000	600000	300000	
5		Marketing	300000	1000000	200000	500000	
6		HR	200000	300000	300000	100000	
7			300000	2			

Fig. 33 (IF Function)

We can also use IF function with text data. For example if you type, **=IF(C2="Yes", 1, 2)** in a cell it means, IF the value in the **cell C2** is equal to **Yes**, then return a 1, otherwise return a 2.

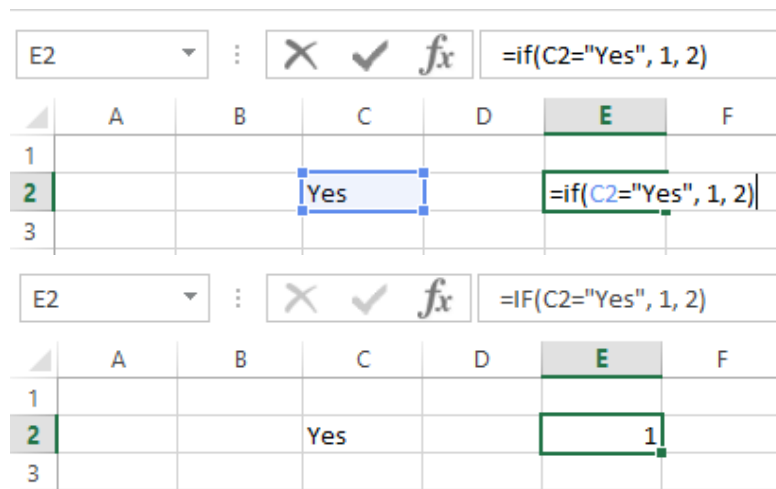


Fig. 34 (IF Function)

### AND Function:

The AND function is used to determine if all conditions in a test are TRUE. The AND function returns TRUE if all its arguments evaluate to TRUE, and returns FALSE if one or more arguments evaluate to FALSE.

- Click the **“Formulas Tab”** and then in the **“Function Library”** group, click **“Logical”**. Click **“AND”**. The Function Arguments dialog box opens with text boxes for the arguments.

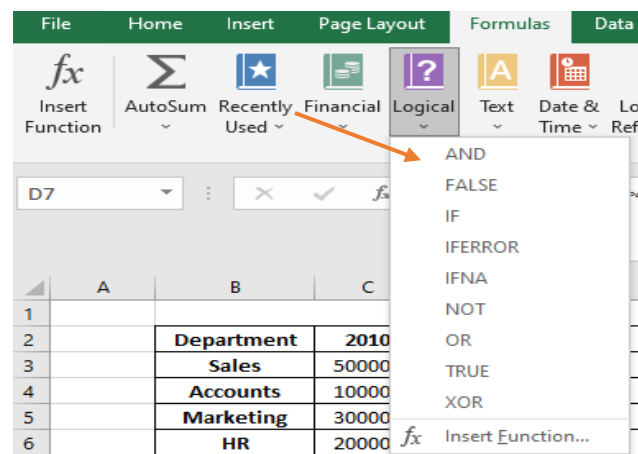


Fig. 35 (AND Function)

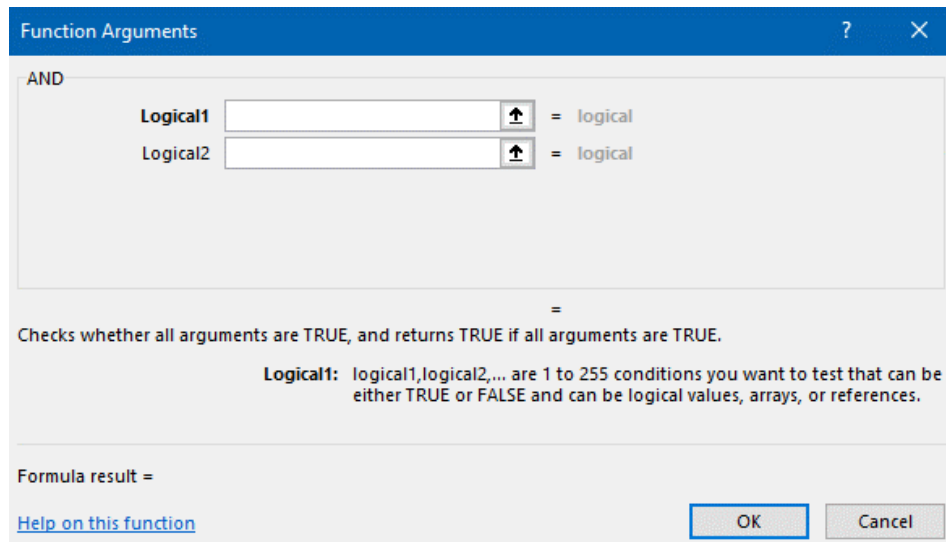


Fig. 36 (Function Arguments dialog)

- In “Logical 1” box, type “C3 < D3”. Press “Tab”
- In “Logical 2” box, type “C3 < E3”. Press “Tab” and
- Click “OK”

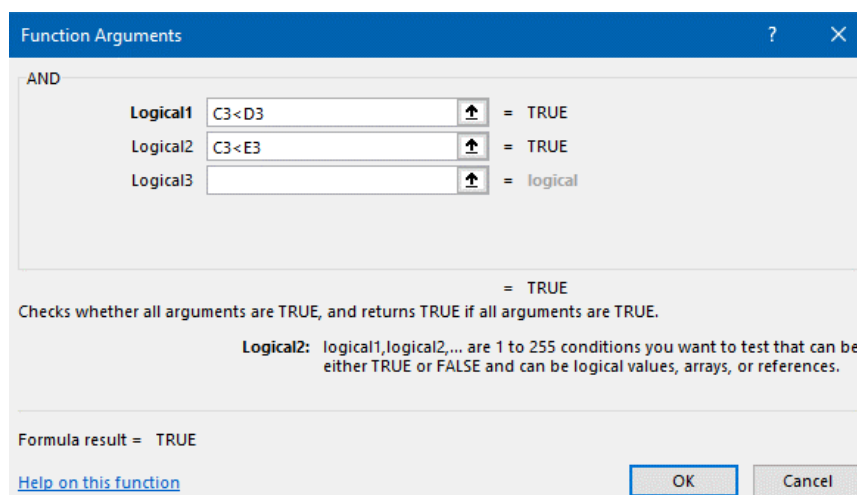


Fig. 37 (Function Arguments dialog)

Result will be displayed in the active cell. It will return **TRUE** if all logical conditions are true else will return **FALSE**.

	A	B	C	D	E	F	G
1		Revenue					
2		Department	2010	2011	2012	2013	
3		Sales	500000	700000	1200000	1200000	More sales in 2011
4		Accounts	100000	300000	600000	300000	TRUE
5		Marketing	300000	1000000	200000	500000	
6		HR	200000	300000	300000	100000	
7			300000	2			

Fig. 38 (AND Function)

We can also use AND function in an IF function. For example if you type, **=IF( AND(A2=10, B2=20), 1, 0)** in a cell it means, **IF** the value in the **cell A2** is equal to **10**, **AND** the value in the **cell B2** is equal to **20** then return **1**, otherwise return **0**.

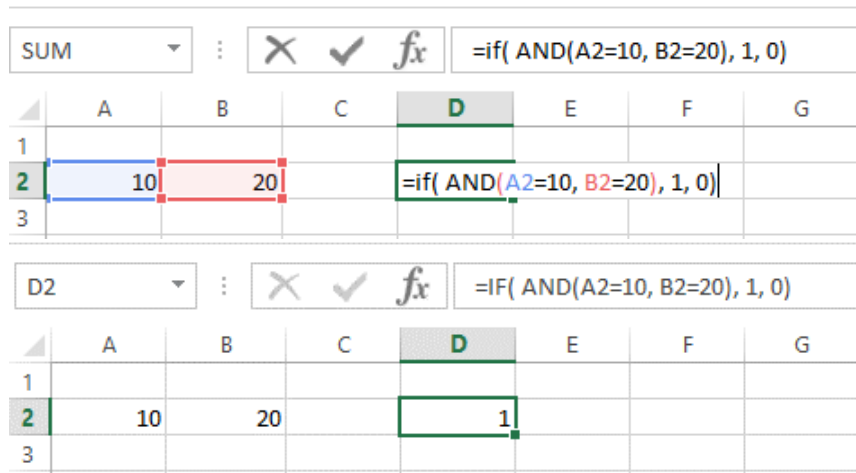


Fig. 39 (AND Function)

### OR Function:

The OR function is used to determine if any conditions in a test are TRUE. The OR function returns TRUE if any of its arguments evaluate to TRUE, and returns FALSE if all of its arguments evaluate to FALSE.

- Click the “**Formulas Tab**” and then in the “**Function Library**” group, click “**Logical**”. Click “**OR**”

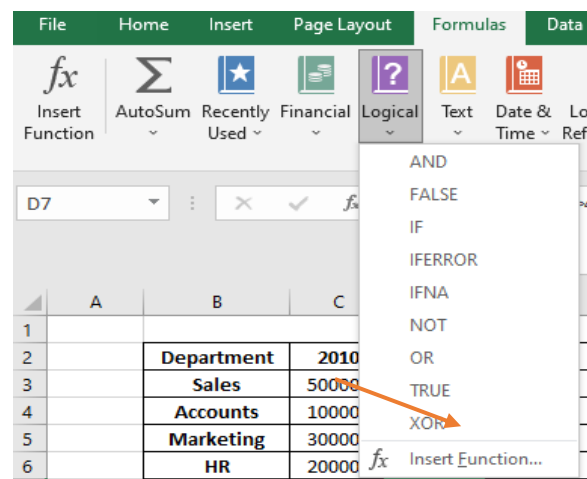


Fig. 40 (OR Function)

The Function Arguments dialog box opens with text boxes for the arguments.

