

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELGAVI-590018, KARNATAKA

**Semester-III****DATA ANALYTICS WITH EXCEL**
LAB MANUAL (BCS358A)

(As per CBCS Scheme 2022)

Academic Year: 2023-2024

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(Approved by AICTE and Affiliated to VTU)

Department of Information Science & Engineering

Data Analytics with Excel		Semester	3
Course Code	BCS358	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	0:0:2:0	SEE Marks	50
Credits	01	Exam Hours	100
Examination type (SEE)	Practical		

Course objectives:

- To Apply analysis techniques to datasets in Excel
- Learn how to use Pivot Tables and Pivot Charts to streamline your workflow in Excel
- Understand and Identify the principles of data analysis
- Become adept at using Excel functions and techniques for analysis
- Build presentation ready dashboards in Excel

Sl.NO	Experiments
1	Getting Started with Excel: Creation of spreadsheets, Insertion of rows and columns, Drag & Fill, use of Aggregate functions.
2	Working with Data : Importing data, Data Entry & Manipulation, Sorting & Filtering.
3	Working with Data: Data Validation, Pivot Tables & Pivot Charts.
4	Data Analysis Process: Conditional Formatting, What-If Analysis, Data Tables, Charts& Graphs.
5	Cleaning Data with Text Functions: use of UPPER and LOWER, TRIM function, Concatenate.
6	Cleaning Data Containing Date and Time Values: use of DATEVALUE function, DATEADD and DATEDIF, TIMEVALUE functions.
7	Conditional Formatting: formatting, parsing, and highlighting data in spreadsheets during data analysis.
8	Working with Multiple Sheets : work with multiple sheets within a workbook is crucial for organizing and managing data, perform complex calculations and create comprehensive reports.

9	Create worksheet with following fields: Empno, Ename, BasicPay(BP), Travelling Allowance(TA), Dearness Allowance(DA), House Rent Allowance(HRA), Income Tax(IT), Provident Fund(PF), Net Pay(NP). Use appropriate formulas to calculate the above scenario. Analyze the data using appropriate chart and report the data.
10	Create worksheet on Inventory Management: Sheet should contain Product code, Product name, Product type, MRP, Cost after % of discount, Date of purchase. Use appropriate Formulas to calculate the above scenario. Analyze the data using appropriate chart and report the data.
11	Create worksheet on Sales analysis of Merchandise Store: data consisting of Order ID, Customer ID, Gender, age, date of order, month, online platform, Category of product, size, quantity, amount, shipping city and other details. Use of formula to segregate different Categories and perform a comparative study using pivot table s and different sort of charts.
12	Generation of report & presentation using Auto filter & macro.

Course out comes(Course Skill Set):

At the end of the course the student will be able to:

- Use advanced functions and productivity tools to assist in developing worksheets.
- Manipulate data lists using Out line and Pivot Tables.
- Use Consolidation to summarise and report results from multiple worksheets.

Apply Macros and Auto filter to solve the given real world scenario.



Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE(Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation(CIE):

CIE marks for the practical course are **50 Marks**.

The split-up of CIE marks for record/journal and test are in the ratio **60:40**.

- Each experiment is to be evaluated for conduction with an observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments are designed by the faculty who is handling the laboratory session and are made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled down to **30 marks** (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct a test of 100 marks after the completion of all the experiments listed in the syllabus.
- In a test, write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability.
- The marks scored shall be scaled down to **20 marks**(40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and marks of a test is the total CIE marks scored by the student.

Semester End Evaluation(SEE):

- SEEmarksforthepracticalcourseare50Marks.
- SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the Head of the Institute.
- The examination schedule and names of examiners are informed to the university before the conduction of the examination. These practical examinations are to be conducted between the schedule mentioned in the academic calendar of the University.

- All laboratory experiments are to be included for practical examination.
- (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.
- Students can pick one question (experiment) from the questions lot prepared by the examiners jointly.
- Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.

General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)

Change of experiment is allowed only once and 15% of Marks allotted to the procedure partare to be made zero.

The minimum duration of SEE is 02 hours

Suggested Learning Resources:

- **Berk&Carey**-Data Analysis with Microsoft® Excel: Updated for Office 2007®, Third Edition, © 2010 Brooks/Cole, Cengage Learning, ISBN-13: 978-0-495-39178-4
- **Wayne L. Winston**-
Microsoft Excel 2019: Data Analysis And Business Modeling, PHI, ISBN: 9789389347180
- **Aryan Gupta** - Data Analysis in Excel: The Best Guide. (<https://www.simplilearn.com/tutorials/excel-tutorial/data-analysis-excel>)

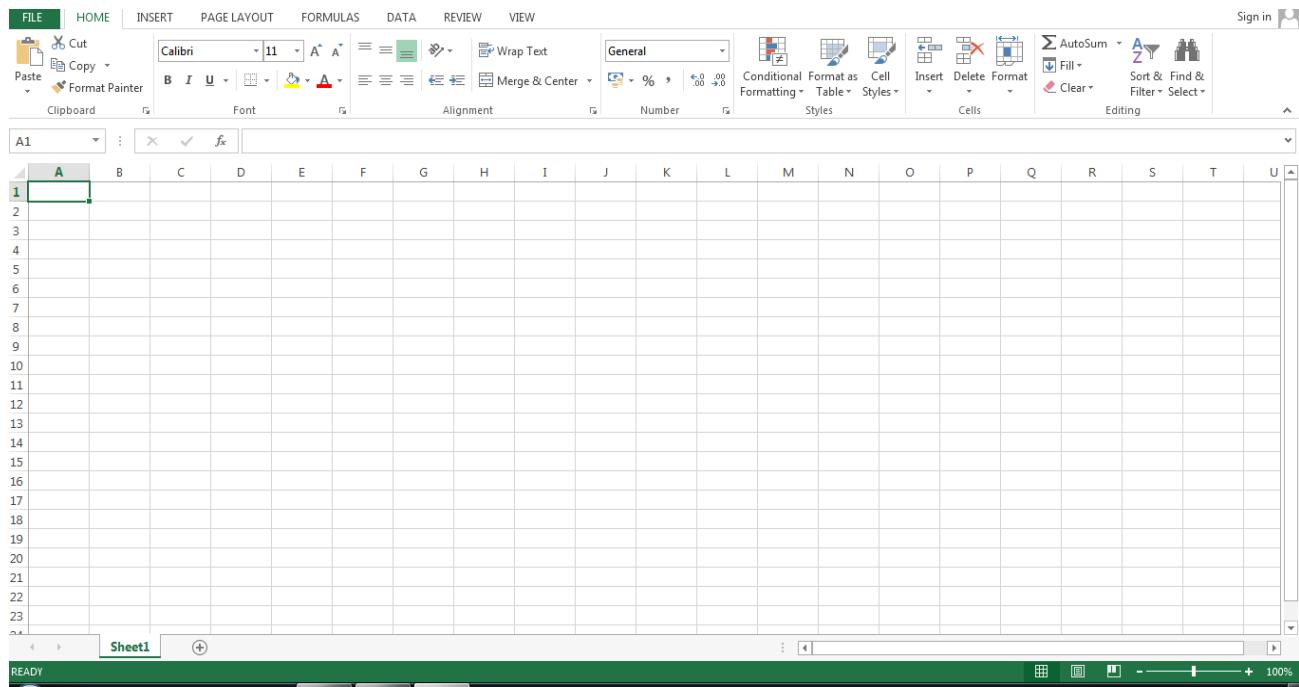
An Introduction to MS Excel

What is Microsoft Excel?

Microsoft Excel is a spreadsheet program used to record and analyze numerical and statistical data. Microsoft Excel provides multiple features to perform various operations like calculations, pivot tables, graph tools, macro programming, etc. It is compatible with multiple OS like Windows, macOS, Android and iOS.

A Excel spreadsheet can be understood as a collection of columns and rows that form a table. Alphabetical letters are usually assigned to columns, and numbers are usually assigned to rows. 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.

MS Excel is a spreadsheet program where one can record data in the form of tables. It is easy to analyze data in an Excel spreadsheet. The image given below represents how an Excel spreadsheet looks like:



How to open MS Excel?

To open MS Excel on your computer, follow the steps given below:

- Click on Start
- Then All Programs
- Next step is to click on MS Office
- Then finally, choose the MS-Excel option

Alternatively, you can also click on the Start button and type MS Excel in the search option available.

What is a cell?

A spreadsheet is in the form of a table comprising rows and columns. The rectangular box at the intersection point between rows and columns forms a cell.

Understanding the worksheet (Rows and Columns, Sheets, Workbooks)

A 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.

A 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.

Features of MS Excel

Various editing and formatting can be done on an Excel spreadsheet. Discussed below are the various features of MS Excel.

The image below shows the composition of features in MS Excel:



Home

Comprises options like font size, font styles, font colour, background colour, alignment, formatting options and styles, insertion and deletion of cells and editing options.

Insert

Comprises options like table format and style, inserting images and figures, adding graphs, charts and spark lines, header and footer option, equation and symbols.

Page Layout

Themes, orientation and page setup options are available under the page layout option.

Formulas

Since tables with a large amount of data can be created in MS excel, under this feature, you can add formulas to your table and get quicker solutions .

Data

Adding external data (from the web), filtering options and data tools are available under this category.

Review

Proofreading can be done for an excel sheet (like spell check) in the review category and a

reader can add comments in this part .

View

Different views in which we want the spreadsheet to be displayed can be edited here. Options to zoom in and out and pane arrangement are available under this category.

Ms-Excel shortcuts:

1. **Ctrl+N:** To open a new workbook.
2. **Ctrl+O:** To open a saved workbook.
3. **Ctrl+S:** To save a workbook.
4. **Ctrl+C:** To copy the selected cells.
5. **Ctrl+V:** To paste the copied cells.
6. **Ctrl+X:** To cut the selected cells.
7. **Ctrl+W:** To close the workbook.
8. **Delete:** To remove all the contents from the cell.
9. **Ctrl+P:** To print the workbook.
10. **Ctrl+Z:** To undo.

Benefits of Using MS Excel

MS Excel is widely used for various purposes because the data is easy to save, and information can be added and removed without any discomfort and less hard work.

Given below are a few important benefits of using MS Excel:

- **Easy To Store Data:** Since there is no limit to the amount of information that can be saved in a spreadsheet, MS Excel is widely used to save data or to analyse data. Filtering information in Excel is easy and convenient.
- **Easy To Recover Data:** If the information is written on a piece of paper, finding it may take longer, however, this is not the case with excel spreadsheets. Finding and recovering data is easy.
- **Application of Mathematical Formulas:** Doing calculations has become easier and less time-taking with the formulas option in MS excel
- **More Secure:** These spreadsheets can be password secured in a laptop or personal computer and the probability of losing them is way lesser in comparison to data written in registers or piece of paper.
- **Data at One Place:** Earlier, data was to be kept in different files and registers when the paperwork was done. Now, this has become convenient as more than one worksheet can be added in a single MS Excel file.
- **Neater and Clearer Visibility of Information:** When the data is saved in the form of a table, analyzing becomes easier. Thus, information in a spreadsheet is more readable and understandable.

Applications of MS Excel:

- Data Entry and Storage
- Performing Calculations
- Data Analysis and Interpretation
- Reporting and Visualizations
- Accounting and Budgeting
- Collection and Verification of Business Data
- Calendars and Schedules

- Administrative and Managerial Duties

Experiment No:1

Aim:

Getting Started with Excel: Creation of spreadsheets, Insertion of rows and columns, Drag & Fill, use of Aggregate functions.

Procedure:

1. Create a suitable examination database and find the sum of the marks(total)of each Student, Average, pass or fail and grade secured by each student.

Rules

- Pass if marks in each subject ≥ 35 ,
- Distinction if average ≥ 70 ,
- First class if average ≥ 60 but < 70 ,
- Second class if average ≥ 50 but < 60 ,
- Third class if average ≥ 35 and < 50 ,
- Fail if marks in any subject is < 35 .

Display average marks of the class, subject wise and pass percentage

Solution. To find the grade of a student we need to do the following steps

- Step1:TypingStudentdatabaseinExcel2007

Type the student database with the required fields starts from A1 cell as follows

	A	B	C	D	E	F	G	H	I	J
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total	Average	P/F	Grade
2	Kiran Kumar V		90	92	94	93	97			
3	Manikandan R		91	94	97	98	99			
4	Kishore Pruthvi		90	91	94	93	96			
5	Lohan V		92	99	94	90	93			
6	Meghanath		90	92	91	90	99			
7	Manikanth		92	93	96	97	93			
8	Rahul R		99	93	95	98	97			
9										

- **Step2:Tofind Total Marks of Student**

To find the total marks of a student click on the cell “G2” and type the following formula

 $=SUM(B2:F2)$

To find the total marks for the remaining students select “G2” cell and drag down to the remaining students.