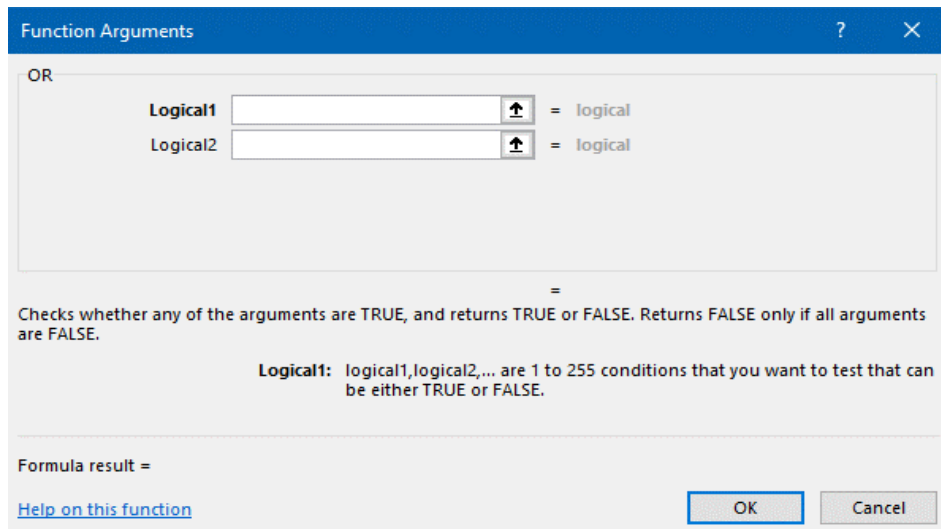


Fig. 41 (Function Arguments dialog)

- In “**Logical 1**” box, type “**C3 > D3**”. Press “**Tab**”
- In “**Logical 2**” box, type “**C3 > E3**”. Press “**Tab**” and
- Click “**OK**”

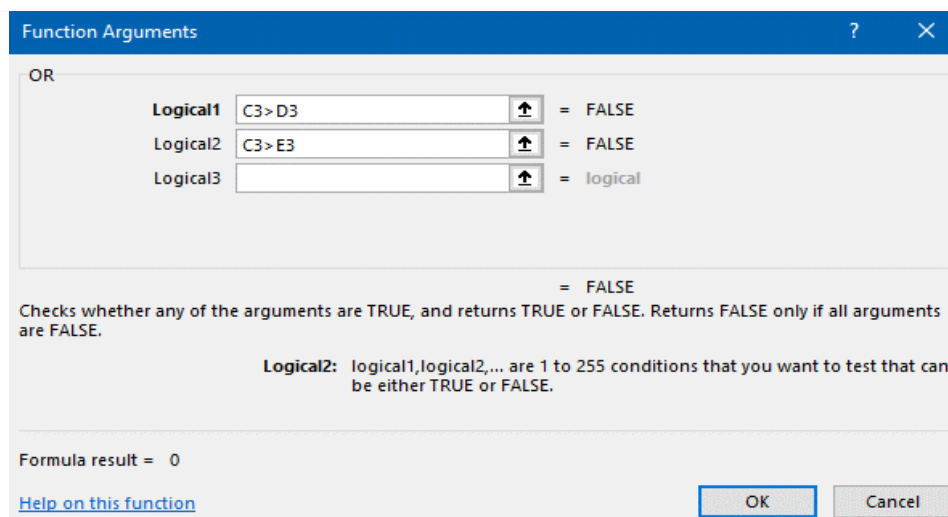


Fig. 42 (Function Arguments dialog)

Result will be displayed in the active cell. It will return **FALSE** if all logical conditions are false else will return **TRUE**.

	A	B	C	D	E	F	G
1		Revenue					
2		Department	2010	2011	2012	2013	
3		Sales	500000	700000	1200000	120000	More sales in 2011
4		Accounts	100000	300000	600000	300000	TRUE
5		Marketing	300000	1000000	200000	500000	FALSE
6		HR	200000	300000	300000	100000	
7			300000	2			

Fig. 43 (OR Function)

We can also use OR function in an IF function. For example if you type, **=IF( OR (A2=10, B2=20), 1, 0)** in a cell it means, **IF** the value in the **cell A2** is equal to **10**, **OR** the value in the **cell B2** is equal to **20** then return **1**, otherwise return **2**.

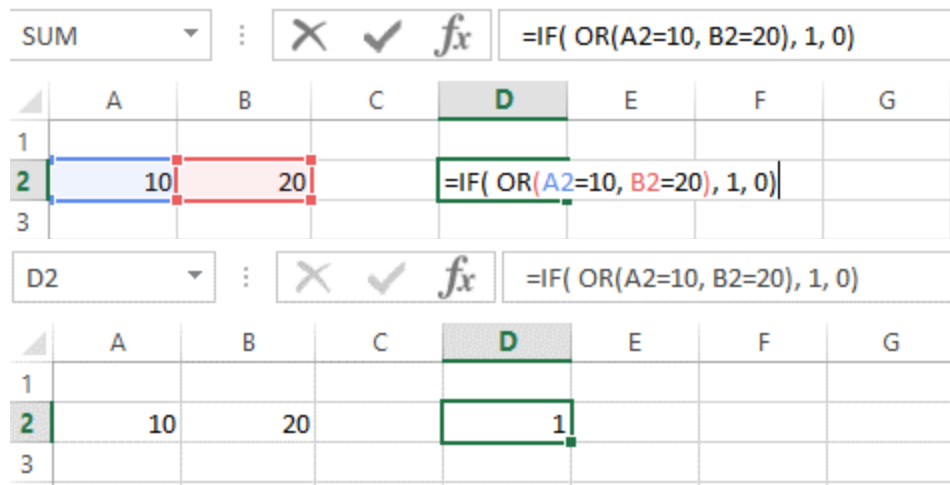


Fig. 44 (OR Function)

### PROPER Function:

The PROPER function capitalizes the first letter in a text string and any other letters in text that follow any character other than a letter. Converts all other letters to lowercase letters. For example

The function **=PROPER (“pakistan zindabad”)** written in any cell of the worksheet will return the text **Pakistan Zindabad** in the same cell.

The function **=PROPER (C2)** written in any cell of the worksheet will return the text **of the cell C2** in the current cell in proper form as described above.

- Click the **“Formulas Tab”** and then in the **“Function Library”** group, click **“Text”**. Scroll to and click **“PROPER”**

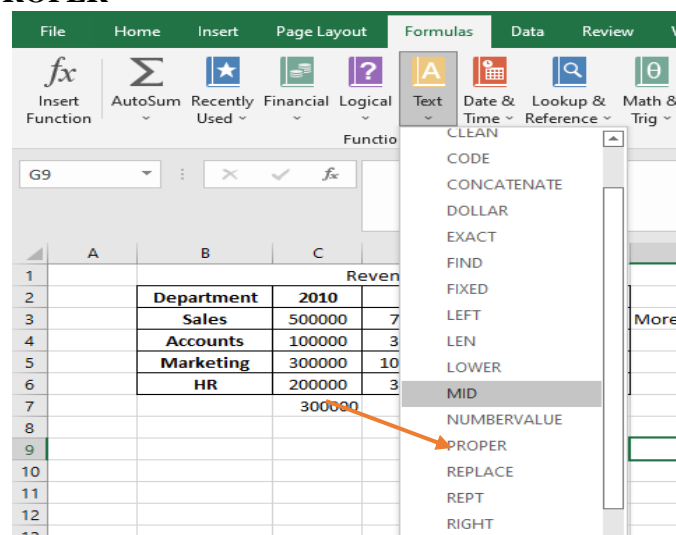


Fig. 45 (PROPER Function)

The Function Arguments dialog box opens with text boxes for the arguments

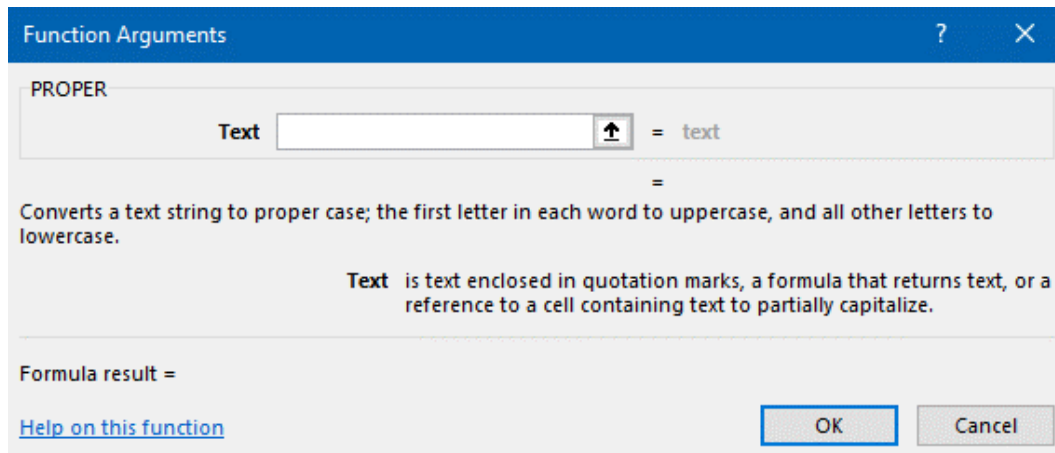


Fig. 46 (Function Arguments dialog)

- In “Text” box, enter any text. Press “Tab” and Click “OK”

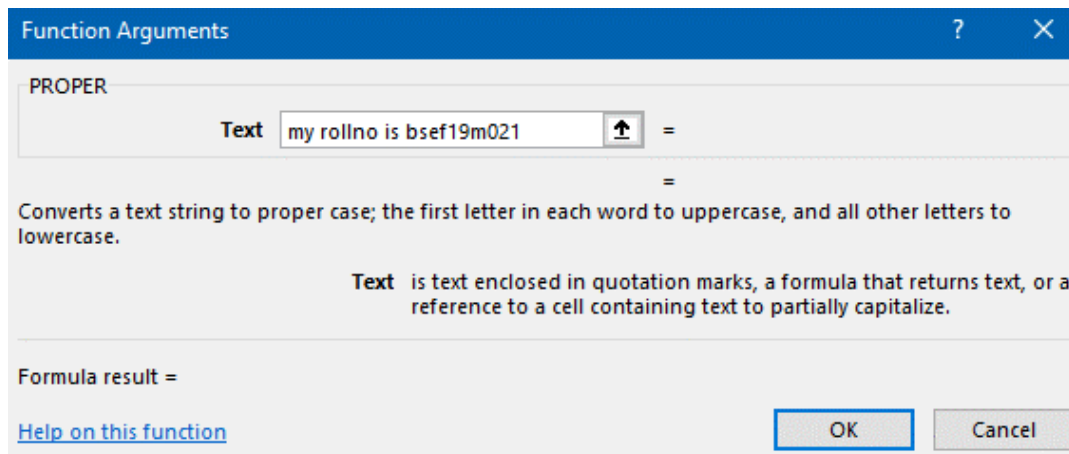


Fig. 47 (Function Arguments dialog)

Result will be displayed in the active cell. Text will be returned in proper case

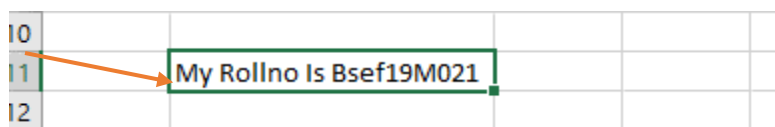


Fig. 48 (PROPER Function)

PROPER can also be used directly to convert text any cell to PROPER case as follows

- In cell B4 type **pakistan zindabad**. In any cell for example cell D4 type **=PROPER (B4)** and press **Enter**. This will convert text of cell B4 into PROPER case in cell D4.

Similarly the functions of UPPER convert a text string into upper case. For example the function **=UPPER (“pakistan zindabad”)** written in any cell of the worksheet will return the text **PAKITAN ZINDABAD** in the same cell.

The functions of LOWER convert a text string into lower case. For example the function **=LOWER (“PAKITAN ZINDABAD”)** written in any cell of the worksheet will return the text **pakistan zindabad** in the same cell.



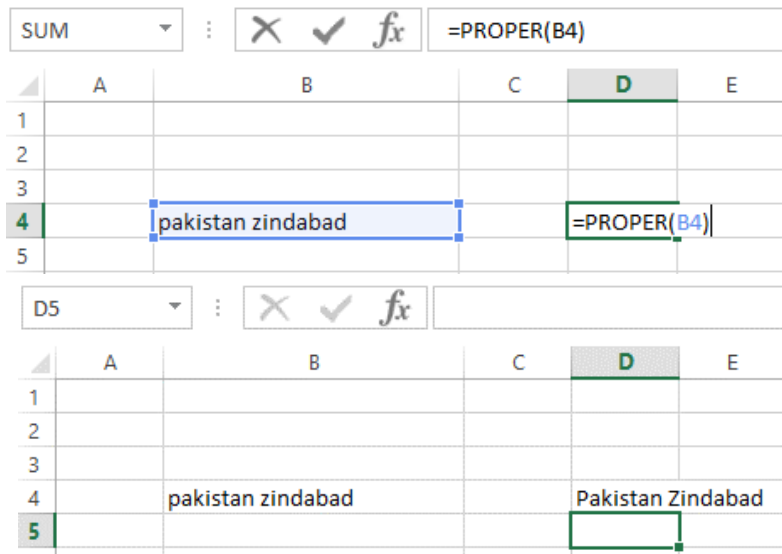


Fig. 49 (PROPER Function)

### CONCATENATE Function:

The CONCATENATE functions is used to join two or more text strings into one string. For example if one types =CONCATENATE("Mr Ahmad obtained ", A2, " marks in exams."). Assume that the cell A2 contains the value 998 than this will return the string **Mr. Ahmad has obtained 998 marks in exams**. The value 998 would be taken from the cell A2.

- Click the “Formulas Tab” and then in the “Function Library” group, click “Text”. Scroll to and click “CONCATENATE”

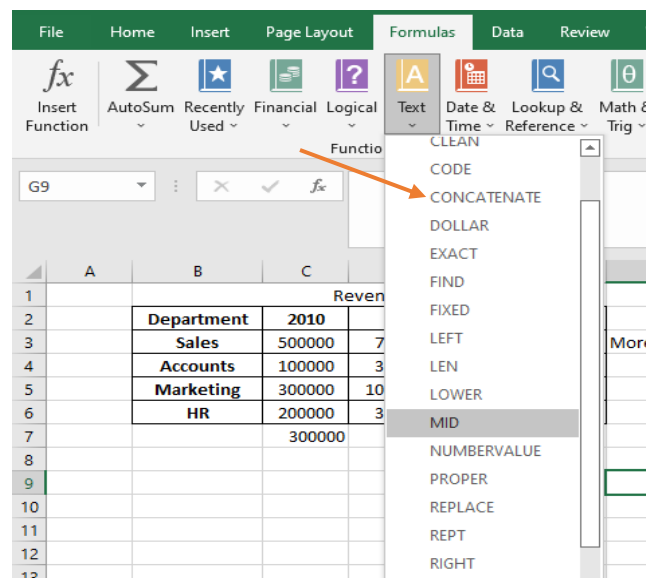


Fig. 50 (CONCATENATE Function)

The Function Arguments dialog box opens with text boxes for the arguments

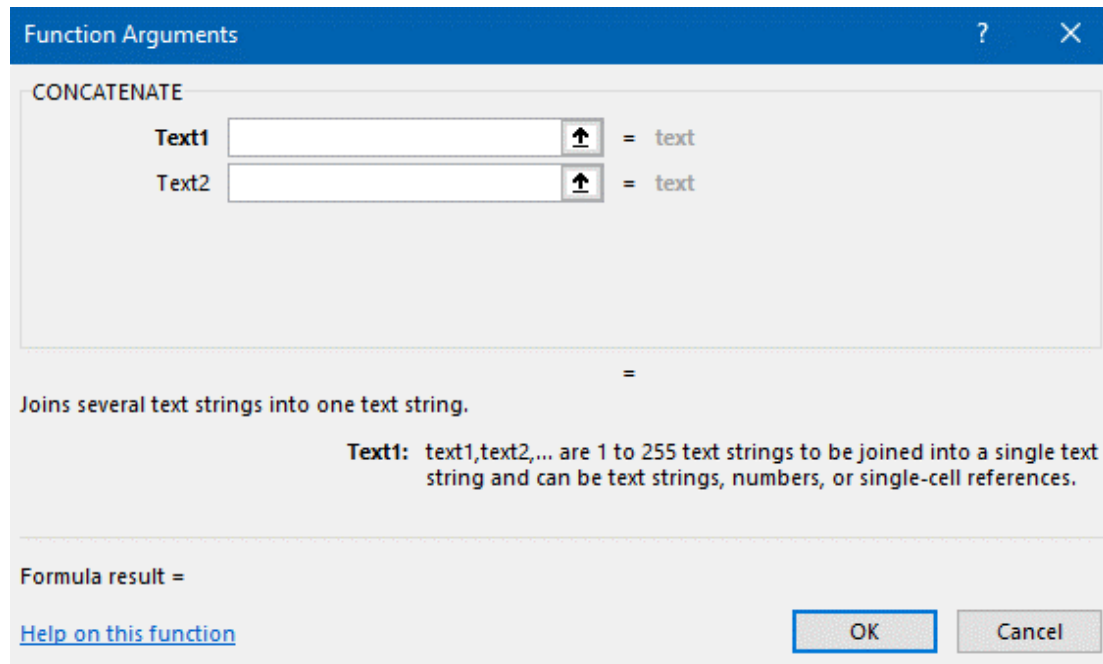


Fig. 51 (Function Arguments dialog)

- In “Text 1” box, enter any text or Cell No. Press “Tab”
- In “Text 2” box, enter any text or Cell No. Press “Tab”
- Click “OK”