	A	B	C	D	E	F	G
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total
2	Kiran Kumar V		90	92	94	93	97
3	Manikandan R		91	94	97	98	99
4	Kishore Pruthvi		90	91	94	93	96
5	Lohan V		92	99	94	90	93
6	Meghanath		90	92	91	90	99
7	Manikanth		92	93	96	97	93
8	Rahul R		99	93	95	98	97

- **Step 3: To find Average marks**

To find the average marks of the student click on the cell“H2”and type the following formula

 $=G2/500*100$

To find the average marks for the remaining students select “H2” cell and drag down to the all the students.

	A	B	C	D	E	F	G	H	I
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total	Average	Grade
2	Kiran Kumar V		90	92	94	93	97	466	93.2
3	Manikandan R		91	94	97	98	99	479	95.8
4	Kishore Pruthvi		90	91	94	93	96	464	92.8
5	Lohan V		92	99	94	90	93	468	
6	Meghanath		90	92	91	90	99	462	
7	Manikanth		92	93	96	97	93	471	
8	Rahul R		99	93	95	98	97	482	
9									

- Step4: To Check Pass or Fail

To check whether the student is Pass or Fail select the cell “I2” and type the following formula

```
=IF(AND(B2>=35,C2>=35,D2>=35,E2>=35,F2>=35),"Pass","Fail")
```

To check the remaining students are Pass/Fail select the cell “I2” and drag down to all the students

	A	B	C	D	E	F	G	H	I	J
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total	Average	P/F	
2	Kiran Kumar V		90	92	94	93	97	466	93.2	Pass
3	Manikandan R		91	94	97	98	99	479	95.8	Pass
4	Kishore Pruthvi		90	91	94	93	96	464	92.8	Pass
5	Lohan V		92	99	94	90	93	468	93.6	Pass
6	Meghanath		90	92	91	90	99	462	92.4	Pass
7	Manikanth		92	93	96	97	93	471	94.2	Pass
8	Rahul R		99	93	95	98	97	482	96.4	Pass
9										
10										

- Step5: To find Grade

To find the grade of a student click on the cell “J2” and type the following formula

```
=IF(AND(B2>=35,C2>=35,D2>=35,E2>=35,F2>=35),IF(H2>=75,"Distinction",IF(H2>=65,"First Class",IF(H2>=50,"Second Class",IF(H2>=35,"Third Class"))),"Fail"))
```

To find the grade for the remaining students select “J2” cell and drag down to all the students

	A	B	C	D	E	F	G	H	I	J
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total	Average	P/F	Grade
2	Kiran Kumar V		90	92	94	93	97	466	93.2	Pass
3	Manikandan R		91	94	97	98	99	479	95.8	Pass
4	Kishore Pruthvi		90	91	94	93	96	464	92.8	Pass
5	Lohan V		92	99	94	90	93	468	93.6	Pass
6	Meghanath		90	92	91	90	99	462	92.4	Pass
7	Manikanth		92	93	96	97	93	471	94.2	Pass
8	Rahul R		99	93	95	98	97	482	96.4	Pass
9										Distinction

Finally we get the following student database with total, average and grade

Output:

	A	B	C	D	E	F	G	H	I	J
1	Name Of Student	ADE	DS	Maths	CO	UHV	Total	Average	P/F	Grade
2	Kiran Kumar V		90	92	94	93	97	466	93.2	Pass
3	Manikandan R		91	94	97	98	99	479	95.8	Pass
4	Kishore Pruthvi		90	91	94	93	96	464	92.8	Pass
5	Lohan V		92	99	94	90	93	468	93.6	Pass
6	Meghanath		90	92	91	90	99	462	92.4	Pass
7	Manikanth		92	93	96	97	93	471	94.2	Pass
8	Rahul R		99	93	95	98	97	482	96.4	Pass
9										Distinction

Experiment No:2

Aim:

Working with Data : Importing data, Data Entry & Manipulation, Sorting & Filtering.

Procedure:

Microsoft Excel is a powerful tool for managing and analyzing data. Whether you are dealing with a large dataset or a simple list, Excel offers various features for importing data, entering information, manipulating content, sorting, and filtering.

Importing Data:

Excel allows you to import data from various sources, making it a versatile tool for handling diverse datasets.

Step 1:Open Excel and Navigate to Data Import

Opening Excel:

Start by launching Microsoft Excel on your computer.

Access Data Import:

Click on the "File" tab in the ribbon at the top of Excel.

Select "Open" from the menu to open a previously saved file.

Alternatively, choose "Get External Data" or "Import" based on your Excel version and select the source of data (e.g., CSV, Database, Web).

Import Data:

If you choose "From Text/CSV," navigate to the location of your CSV file and click "Import."

Excel will guide you through the import process, allowing you to specify delimiters, data types, and other settings.

Data Entry and Manipulation:

Excel provides a user-friendly interface for entering data and performing basic manipulations.

Step 2: Data Entry and Basic Manipulation**Entering Data:**

Click on a cell and start typing your data. Press Enter to move to the cell below or use the arrow keys to navigate.

Excel automatically adjusts the width of the cell to fit your data.

Data Manipulation:**Copying and Pasting:**

Select a range of cells, right-click, and choose "Copy."

Move to the destination, right-click, and choose "Paste" to copy the data.

Formulae and Functions:

Enter formulas in cells to perform calculations. For example, =SUM(A2:A10) calculates the sum of cells A2 to A10.

Excel offers a wide range of functions (AVERAGE(), IF(), VLOOKUP(), etc.) for advanced calculations.

Data Validation:

Select a range, go to the "Data" tab, and click on "Data Validation."

Set criteria to restrict data entry, such as allowing only numbers between a specific range.

Sorting Data:

Sorting data helps in organizing information in a meaningful way for better analysis.

Step 3: Sorting Data**Sorting Ascending/Descending:**

Select the column you want to sort.

Click on the "Data" tab and choose "Sort A to Z" for ascending or "Sort Z to A" for descending order.

Alternatively, right-click the selected column and choose "Sort."

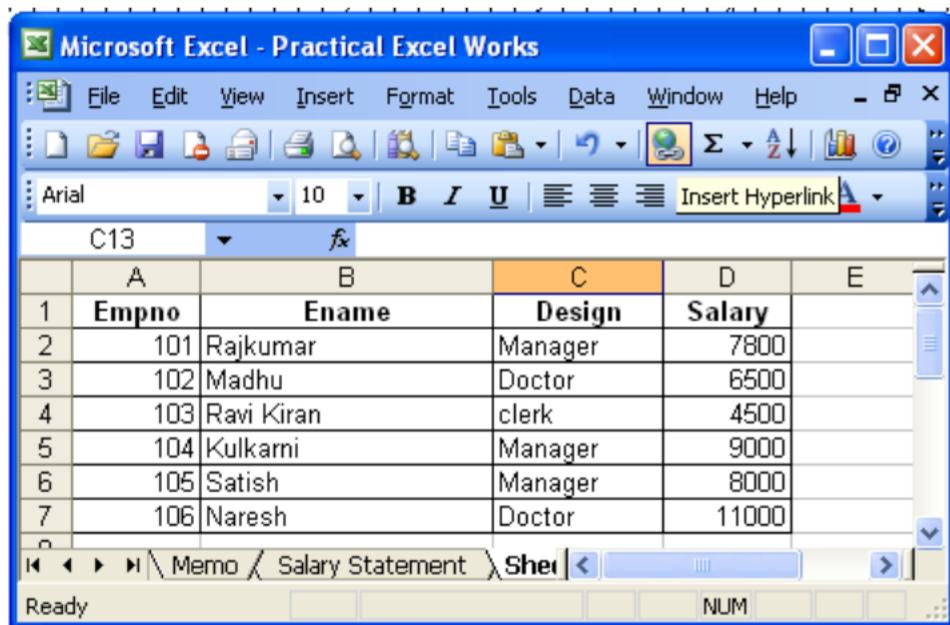
Complex Sorting:

For sorting based on multiple criteria (e.g., first sort by Category, then by Price within each Category), use the "Sort" dialog box.

Specify the primary and secondary sort columns along with the sort order for each.

To Sort the Data:

Steps: 1. Select data on list to be sorted.

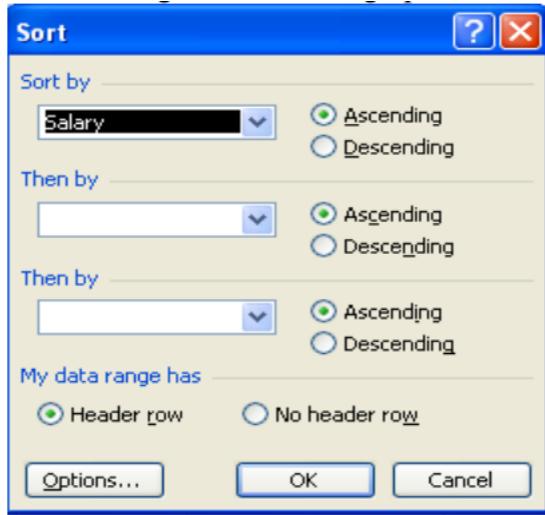


A screenshot of Microsoft Excel showing a table of employee data. The window title is "Microsoft Excel - Practical Excel Works". The table has columns labeled A, B, C, D, and E. Column C is highlighted in orange. The data rows are as follows:

	A	B	C	D	E
1	Empno	Ename	Design	Salary	
2	101	Rajkumar	Manager	7800	
3	102	Madhu	Doctor	6500	
4	103	Ravi Kiran	clerk	4500	
5	104	Kulkarni	Manager	9000	
6	105	Satish	Manager	8000	
7	106	Naresh	Doctor	11000	

For example salary in the above figure.

2. Click the Data Menu and select the sort option. The sort dialog box appears.
3. Select the ascending and descending option in the Sort by section



4. Click the OK button

Filtering Data:

Filtering data allows you to focus on specific subsets of information within your dataset.

Step 4: Filtering Data

Applying Filters:

Select your data range.

Click on the "Data" tab and select "Filter."

Dropdown arrows will appear next to each column header.

Click on these arrows to filter data based on specific criteria.

Filtering Criteria:

For text columns, you can filter by specific text values.

For numeric columns, you can filter by numbers greater than, less than, or within a specific range.

For date columns, filter options include dates within a specific period.

2. Prepare a salary statement for the following information and plot a graph

SL NO	EMP NAME	BASIC PAY

1	RAMA	10000
2	MANJU	15000
3	SASH	11000
4	HANU	10000
5	SITA	9000

I. Using MS-Excel calculate the following

a. DA is 3% of basic

b. HRA is 5% of basic

c. Tax is 5% of Gross

II. Find maximum and minimum of Basic pay

III. Count the number of employees where net salary is more than 10,000

IV. Sort the data on the basis of employee name in ascending order

V. Plot the column graph by taking employee name on x-axis and net salary on y-axis

VI. Apply custom filter and display the empnames for whom the Basic pay \geq 10000

SOLUTION:

1. Type the text i.e. “EMPLOYEES SALARY STATEMENT” in the cell from “A1 to H1”

using the merge and center button

2. Type the SL NO, EMP NAME, BASIC PAY, DA, HRA, GROSS, TAX, NET SALARY in A2, B2, C2, D2, E2, F2, G2, H2 respectively

3. Put the data for SL NO, EMP NAME, BASIC PAY

4. Calculation for

$$\text{DA} = \text{C3} * 3\%$$

$$\text{HRA} = \text{C3} * 5\%$$

$$\text{GROSS} = \text{C3} + \text{D3} + \text{E3}$$

TAX = F3*5%

NET SLARY = F3-G3

5. Calculation for

MAXIMUM = max(C3:C8)

MINIMUM = min(C3:C8)

COUNT = countif(C3:C8,"&>=10000")

6. For Sort

Select data range -> Click data menu ->Sort -> Sort by -> Emp Name -> Sort on ->

Values -> Order -> A to Z

7. For Graph

Select data range -> Click insert menu -> Chart -> Select column chart -> OK

8. For Filtering

Apply filter selecting Basic pay, then -> click Number filter -> Select greater than and equal to -> enter 10000

➔ Click OK

OUTPUT:

EMPLOYEES SALARY STATEMENT							
SL NO	EMP NAME	BASIC PAY	DA	HRA	GROSS PAY	TAX	NET SALARY
1	RAMA	10000	300	500	10800	540	10260
2	MANJU	15000	450	750	16200	810	15390
3	SASH	11000	330	550	11880	594	11286
4	HANU	10000	300	500	10800	540	10260
5	SITA	9000	270	450	9720	486	9234
6	BHARATH	12000	360	600	12960	648	12312