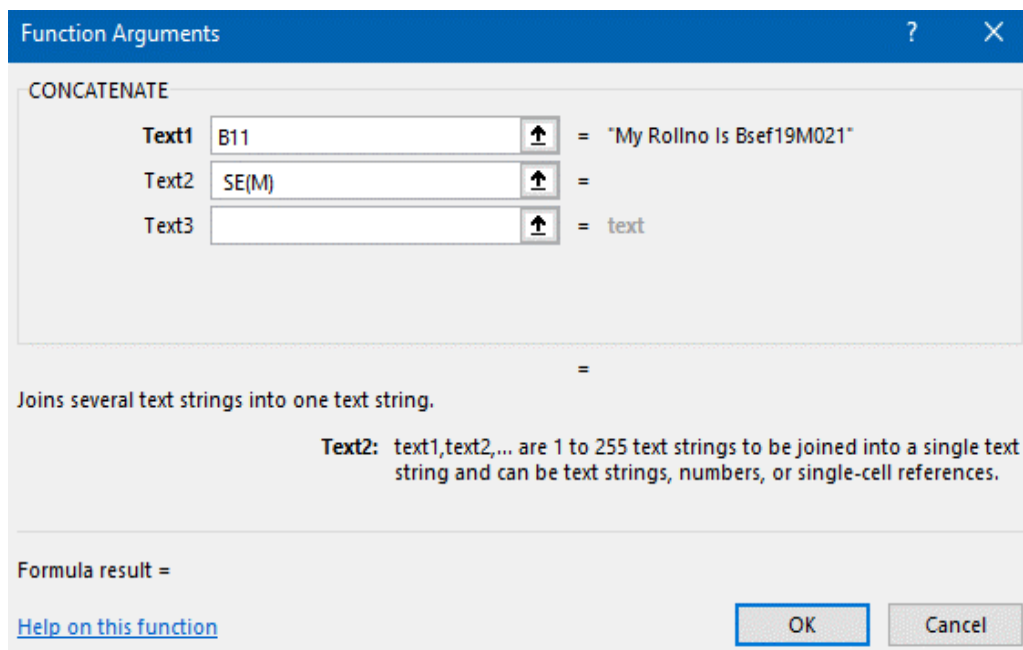


Fig. 52 (Function Arguments dialog)

Result will be displayed in the active cell. Concatenated text will be returned.

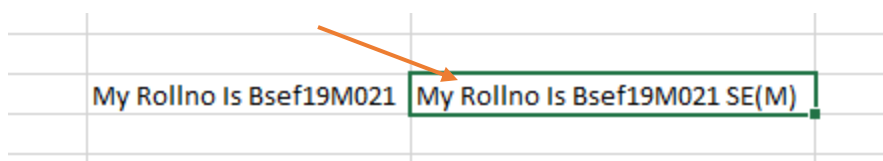


Fig. 53 (CONCATENATE Function)

Concatenate can also be used directly to combine text in two cells as follows

- In cell **B4** type **Pakistan**, and cell **D4** type **Zindabad**. In any cell for example cell **B6** type **=CONCATENATE (B4, D4)** and press **Enter**. This will join text from both cells and display it in the cell **B6**.

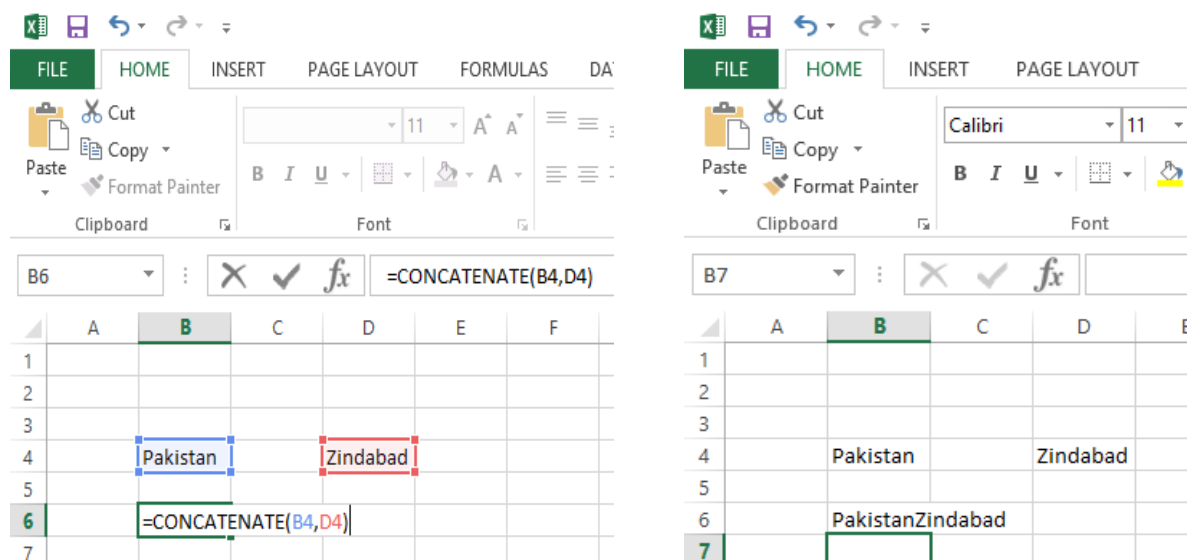


Fig. 54 (CONCATENATE Function)

### Creating Charts:

- Select the data
- Click the **“Insert tab”** on the ribbon
- Click the **“Insert Column Chart”** on the ribbon

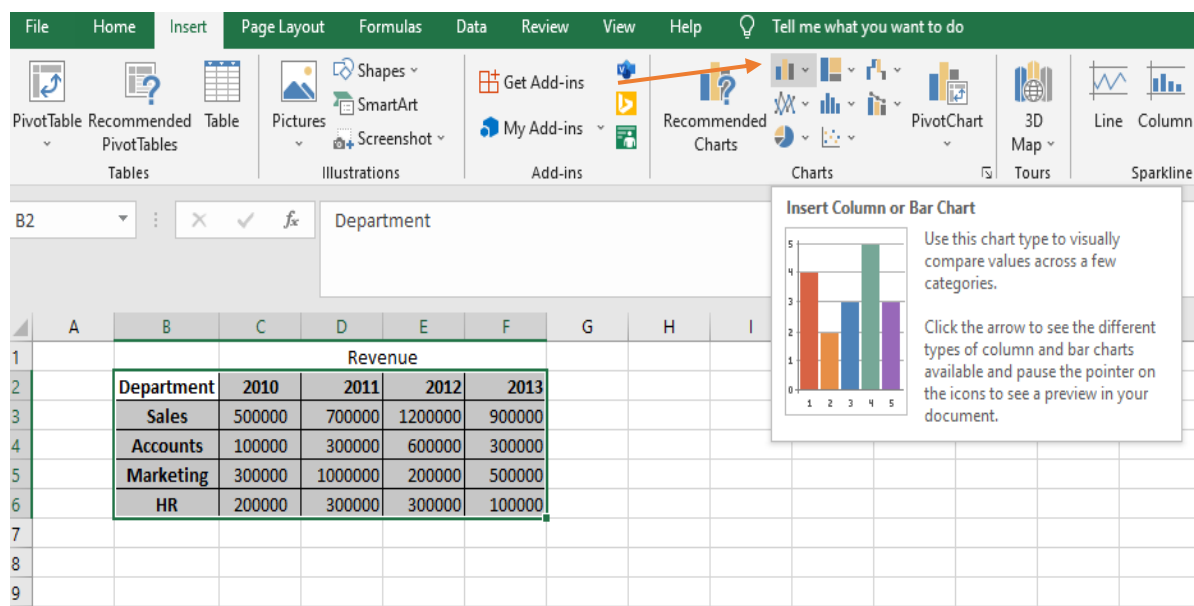


Fig. 55 (Creating Charts)

The 2-D column, 3-D Column chart options are displayed. Further, More Column Charts... option is also displayed. Move through the charts to see the preview.

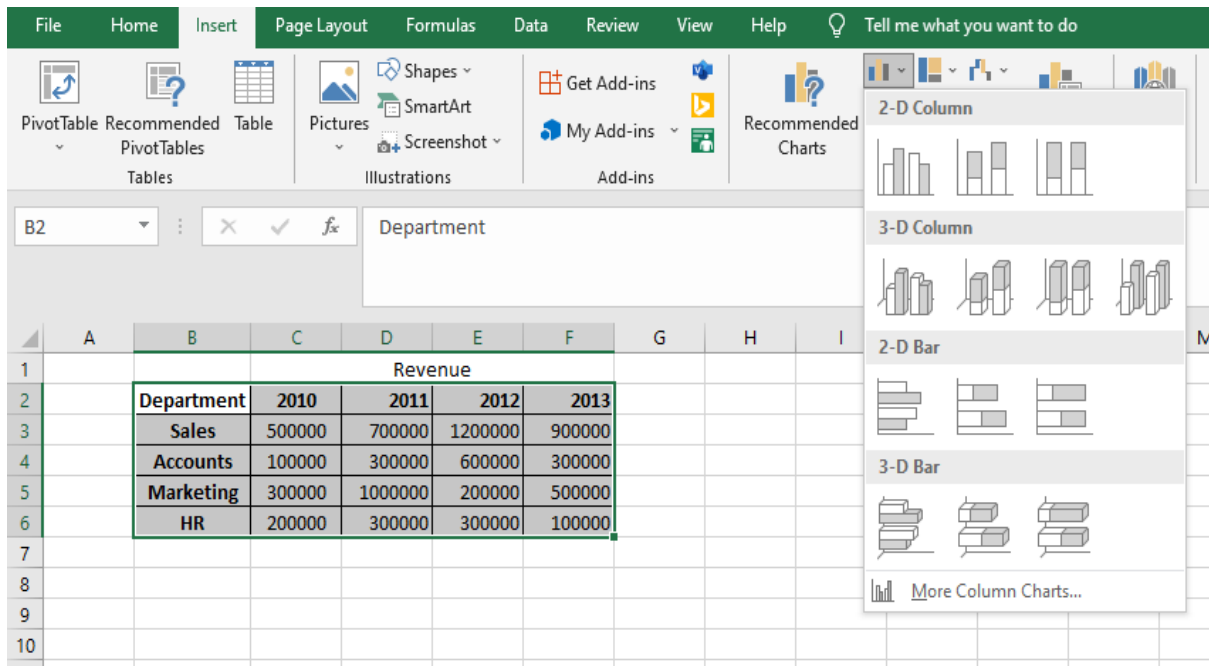


Fig. 56 (Creating Charts)

- Click any of the chart, it will be displayed on the worksheet.