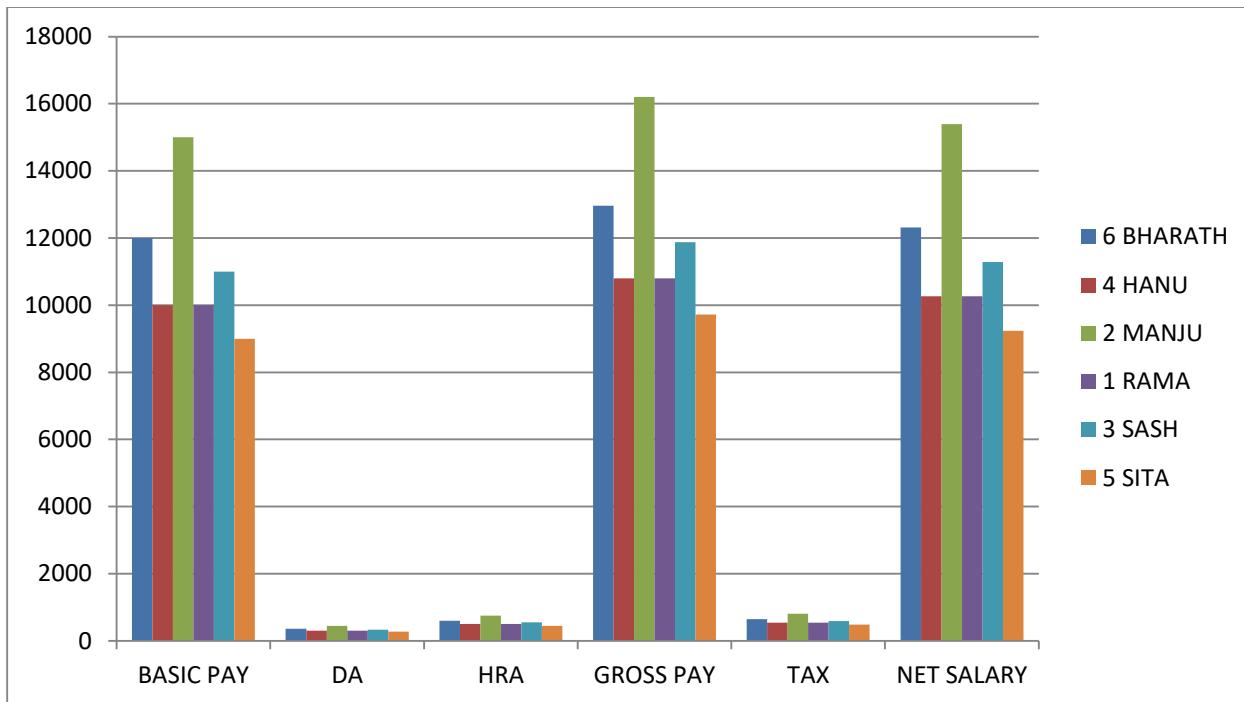
SL NO	EMP NAME	BASIC PAY	MAX(BASIC PAY)	MIN(BASIC PAY)	COUNT(BPAY>=10000)
1	BHARATH	12000	15000	9000	5
2	HANU	10000			
3	MANJU	15000			
4	RAMA	10000			
5	SASH	11000			
6	SITA	9000			

FILTERED DATA:

EMPLOYEE NAMES FOR WHOM BASIC PAY >=10000

SL NO	EMP NAME	BASIC PAY	DA	HRA	GROSS PAY	TAX	NET SALARY
1	RAMA	10000	300	500	10800	540	10260
2	MANJU	15000	450	750	16200	810	15390
3	SASH	11000	330	550	11880	594	11286
4	HANU	10000	300	500	10800	540	10260
6	BHARATH	12000	360	600	12960	648	12312

COLUMN CHART FOR EMPLOYEE DATABASE



Experiment No: 3

Aim:

Working with Data: Data Validation, Pivot Tables & Pivot Charts.

Procedure:

Pivot tables are one of Excel's most powerful features. A pivot table allows to extract the significance from a large, detailed data set.

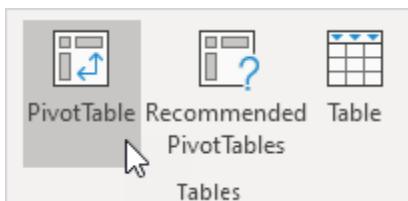
Data set consists of 213 records and 6 fields. Order ID, Product, Category, Amount, Date and Country.

	A	B	C	D	E	F	G	H
1	Order ID	Product	Category	Amount	Date	Country		
2	1	Carrots	Vegetables	\$4,270	1/6/2016	United States		
3	2	Broccoli	Vegetables	\$8,239	1/7/2016	United Kingdom		
4	3	Banana	Fruit	\$617	1/8/2016	United States		
5	4	Banana	Fruit	\$8,384	1/10/2016	Canada		
6	5	Beans	Vegetables	\$2,626	1/10/2016	Germany		
7	6	Orange	Fruit	\$3,610	1/11/2016	United States		
8	7	Broccoli	Vegetables	\$9,062	1/11/2016	Australia		
9	8	Banana	Fruit	\$6,906	1/16/2016	New Zealand		
10	9	Apple	Fruit	\$2,417	1/16/2016	France		
11	10	Apple	Fruit	\$7,421	1/16/2016	Canada		

Insert a Pivot Table

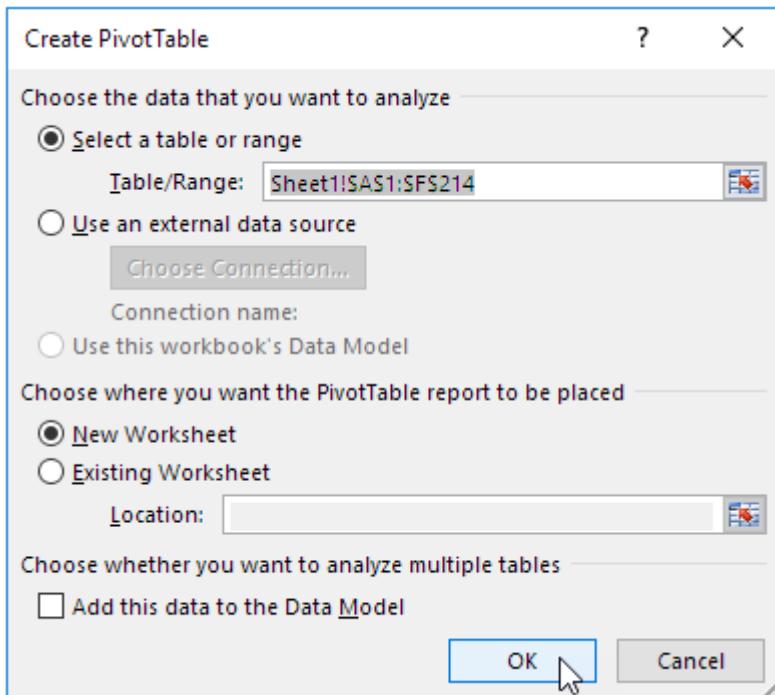
To insert a pivot table, execute the following steps.

1. Click any single cell inside the data set.
2. On the Insert tab, in the Tables group, click PivotTable.



The following dialog box appears. Excel automatically selects the data for you. The default location for a new pivot table is New Worksheet.

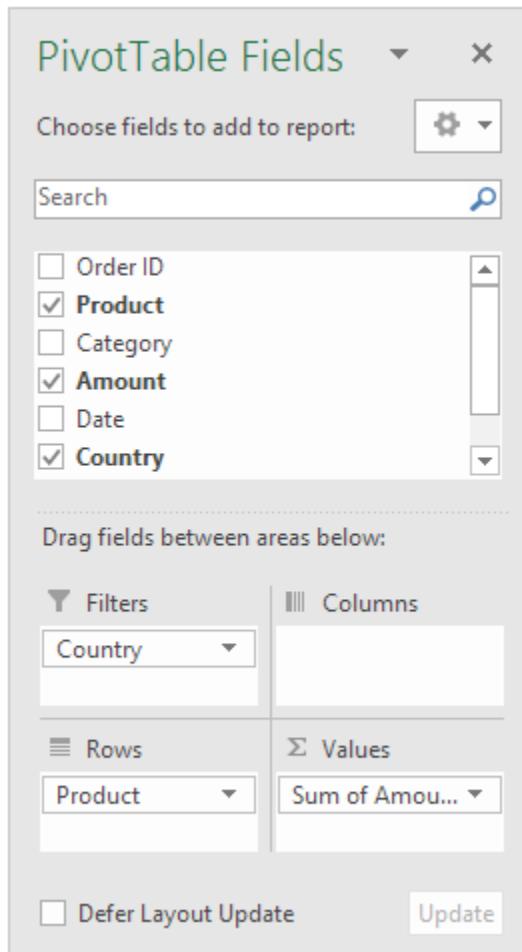
3. Click OK.



Drag fields

The PivotTable Fields pane appears. To get the total amount exported of each product, drag the following fields to the different areas.

1. Product field to the Rows area.
2. Amount field to the Values area.
3. Country field to the Filters area.



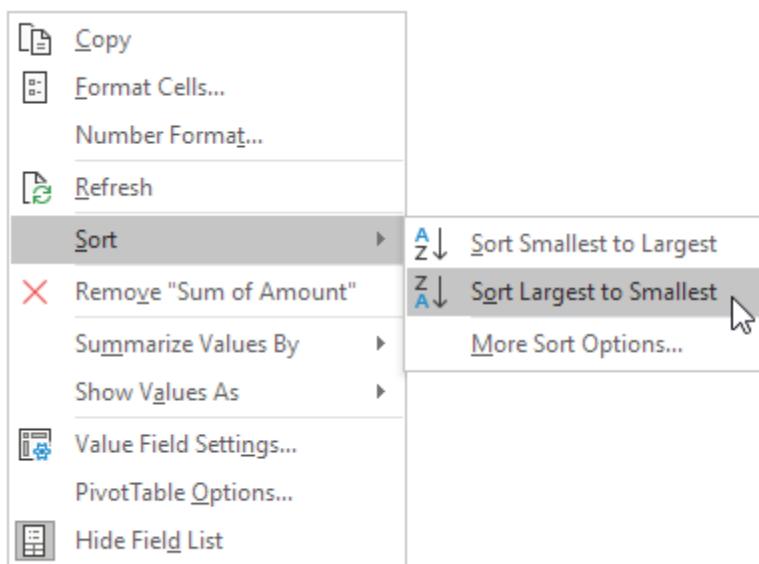
Below you can find the pivot table. Bananas are our main export product.

	A	B	C
1	Country	(All)	
2			
3	Row Labels	Sum of Amount	
4	Apple	191257	
5	Banana	340295	
6	Beans	57281	
7	Broccoli	142439	
8	Carrots	136945	
9	Mango	57079	
10	Orange	104438	
11	Grand Total	1029734	
12			

Sort

To get Banana at the top of the list, sort the pivot table.

1. Click any cell inside the Sum of Amount column.
2. Right click and click on Sort, Sort Largest to Smallest.



Result.

	A	B	C
1	Country	(All)	
3	Row Labels	Sum of Amount	
4	Banana	340295	
5	Apple	191257	
6	Broccoli	142439	
7	Carrots	136945	
8	Orange	104438	
9	Beans	57281	
10	Mango	57079	
11	Grand Total	1029734	
12			

Filter

Because we added the Country field to the Filters area, we can filter this pivot table by Country. For example, which products do we export the most to France?

1. Click the filter drop-down and select France.

Result. Apples are our main export product to France.

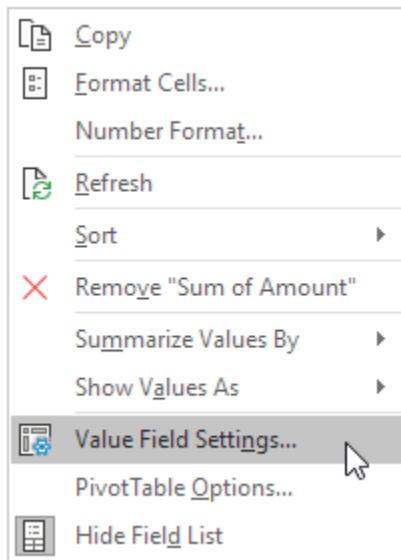
	A	B	C
1	Country	France	▼
2			
3	Row Labels	Sum of Amount	
4	Apple	80193	
5	Banana	36094	
6	Carrots	9104	
7	Mango	7388	
8	Broccoli	5341	
9	Orange	2256	
10	Beans	680	
11	Grand Total	141056	
12			

Note: you can use the standard filter (triangle next to Row Labels) to only show the amounts of specific products.

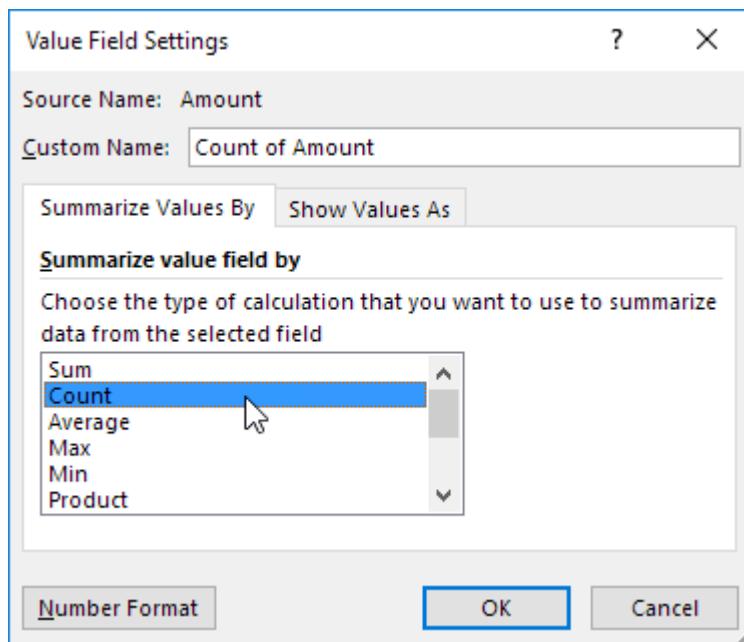
Change Summary Calculation

By default, Excel summarizes your data by either summing or counting the items. To change the type of calculation that you want to use, execute the following steps.

1. Click any cell inside the Sum of Amount column.
2. Right click and click on Value Field Settings.



3. Choose the type of calculation you want to use. For example, click Count.



4. Click OK.

Result. 16 out of the 28 orders to France were 'Apple' orders.

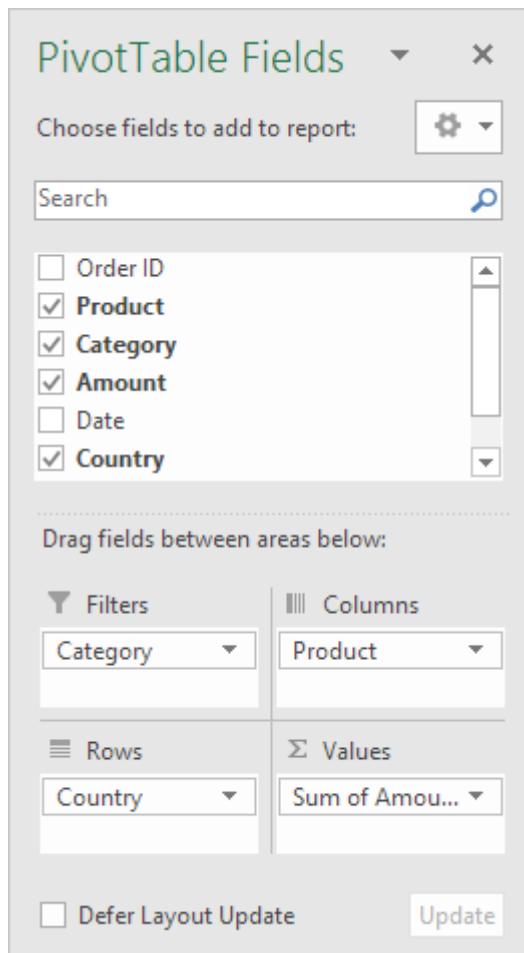
	A	B	C
1	Country	France	▼
2			
3	Row Labels	Count of Amount	
4	Apple	16	
5	Banana	7	
6	Carrots	1	
7	Mango	1	
8	Orange	1	
9	Beans	1	
10	Broccoli	1	
11	Grand Total	28	
12			

Two-dimensional Pivot Table

If you drag a field to the Rows area and Columns area, you can create a two-dimensional pivot table.

First, [insert a pivot table](#). Next, to get the total amount exported to each country, of each product, drag the following fields to the different areas.

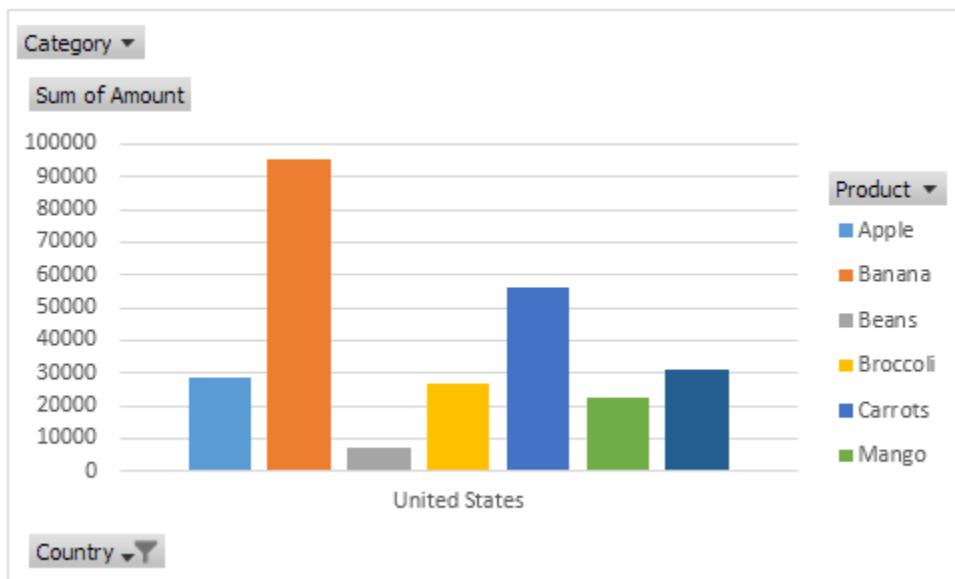
1. Country field to the Rows area.
2. Product field to the Columns area.
3. Amount field to the Values area.
4. Category field to the Filters area.



Below you can find the two-dimensional pivot table.

	A	B	C	D	E	F	G	H	I	J
1	Category	(All)								
2										
3	Sum of Amount	Column								
4	Row Labels	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total	
5	Australia	20634	52721	14433	17953	8106	9186	8680	131713	
6	Canada	24867	33775		12407		3767	19929	94745	
7	France	80193	36094	680	5341	9104	7388	2256	141056	
8	Germany	9082	39686	29905	37197	21636	8775	8887	155168	
9	New Zealand	10332	40050		4390			12010	66782	
10	United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137	
11	United States	28615	95061	7163	26715	56284	22363	30932	267133	
12	Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734	
13										

To easily compare these numbers, create a pivot chart and apply a filter. Maybe this is one step too far for at this stage, but it shows one of the many other powerful pivot table features Excel has to offer.



Experiment No: 4

Aim:

Data Analysis Process: Conditional Formatting, What-If Analysis, Data Tables, Charts & Graphs.

Procedure:**What is What-if Analysis?**

What-if analysis is a procedure in excel in which we work in **tabular form data**. In the What-if analysis **variety of values** have been in the cell of the excel sheet to see the result in different ways by not creating different sheets. There are three tools of what-if analysis.

Tools of what-if analysis

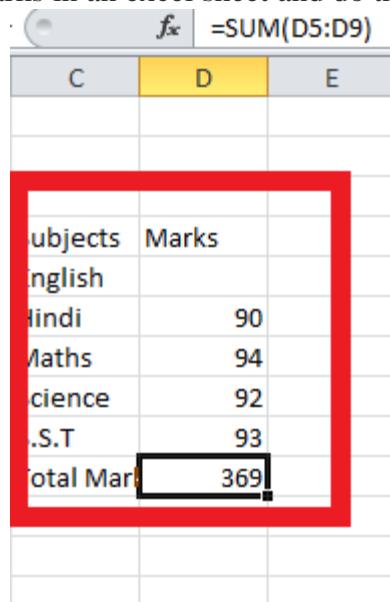
There are three tools in what-if analysis:

1. Goal seek
2. Scenario manager
3. Data Table

Goal seek

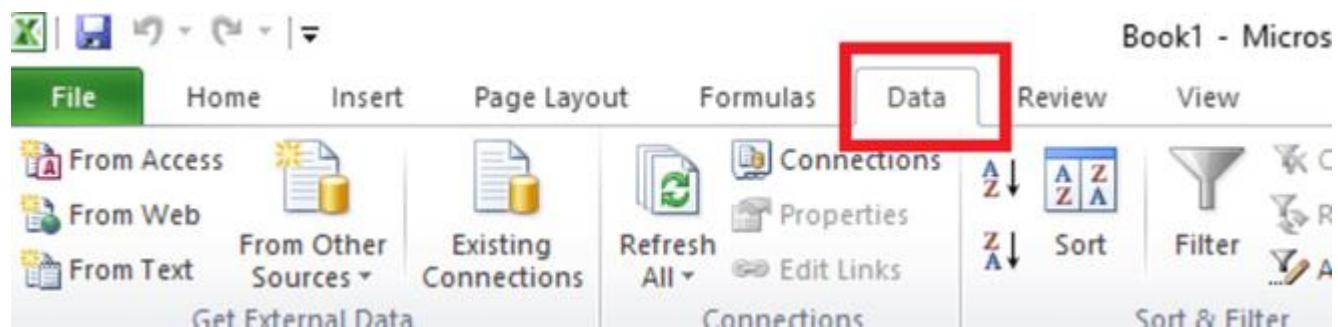
In goal seek we already know our output value we have to find the correct input value. For example, if a **student** wants to know his **English marks** and he knows all the rest of the marks and total marks in all subjects.

Step 1: Write all subjects and their marks in an excel sheet and do the **sum** by applying the formula sum.

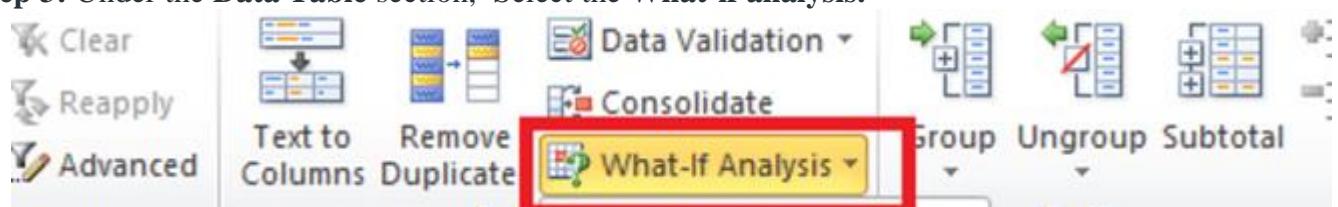


Subjects	Marks
English	
Hindi	90
Maths	94
Science	92
P.S.T	93
Total Marks	369

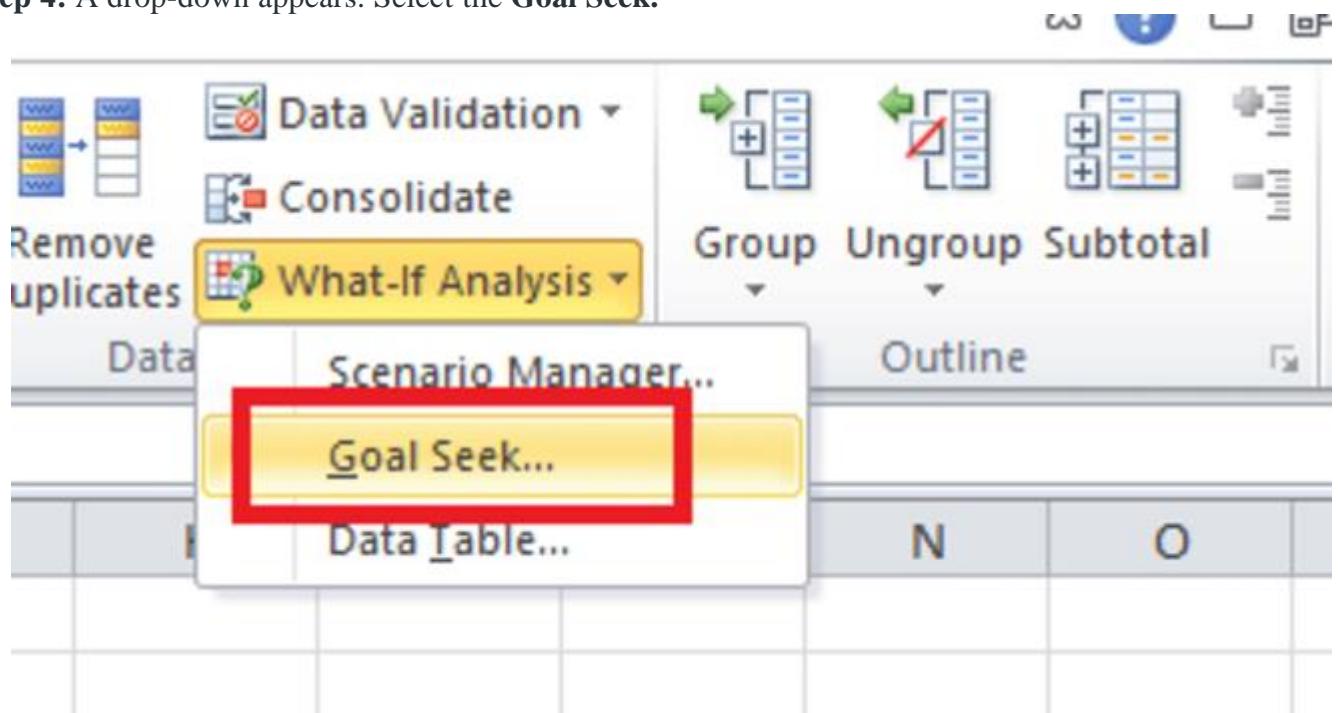
Step 2: Go into the **data** tab of the **Toolbar**.