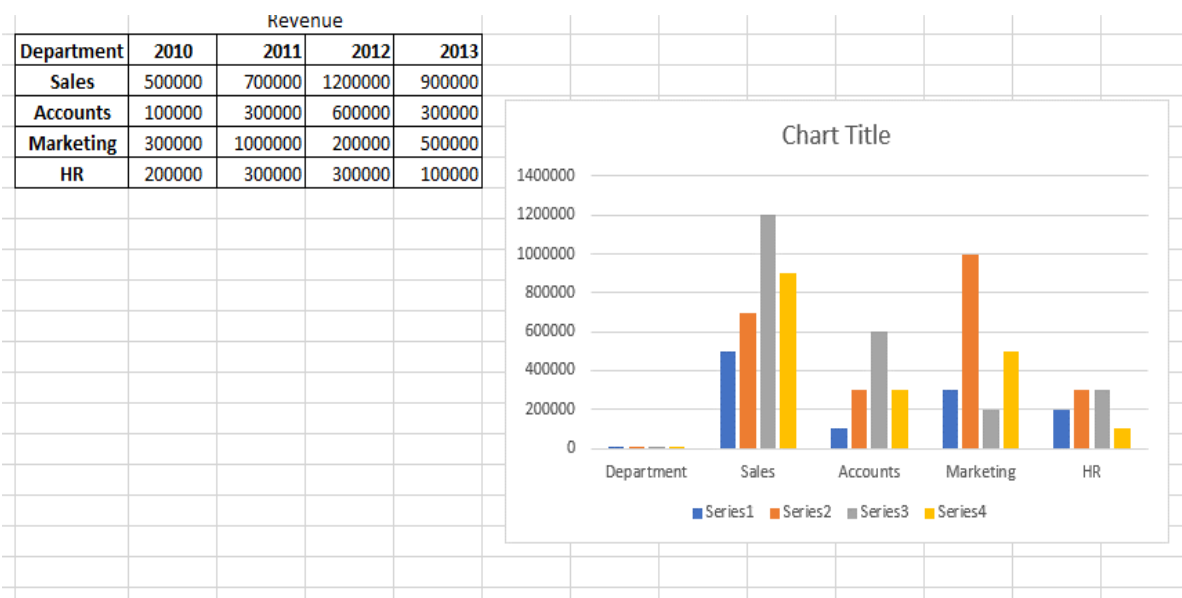


Fig. 57 (Creating Charts)

### Format Chart:

- Select the chart
- Click on **“Chart Design Tab”**
- Click on **“Quick Layout”**. As you move to each of the options, the chart changes to preview what it will look like if you select the option
- Select any option you want

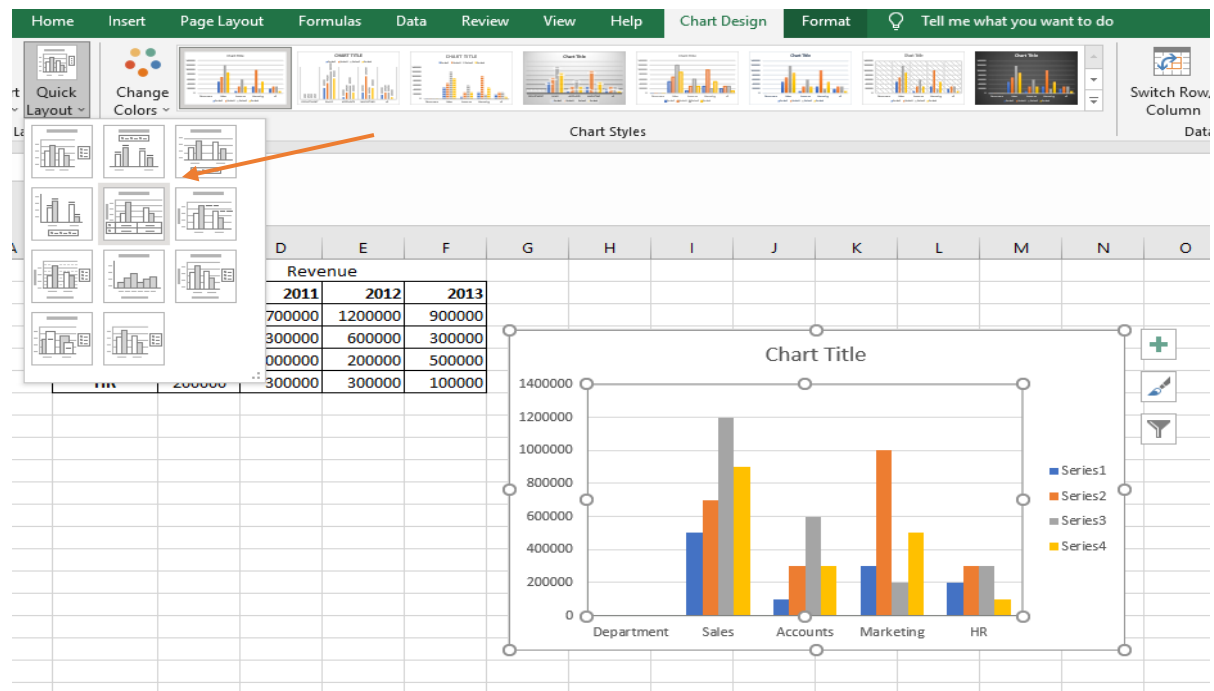


Fig. 58 (Format Charts)

**Add / Delete Chart elements:**

- Select the chart
- Click the “Charts Element” button

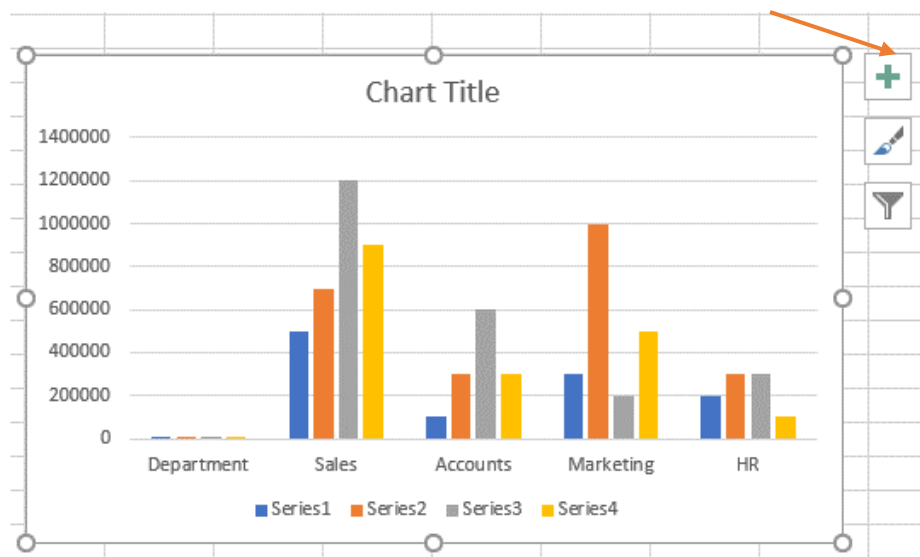


Fig. 59 (Format Charts)

- Check the “unchecked boxes” to add elements

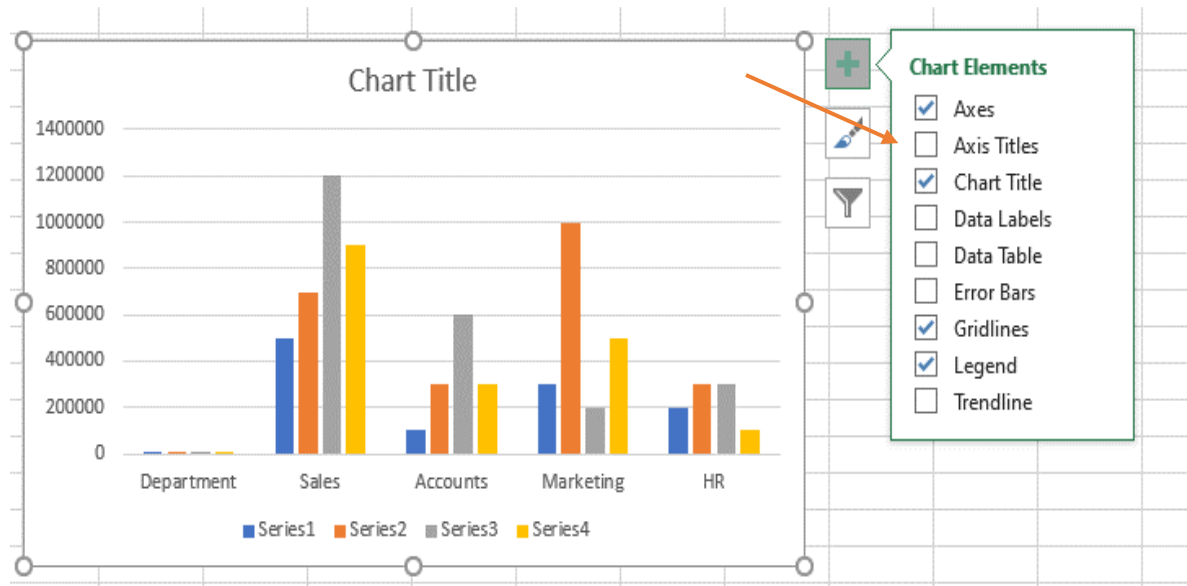


Fig. 60 (Add Chart Elements)