Step 3: Under the **Data Table** section, Select the **What-if analysis**.



Step 4: A drop-down appears. Select the **Goal Seek**.



Step 5: The dialogue box appears in the first column write the name of the cell in which you apply the formula sum. Type **D10** in Set cell.

Subjects	Marks
English	
Hindi	90
Maths	94
Science	92
S.S.T	93
Total Marks	369

Goal Seek

Set cell:

To value:

By changing cell:

OK Cancel

Step 6: In the second column write the value of the target. The target value for this example is **440**.

Subjects	Marks
English	
Hindi	90
Maths	94
Science	92
S.S.T	93
Total Marks	369

Goal Seek

Set cell: D10

To value: 440

By changing cell: \$D\$5

OK Cancel

Step 7: In the third column write the name of the cell in which you want to get marks in English. Provide absolute cell reference, i.e. \$D\$5.

Subjects	Marks
English	
Hindi	90
Maths	94
Science	92
S.S.T	93
Total Marks	369

Goal Seek

Set cell: D10

To value: 440

By changing cell: \$D\$5

OK Cancel

Step 8: Click **ok** and see the result. The estimated marks for **English** are **71**.

Subjects	Marks
English	71
Hindi	90
Maths	94
Science	92
S.S.T	93
Total Marks	440

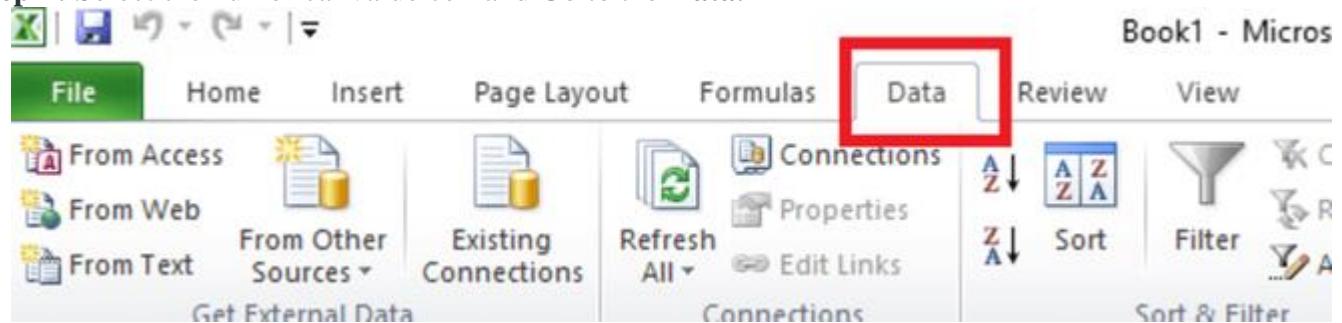
Scenario Manager

In **scenario manager**, we create different **scenarios** by proving different input values for the same **variable** than by comparing scenarios to choose the correct result. For Example, To check the **cost of revenue** for **three different months**.

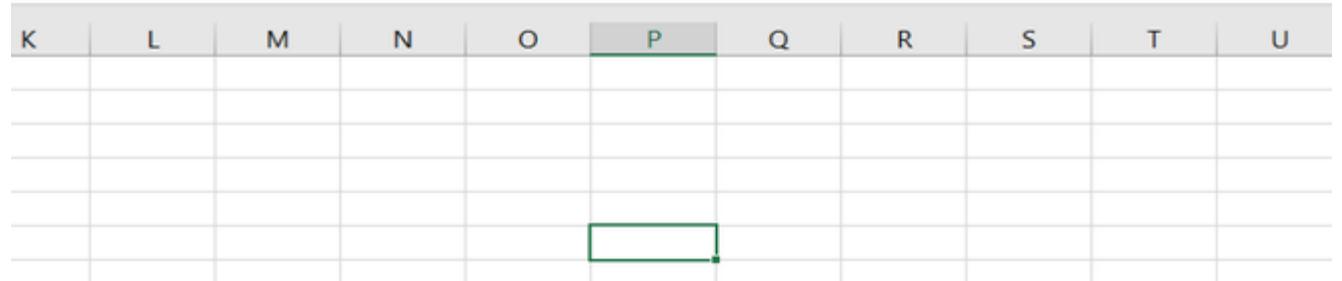
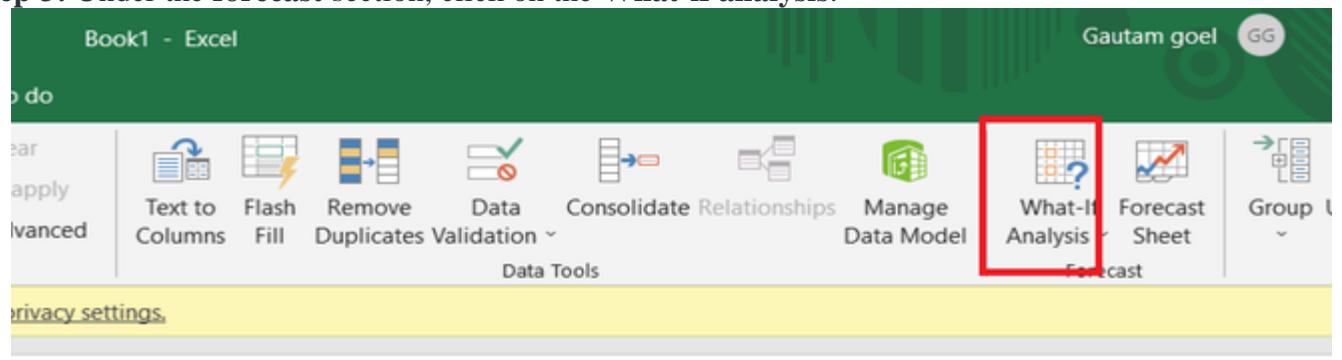
Step 1: Given a data set, for **Revenue Cost of Jan**, with **Expenses** and **Cost** as its columns.

Revenue Cost of Jan	
Expenses	Cost
Raw material	1000
Making	200
Packaging	150
Transportation	120
Other	100
Total	1570

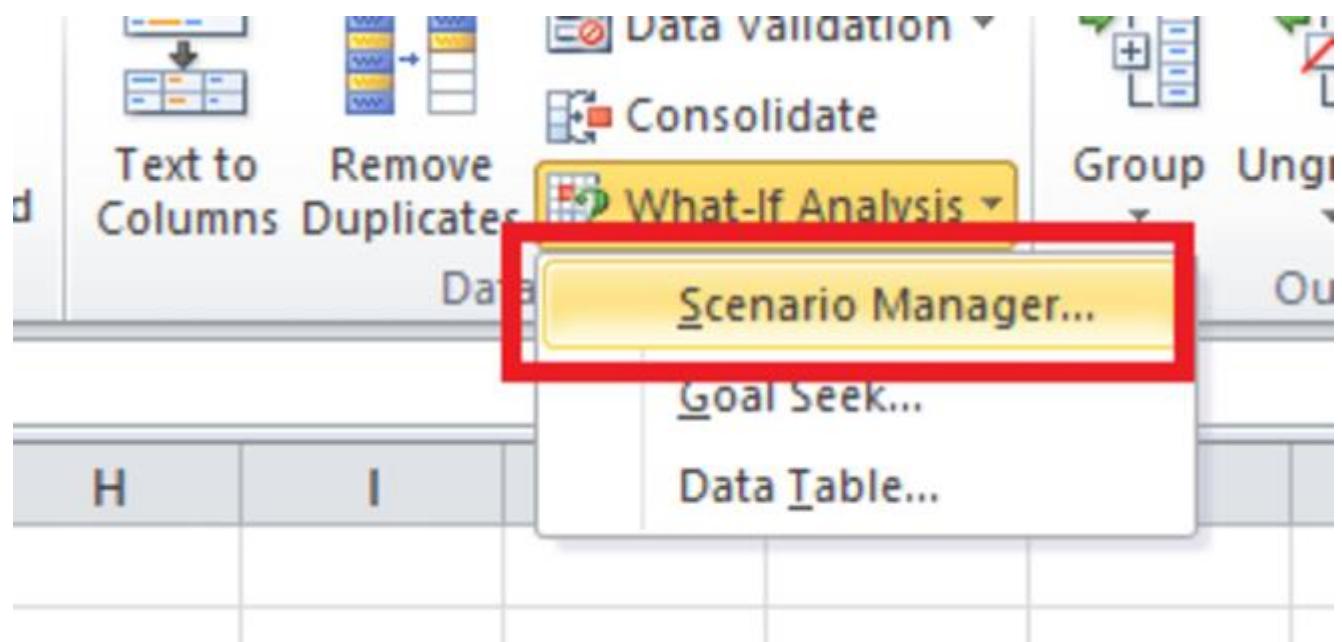
Step 2: Select the numerical value cell and Go to the **Data**.



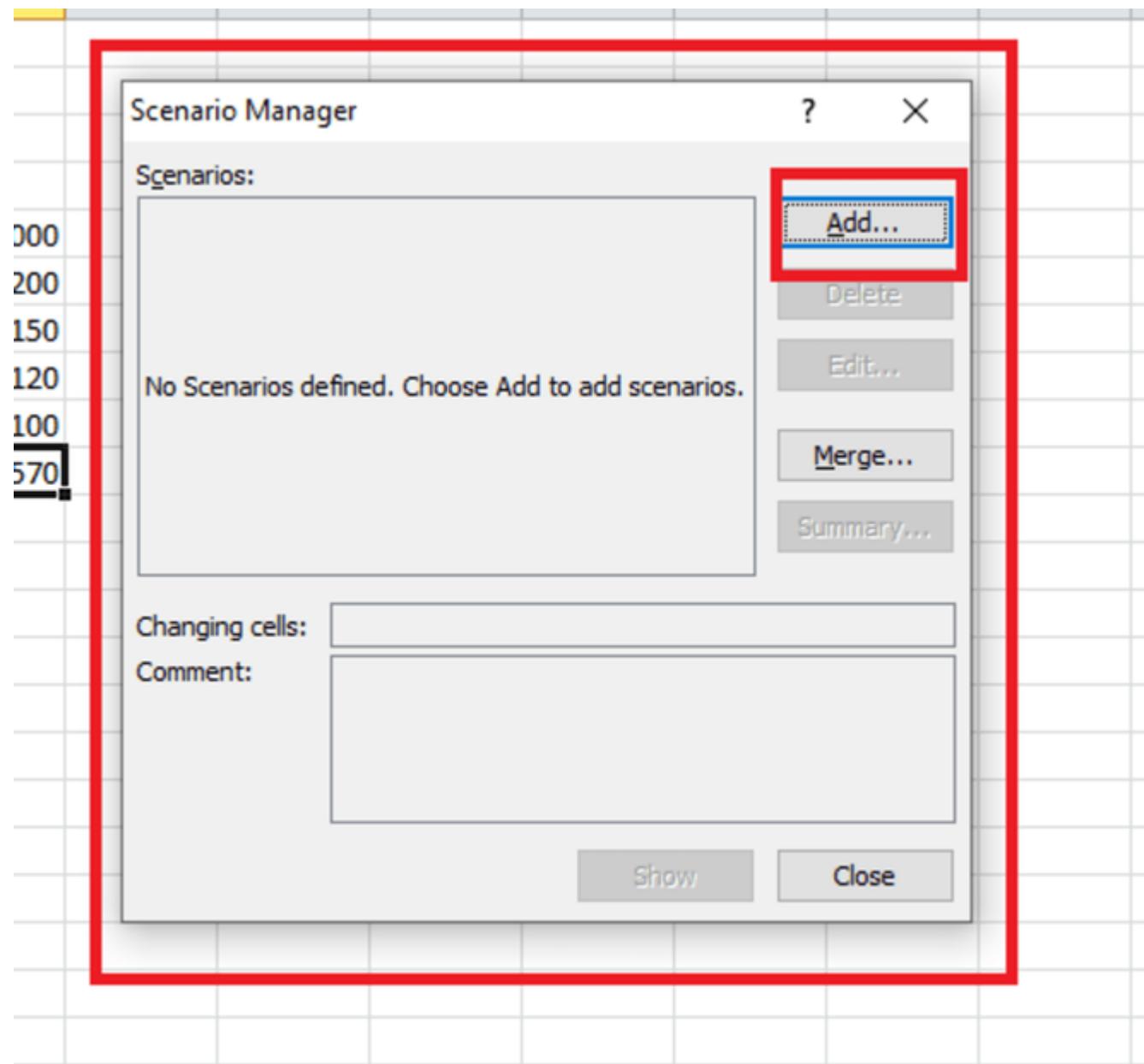
Step 3: Under the **forecast** section, click on the **What-if analysis**.