- Uncheck the “checked boxes” to delete elements

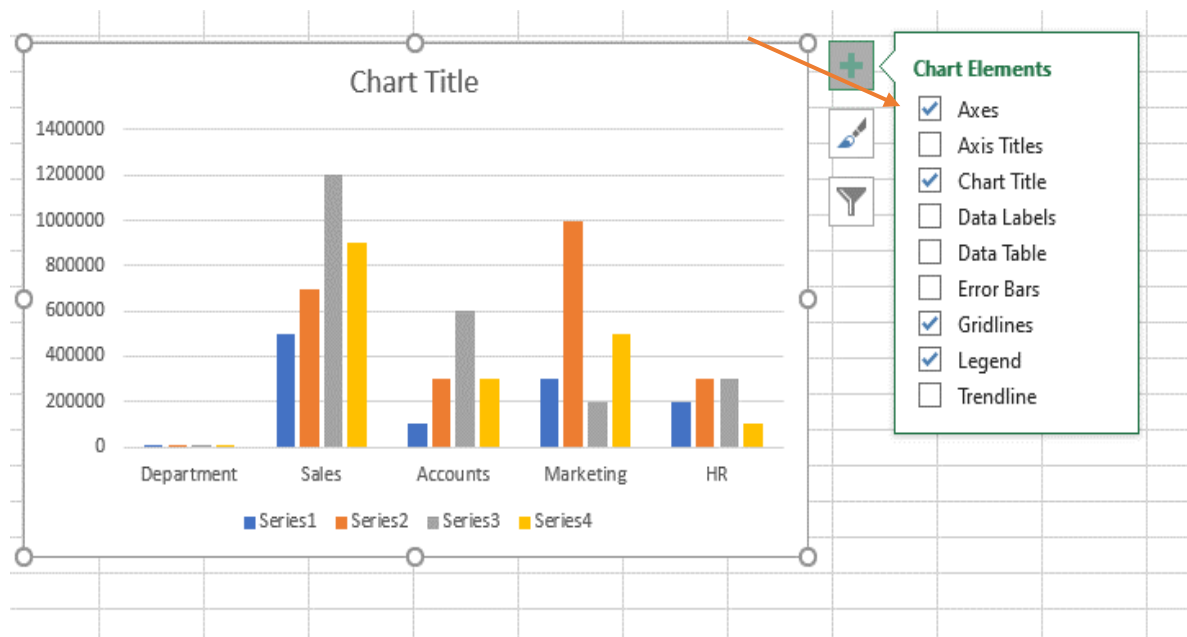


Fig. 61 (Delete Chart Elements)

### Add Sparklines:

- On the **Insert** tab go to the **Sparklines** group and click **Line**

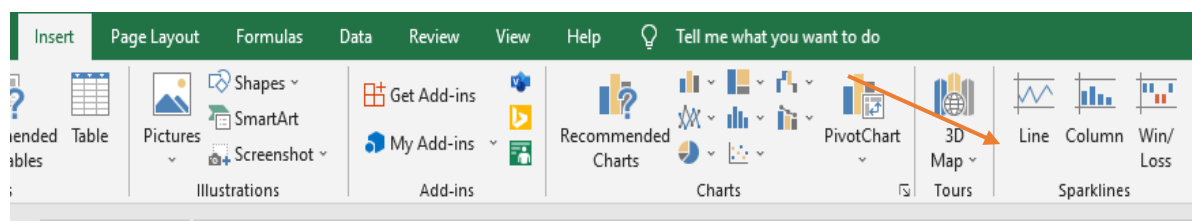


Fig. 62 (Sparklines)

- **Create Sparklines** dialog will appear.
- Select “**data range**” for which you want to create sparkline
- Select “**location range**” according to the data range
- Click “**OK**”

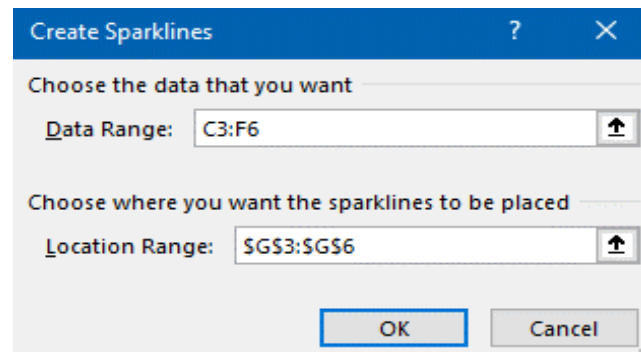


Fig. 63 (Create Sparklines dialog)

- Sparklines will be created at specified location range.

Department	2010	2011	2012	2013	Sparkline
Sales	500000	700000	1200000	900000	
Accounts	100000	300000	600000	300000	
Marketing	300000	1000000	200000	500000	
HR	200000	300000	300000	100000	

Fig. 64 (Sparklines)

### Creating PivotTable:

- Select the data you want to use in PivotTable
- On “**Insert tab**” in “**Tables**” group, click “**PivotTable**” then click “**From Table/Range**”

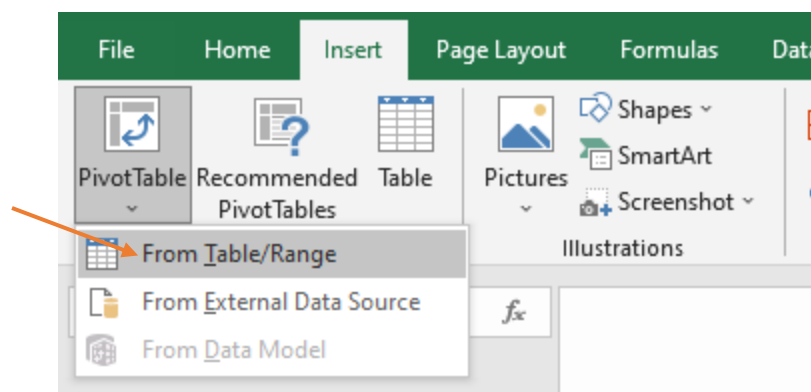


Fig. 65 (PivotTable)

- Click “**OK**” on the dialog box
- The worksheet now shows the layout for PivotTable. You will also see the PivotTable Fields which shows the column tiles from the source data

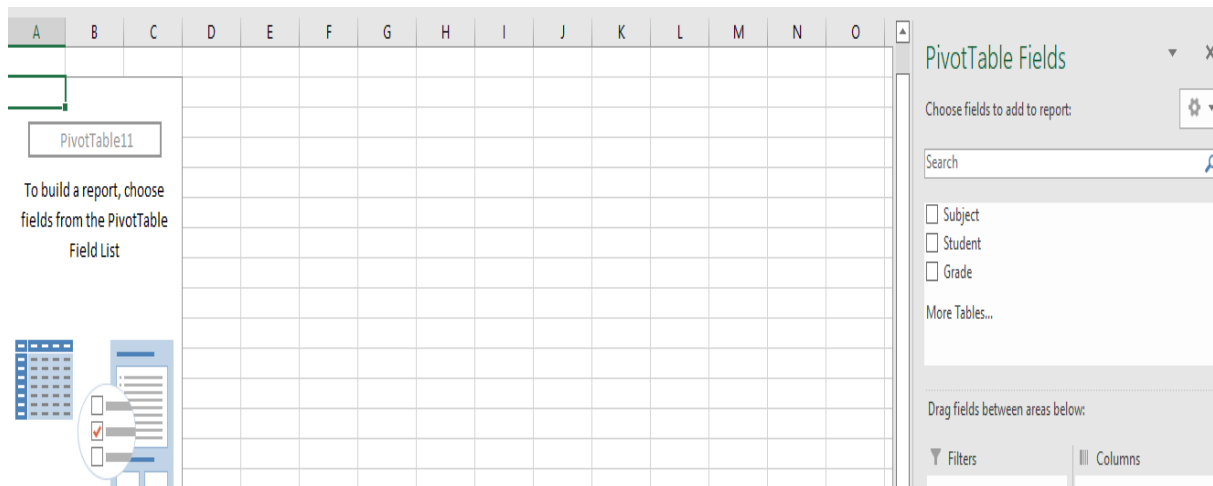


Fig. 66 (PivotTable)

The PivotTable is created by moving fields from the Fields to the layout area. What you drag where depends on what question you are trying to answer. This can be done in four ways:

- Select the check box next to the field name. Excel will automatically put the field in place.
  - Non-numeric fields are automatically placed in Row Labels on the left side of the report. As you add more non-numeric fields, Excel places them on the inside of fields already on the PivotTable report, building a hierarchy.
  - Numeric fields will be placed in Column Labels.
- Right click the field name and select desired locations of the field
- Drag the field name to the locations listed below the field list
- Drag the field name directly to the layout area

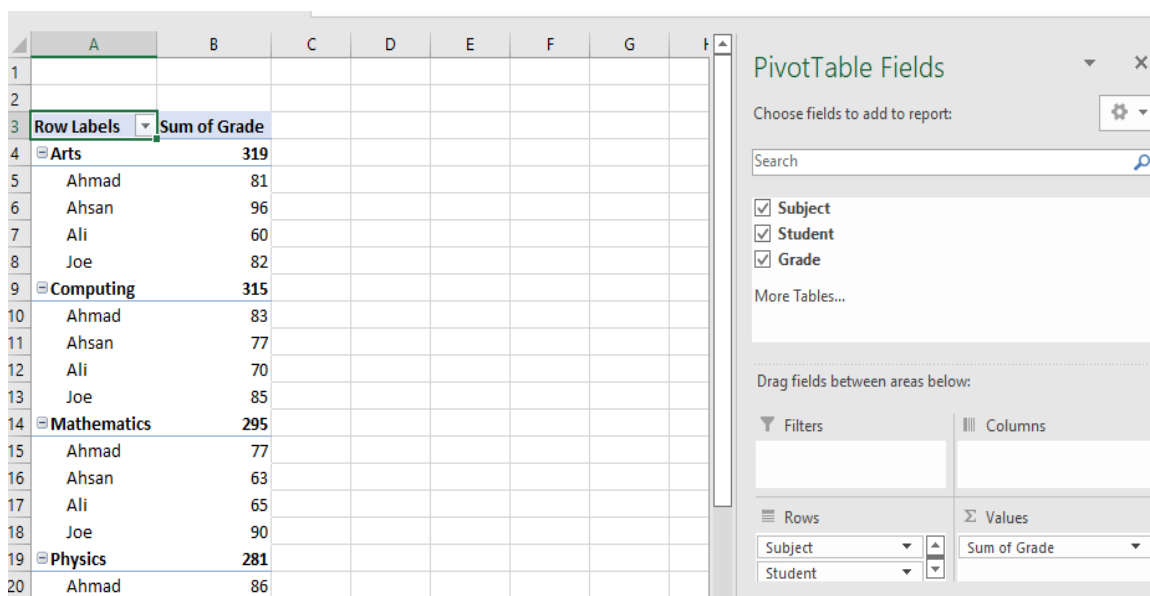


Fig. 67 (PivotTable)

### Filter PivotTable:

Filtering specific student marks.

- Move “Student” to the “Filters” field. PivotTable will be updated



	A	B	C	D	E	F	G	H
1	Student	(All)						
2								
3	Row Labels	Sum of Grade						
4	Arts	319						
5	Computing	315						
6	Mathematics	295						
7	Physics	281						
8	Grand Total	1210						
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Fig. 68 (Filter PivotTable)

- From the drop-down menu against Student in the layout area, select “Ali”
- Click “OK”

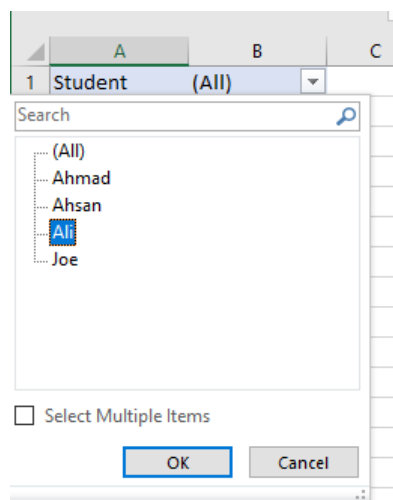


Fig. 69 (Filter PivotTable)

Marks of Ali will be shown against each subject.

	A	B	C
1	Student	Ali	
2			
3	Row Labels	Sum of Grade	
4	Arts	60	
5	Computing	70	
6	Mathematics	65	
7	Physics	39	
8	Grand Total	234	
9			
10			

Fig. 70 (Filter PivotTable)

**Securing Workbook:**

- On “**Review tab**” in “**Protect**” group, click “**Protect Workbook**”

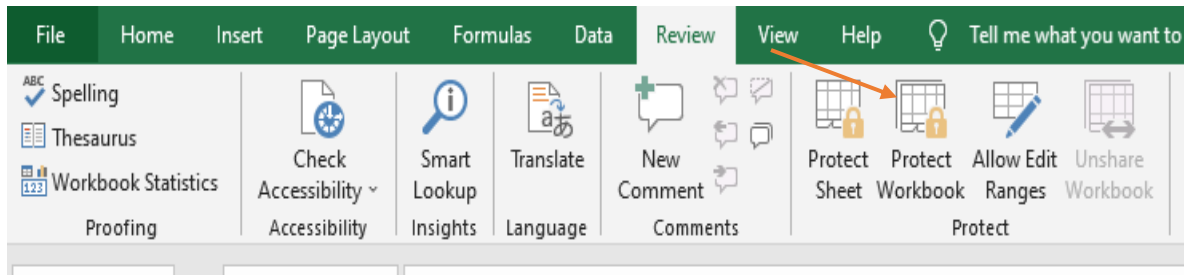


Fig. 71 (Secure Workbook)

- Enter password in the “**Protect Structure & Windows**” dialog and click OK

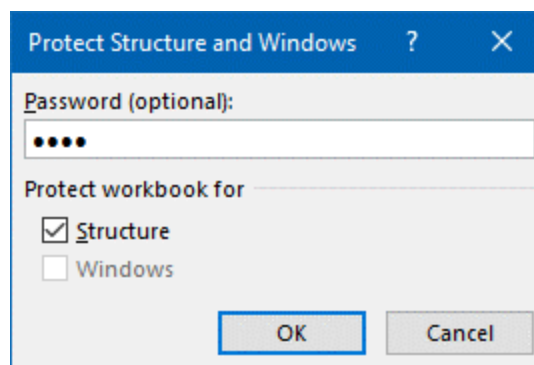


Fig. 72 (Secure Workbook)

- Press “**Esc**” and then click the “**File tab**”. Select “**Save As**” and then click the “**Browse**” button
- In the Save As dialog box, click the “**Tools**” button
- Select “**General Options**”

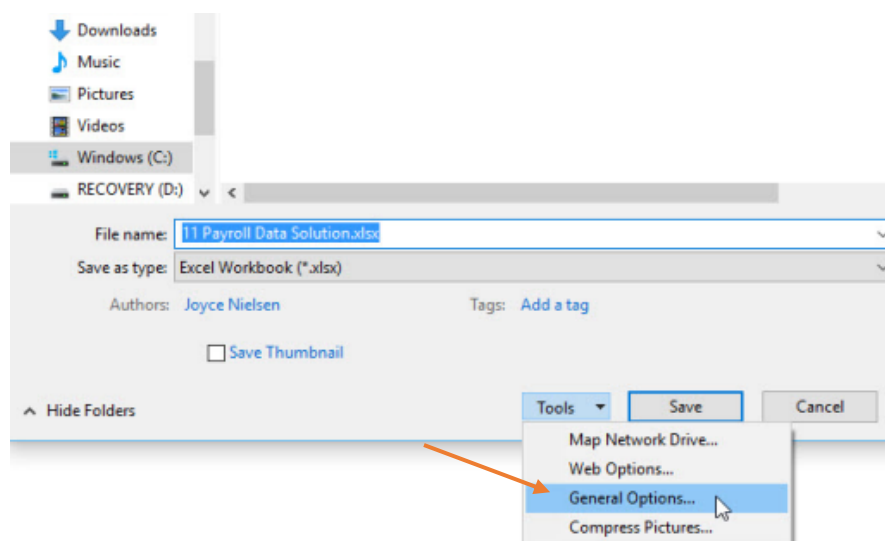


Fig. 73 (Secure Workbook)

- In “**General Options**”, enter **Password to open** and **Password to modify** and Click “**OK**”

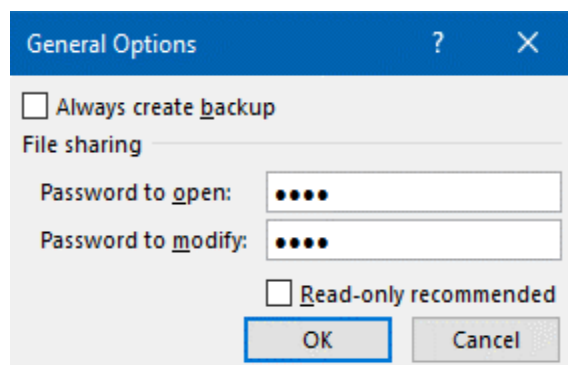


Fig. 74 (General Options dialog)

- Save the workbook
- Now password will be required every time when you open the workbook.