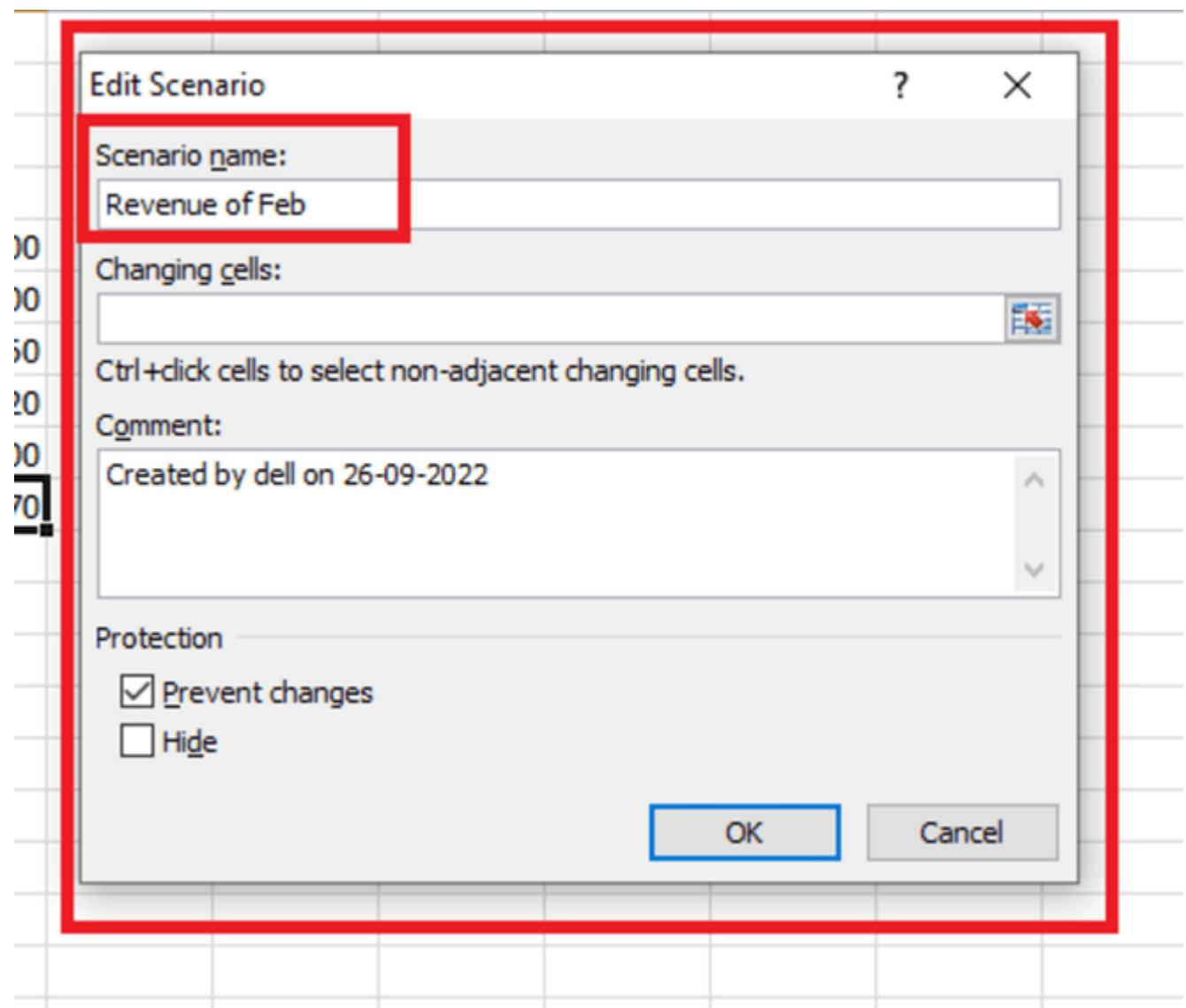
Step 4: A drop-down appears. Select the **Scenario manager**.



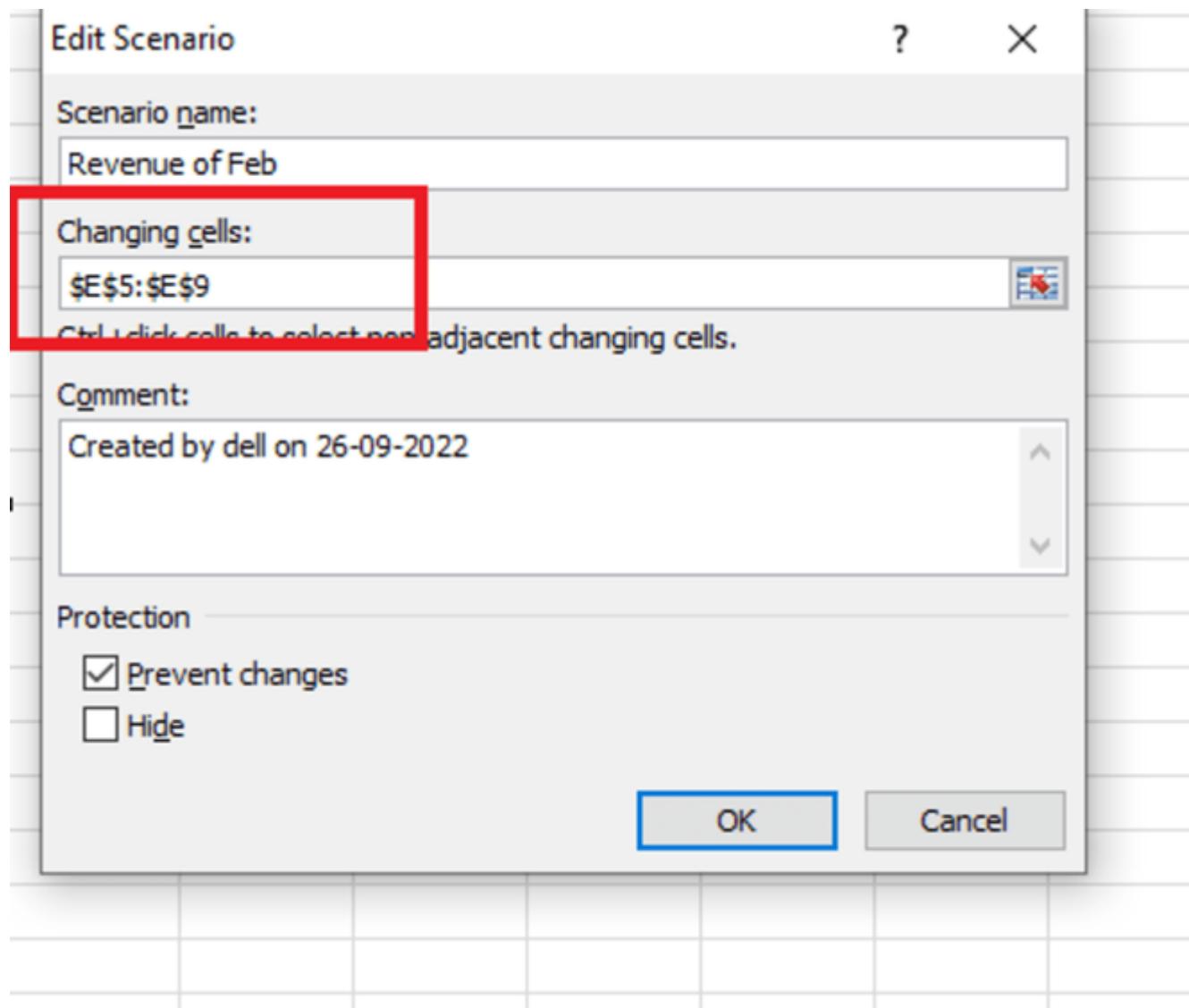
Step 5: A dialog box appears in the dialog box select **add option**.



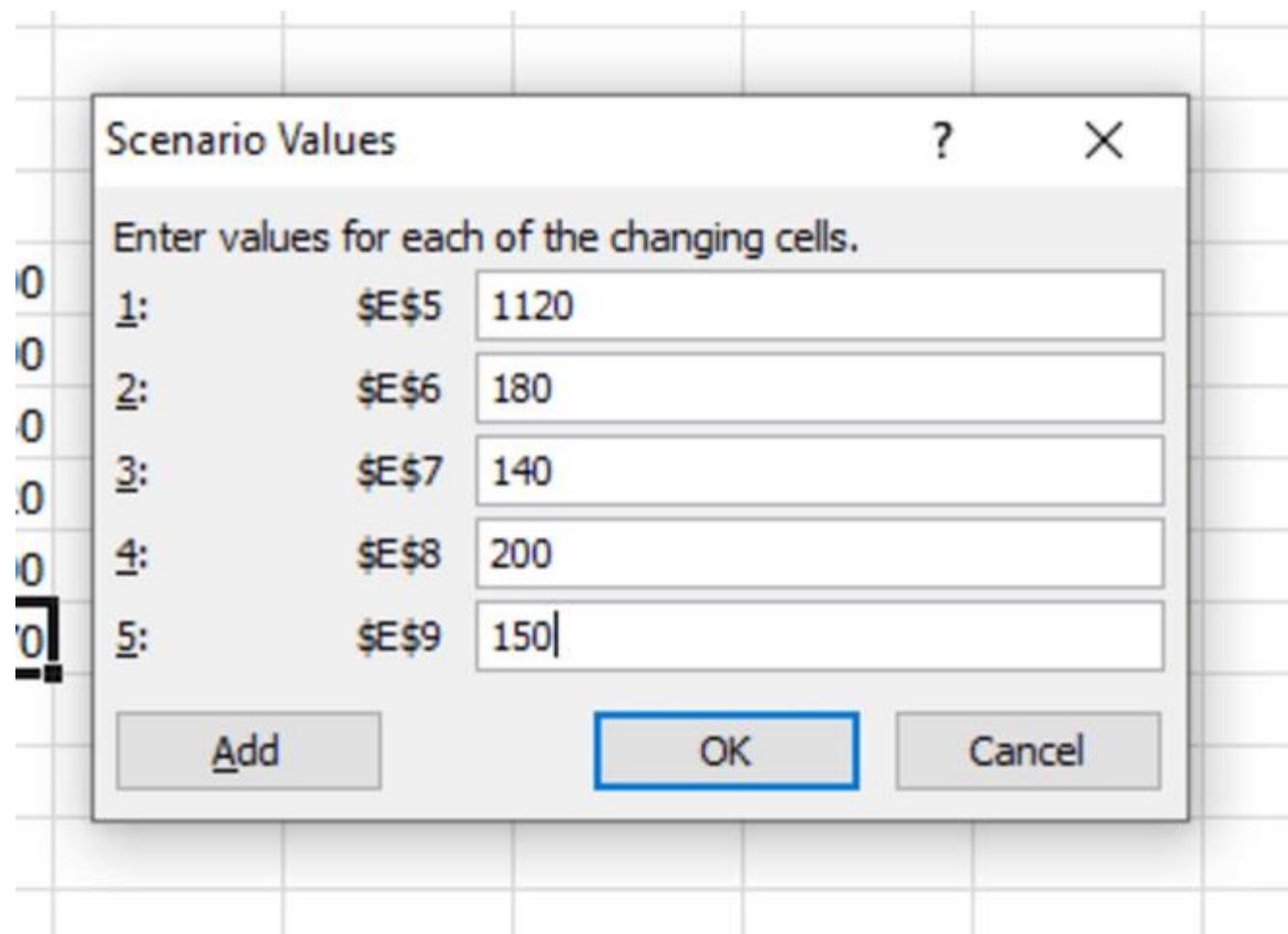
Step 6: A new dialog appears to write the name of the **new scenario** in the first column. Under **Scenario name**, write “**Revenue of Feb**”.