**Task 01: Checking Exam Status****[25 minutes / 30 marks]**

Student_ID	Student Name	Dues Remaining	Fee_Status	Absentees	Exam_Status
1	ali	28000	UNPAID	8	FALSE
2	ahmad	0	PAID	9	FALSE
3	ahsan	0	PAID	2	TRUE

Fig. 75 (In-Lab task)

- Create above shown worksheet with at least **10 rows**
- **Student\_ID** column will contain only **whole numbers**
- **Dues Remaining** column will also contain **whole numbers** with range (0,30000)
- **Fee Status** should be **PAID** (If Dues Remaining are equal to zero) and **UNPAID** (If Dues Remaining are greater than zero)
- **Exam Status** should be **TRUE** (If Fee Status is PAID and Absentees are less than eight) otherwise **FALSE**
- Remove duplications on the basis of **Student\_ID**
- Formulas must be used where required
- Freeze only first row of the data
- Name excel file with **“Your Roll No”**
- Email the file to the TA, the subject should be **“Lab 07\_Task 01\_Your Roll No”**

**Task 02: Creating Chart****[20 minutes / 20 marks]**

Department	2010	2011	2012	2013
Sales	500000	700000	1200000	120000
Accounts	100000	300000	600000	300000
Marketing	300000	1000000	200000	500000
HR	200000	300000	300000	100000

Fig. 76 (In-Lab task)

- For the above data, create a 3D bar chart
- Only the following elements should be the part of the chart:
  - Axes, Data Table, Gridline, Legend

## Post-Lab activities:

### Task 01: GPA Calculation

[Estimated time 60 minutes / 50 marks]

SR #	Course Code	Course Name	Cr. Hrs	Obt. Marks	Tot. Marks	Percent.	Grade	Grade Points (GP)
							<b>GPA</b>	<b>....</b>

Fig. 77 (Post-Lab task)

Create a worksheet as shown above.

- **Marks & Total Marks** column should have a data validation of **whole numbers** with a range between **0 to 100**
- **Percentage** should be calculated by the formula
- Use Multiple **IF Functions** to fill **Grade** and **Grade Points** columns

Marks in Percent	Letter Grade	Grade Point
0	F	0.00
50	D	1.00
55	C-	1.70
58	C	2.00
61	C+	2.30
65	B-	2.70
70	B	3.00
75	B+	3.30
80	A-	3.70
85	A	4.00

Fig. 78 (Marks, Grade, and Grade Point (GP) Table)

- Grade Points (GPs) in a course are equal to grade point obtained by the candidate multiplied by number of credit hours of the course for example if a student obtains 75 marks in a three credit hours course then his/her Grade Points in this course would be

$$\begin{aligned}
 \text{Grand Points} &= \text{Grade Point} \times \text{Credit Hours} \\
 &= 3.3 \times 3 \\
 &= 9.9
 \end{aligned}$$

- Use **SUM** function to calculate **GPA** (Grade Point Average) cell using following criteria

$$\text{GPA} = (\text{sum of all grade points}) / \text{total credit hours}$$

- **Secure** your Workbook (**Password must be your Roll No**)
- Following are some samples of the GPA calculation sheet

SR #	Course Code	Course Name	Cr. Hrs	Obt. Marks	Tot. Marks	Percent.	Grade	Grade Points (GP)
1	GE-161	Introduction to ICT	2	88	100	88%	A	8
2	GE-161L	Introduction to ICT Lab	1	85	100	85%	A	4
3	GE-162	English Composition & Comprehension	3	78	100	78%	B+	9.9
4	GE-163	Islamic Studies	2	85	100	85%	A	8
5	GE-165	Pakistan Studies	2	83	100	83%	A-	7.4
6	MS-151	Applied Physics	3	72	100	72%	B	9
7	MS-152	Calculus & Analytical Geometry	3	92	100	92%	A	12
8	HQ-181	Quran Translation	0.5	78	100	78%	B+	1.65
GPA								3.633333333

SR #	Course Code	Course Name	Cr. Hrs	Obt. Marks	Tot. Marks	Percent.	Grade	Grade Points (GP)
1	GE-161	Introduction to ICT	2	65	100	65%	B-	5.4
2	GE-161L	Introduction to ICT Lab	1	75	100	75%	B+	3.3
3	GE-162	English Composition & Comprehension	3	68	100	68%	B-	8.1
4	GE-163	Islamic Studies	2	52	100	52%	D	2
5	GE-165	Pakistan Studies	2	64	100	64%	C+	4.6
6	MS-151	Applied Physics	3	75	100	75%	B+	9.9
7	MS-152	Calculus & Analytical Geometry	3	63	100	63%	C+	6.9
8	HQ-181	Quran Translation	0.5	72	100	72%	B	1.5
GPA								2.527272727

SR #	Course Code	Course Name	Cr. Hrs	Obt. Marks	Tot. Marks	Percent.	Grade	Grade Points (GP)
1	GE-161	Introduction to ICT	2	95	100	95%	A	8
2	GE-161L	Introduction to ICT Lab	1	85	100	85%	A	4
3	GE-162	English Composition & Comprehension	3	75	100	75%	B+	9.9
4	GE-163	Islamic Studies	2	25	100	25%	F	0
5	GE-165	Pakistan Studies	2	55	100	55%	C-	3.4
6	MS-151	Applied Physics	3	98	100	98%	A	12
7	MS-152	Calculus & Analytical Geometry	3	60	100	60%	C	6
8	HQ-181	Quran Translation	0.5	63	100	63%	C+	1.15
GPA								2.693939394

Fig. 79 (Sample Post-Lab task)

- Draw a bar chart of marks obtained by the student having course code on x- axes

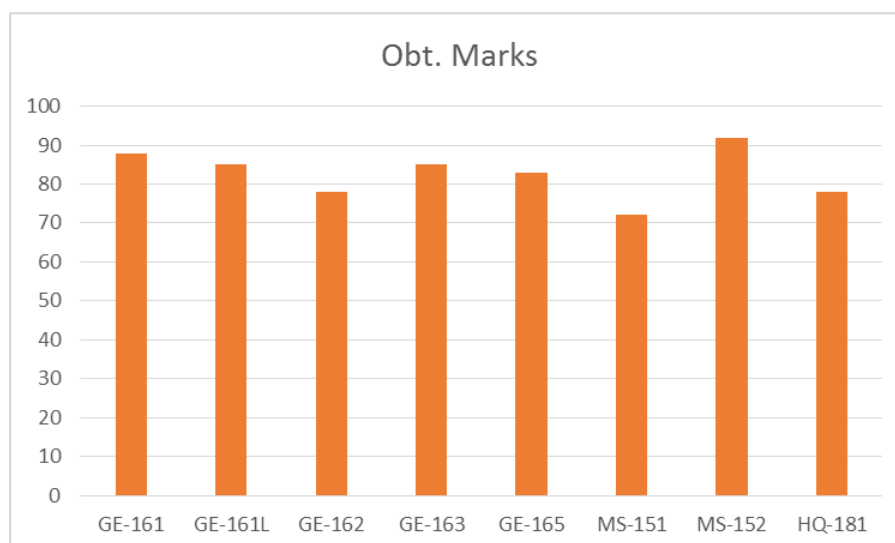




Fig. 80 (Sample Post-Lab task)

## Submissions:

- For Pre-Lab Activity:
  - Perform Pre-Lab as mentioned above.
  - Save the respective document in folder “RollNo\_Pre-Lab-07”.
  - Then zip the whole folder (RollNo\_Pre-Lab-07.zip), and email it to your respective TA.
- For In-Lab:
  - Perform mentioned tasks of In-Lab activity.
  - Make a folder on Desktop by the name “RollNo\_In-Lab-07”.
  - Then save each document in folder “RollNo\_In-Lab-07”.
- For Post-Lab Activity:
  - Perform Post-Lab as mentioned above.
  - Save the respective document in folder “RollNo\_Post-Lab-07”.
  - Then zip the whole folder (RollNo\_Post-Lab-07.zip), and email it to your respective TA.

## Evaluations Metric:

- All the Lab tasks will be evaluated offline by TA's.
- Division of In-Lab tasks: [50 marks]
  - Task 01 (Checking Exam Status) [30 marks]
  - Task 02 (Creating Chart) [20 marks]
- Division of Pre-Lab tasks: [20 marks]
  - Task 01 (Creating Workbook) [20 marks]
- Division of Post-Lab tasks: [50 marks]
  - Task 01 (GPA Calculation) [50 marks]

## References and Additional Material:

- Joyce J. Nielsen, Microsoft Official Academic Course, Microsoft Excel 2016, Wiley Publisher, 2016. ISBN: 978-111-927300-4  
[https://drive.google.com/drive/u/1/folders/1V9nh8WIKOIQvi\\_ig98\\_YCaP7Vvei-tQz](https://drive.google.com/drive/u/1/folders/1V9nh8WIKOIQvi_ig98_YCaP7Vvei-tQz)
- Learn Microsoft ® Excel:  
<https://support.microsoft.com/en-us/excel>

## Lab Time Activity Simulation Log:

- Slot – 01 – 00:00 – 00:15: Settlement and attendance
- Slot – 02 – 00:15 – 00:30: Demonstration on screen (Microsoft ® Excel)
- Slot – 03 – 00:30 – 00:45: Demonstration on screen (Microsoft ® Excel)
- Slot – 04 – 00:45 – 01:00: Demonstration on screen (Microsoft ® Excel)
- Slot – 05 – 01:00 – 01:15: Demonstration on screen (Microsoft ® Excel)
- Slot – 06 – 01:15 – 01:30: Demonstration on screen (Microsoft ® Excel)
- Slot – 07 – 01:30 – 01:45: Demonstration on screen (Microsoft ® Excel)
- Slot – 08 – 01:45 – 02:00: Discussion on In-Lab Task
- Slot – 09 – 02:00 – 02:15: In-Lab Tasks
- Slot – 10 – 02:15 – 02:30: In-Lab Tasks
- Slot – 11 – 02:30 – 02:45: In-Lab Tasks
- Slot – 12 – 02:45 – 03:00: Discussion on Post-Lab Task