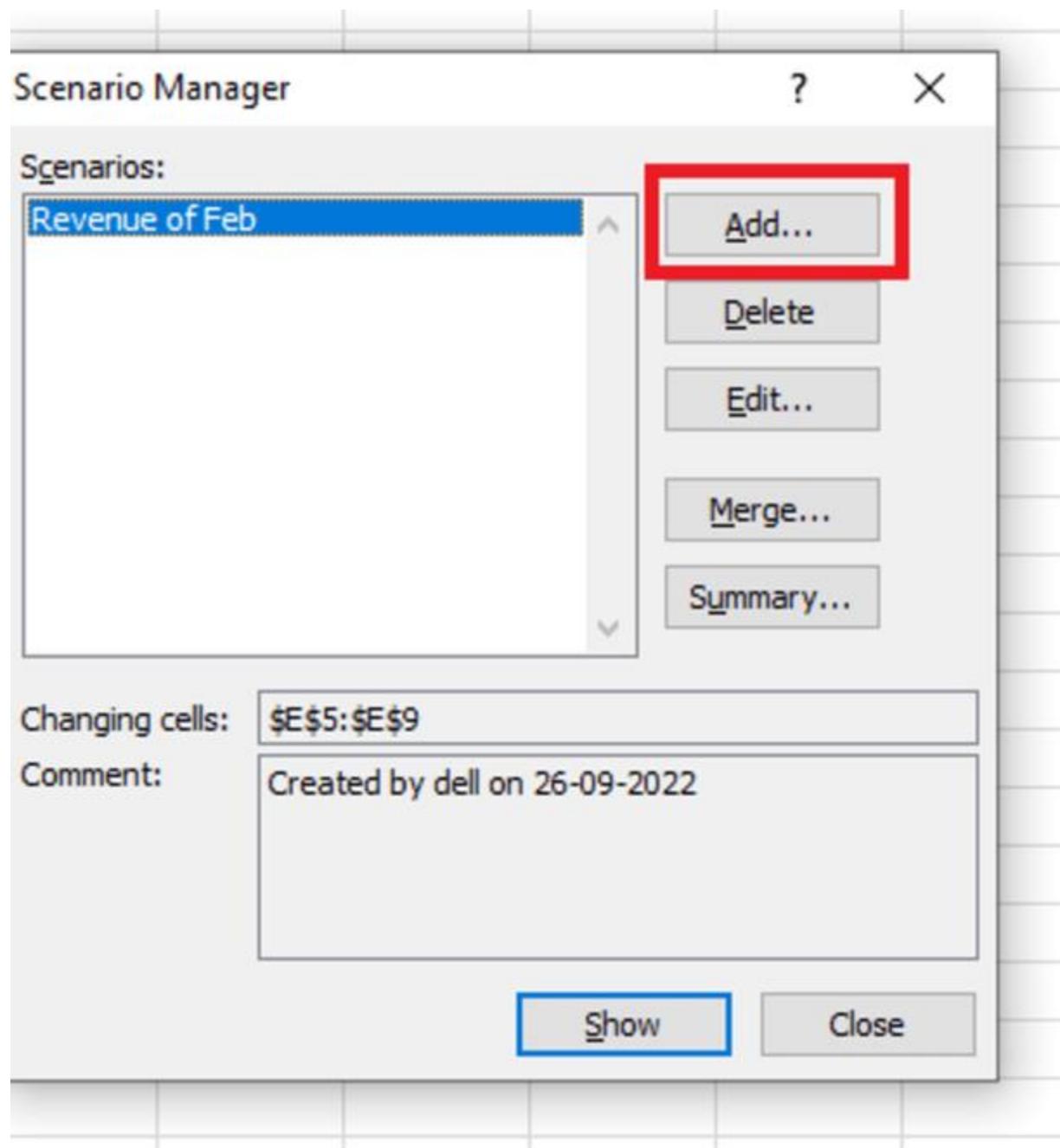
Step 7: In the second column select the changing cell. The changing cells for this example, are \$E\$5:\$E\$9.

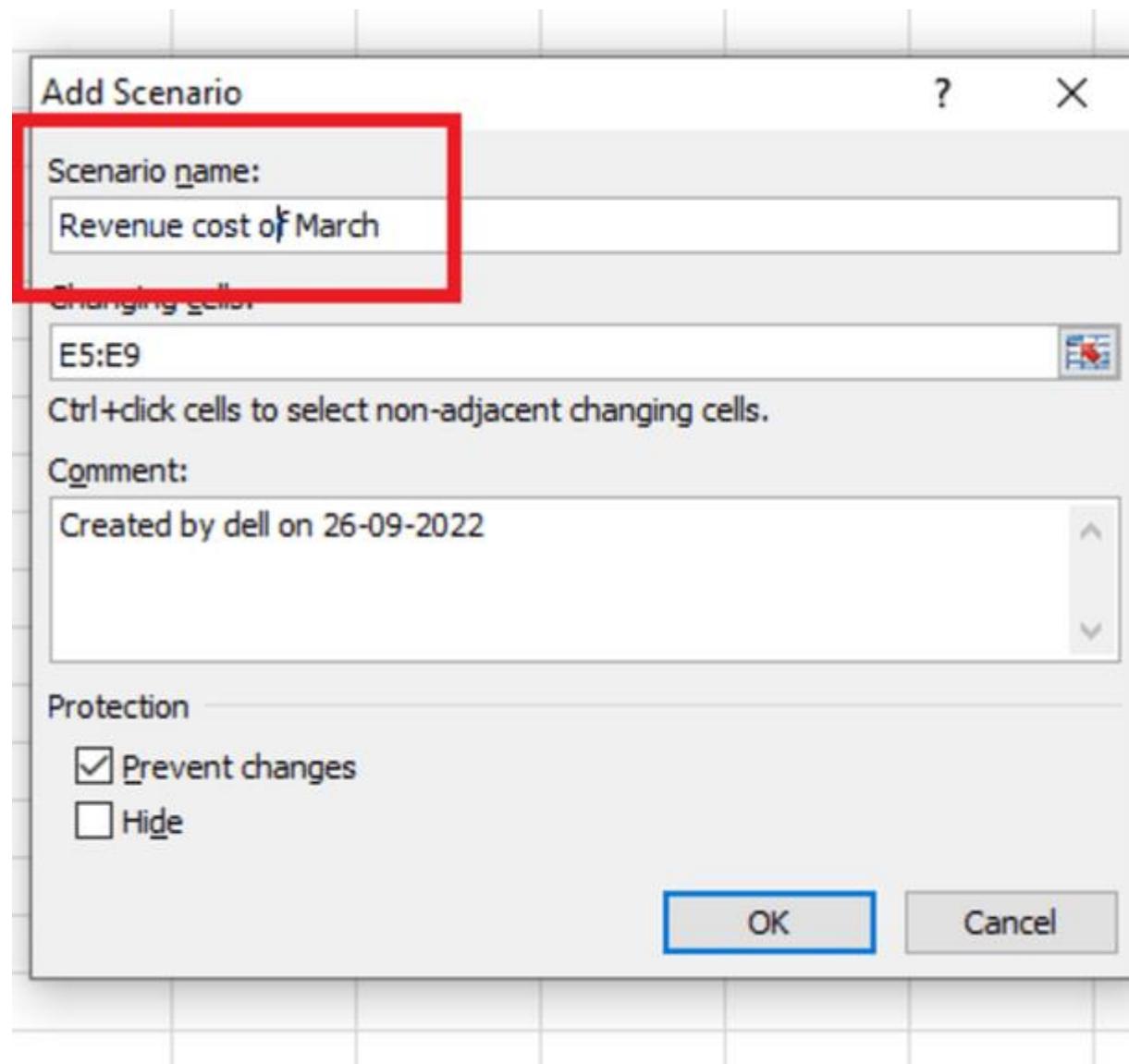


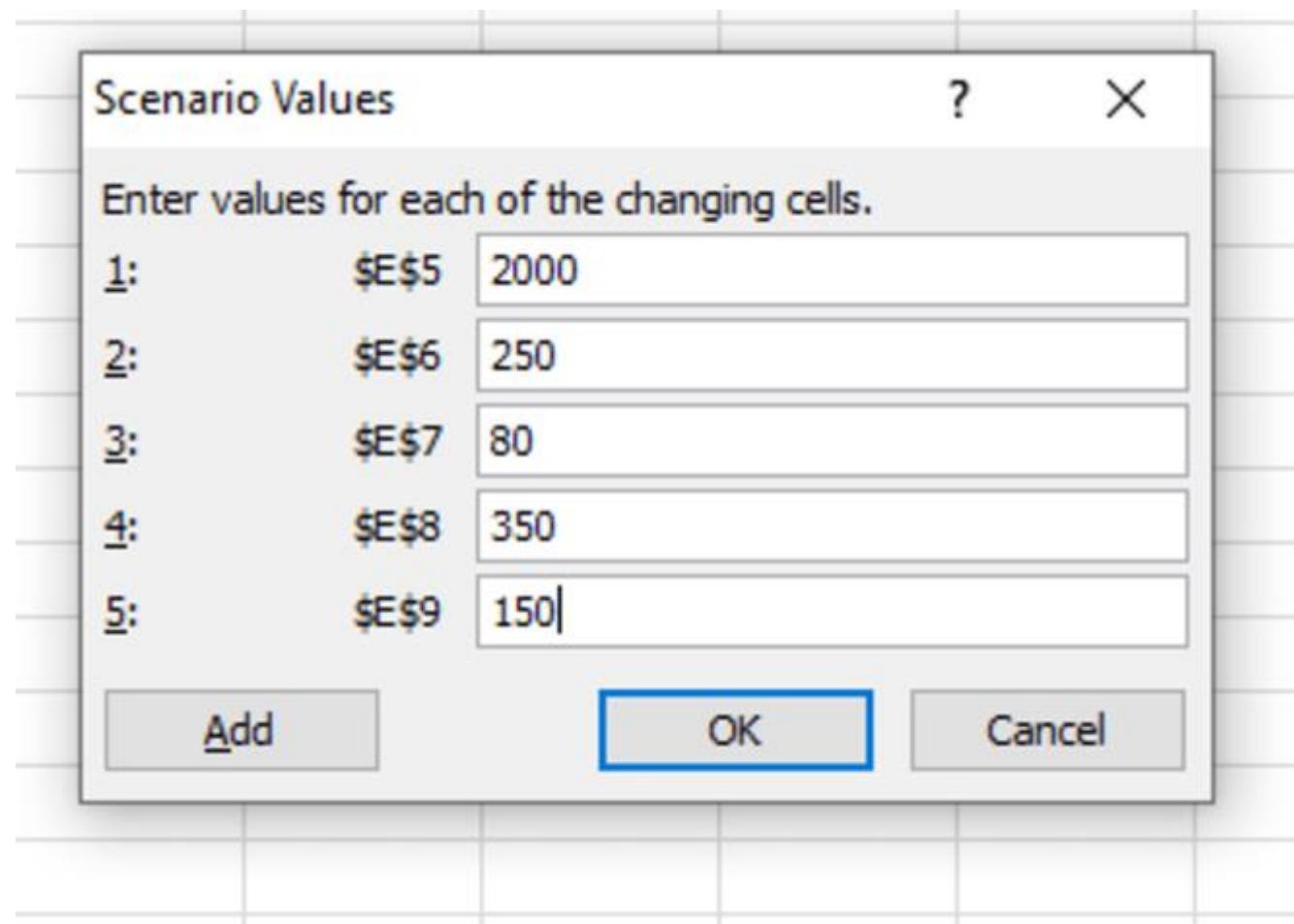
Step 8: A new dialogue box name **Scenario Values** appears to write the changed value in the box. Enter the values as per shown in the image. Click **Ok**.



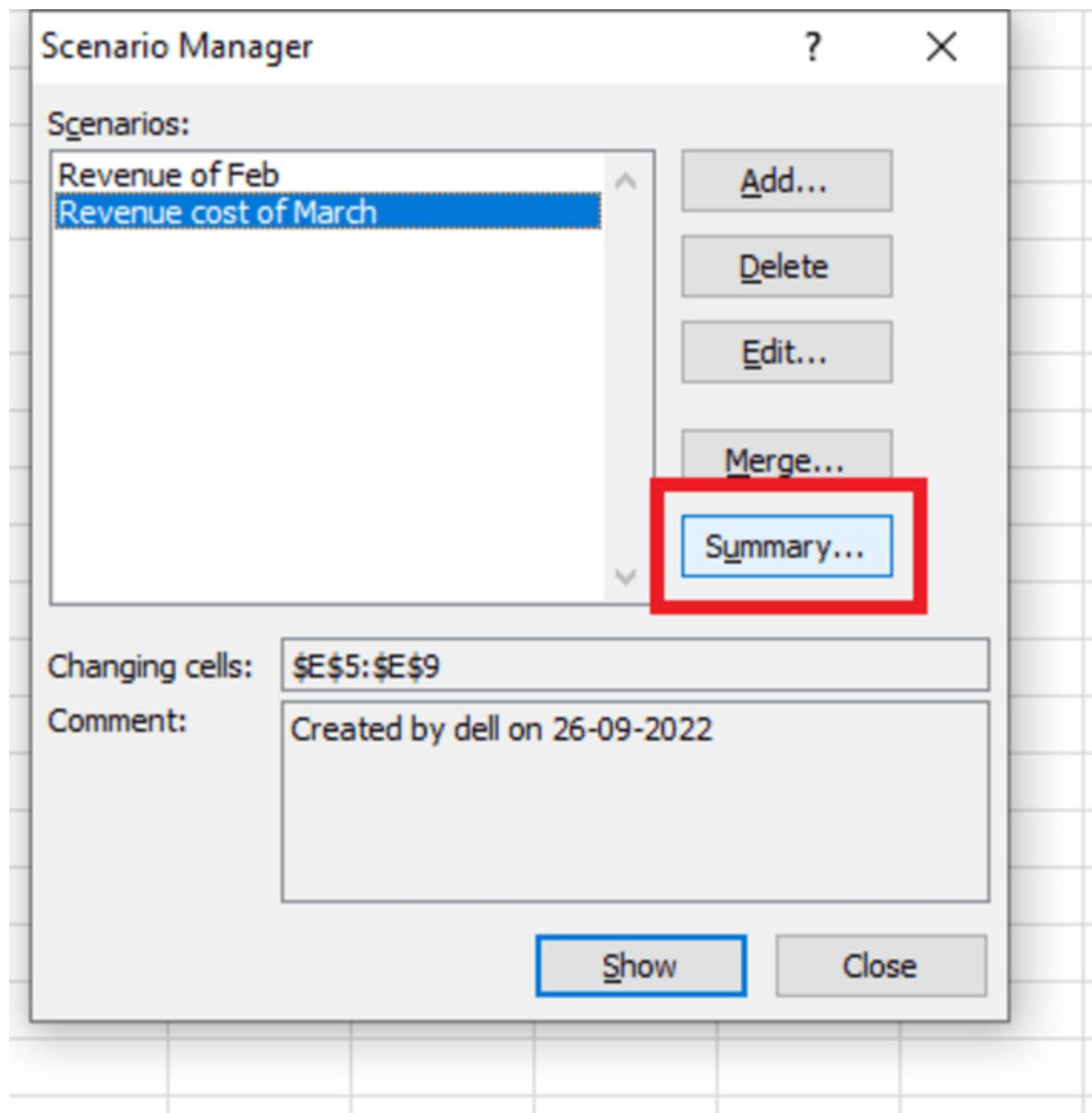
Step 9: Repeat step5, step6, and step8.







Step 10: Click **Ok** then select **summary**.



Step 11: A new Dialog box name **Scenario Summary** appears. Select **Result cells: \$E\$10**.

Revenue Cost of Jan	
Expenses	Cost
Raw material	1120
Making	180
Packaging	140
Transportation	200
Other	150
Total	1790

Scenario Summary ? X

Report type

Scenario summary

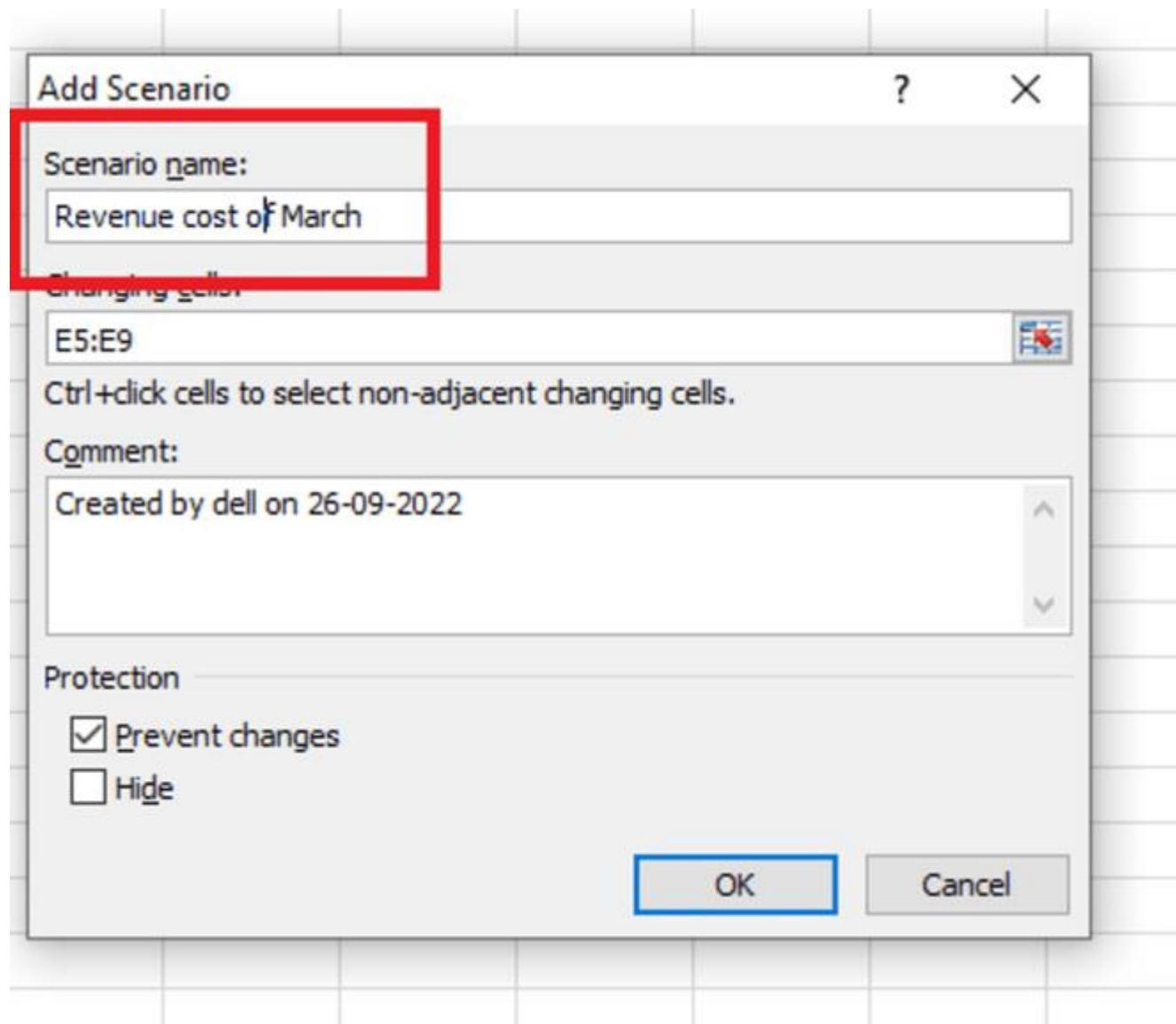
Scenario PivotTable report

Result cells:

=E\$10

OK Cancel

Step 12: See the result.



Data Table

In data, we create a table with different input values for the same variables. It is one of the most helpful features in what-if analysis. One can change different values in x and can achieve different outputs accordingly for research as well as business-driven purposes.

A data table is of two types:

Data table in one Variable

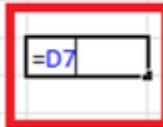
In the data table in one variable, we can change only **one input value either in a row or in a column**. It includes only one input cell. For example, a company wants to know about its revenue by changing the cost of raw materials by using a data table. Given a data set, with **material** and their **cost**.

Step 1: Create a **table** of revenue cost.

Data table in one variable	
	(per qty)
Raw material	1000
making cost	25
packaging cost	20
Transportation cost	40
Total revenue cost	1085

Step 2: Copy the last cell in which you get output in another cell. **D7** for this example.

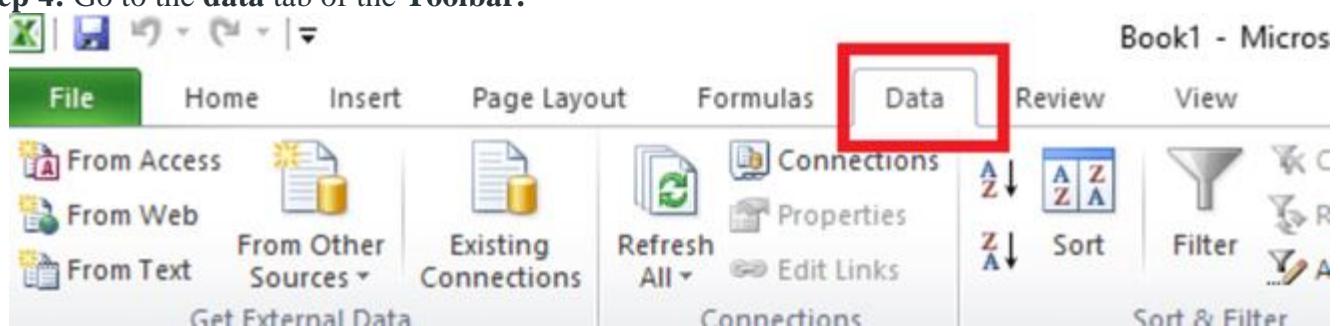
Data table in one variable	
	(per qty)
Raw material	1000
making cost	25
packaging cost	20
Transportation cost	40
Total revenue cost	1085



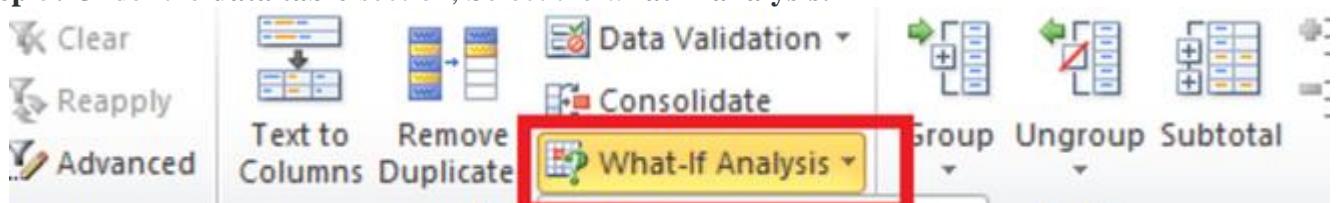
Step 3: Write the values in the cell for which you want to make a change in a column or in rows.

Raw mat	1085
	1110
	1120
	1130
	900
	800

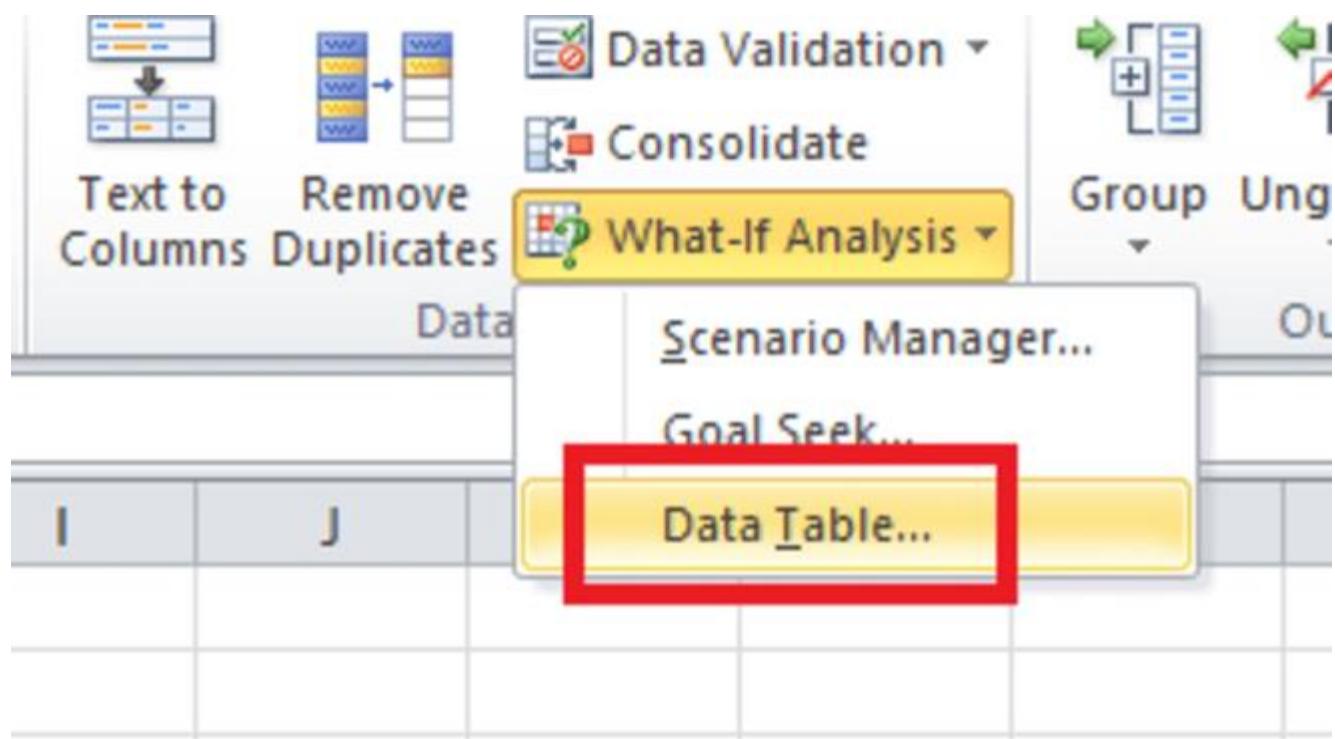
Step 4: Go to the **data** tab of the Toolbar.



Step 5: Under the **data table** section, Select the **what-if analysis**.



Step 6: A drop-down appears. Select the **Data Table**.



Step 7: A dialogue box name **data table** appears then select the cell in which you want to change the input value in a row or in the column. Input the value of the **Column input cell** to be **\$D\$3**. Click **Ok**. Your data table is ready.

Data table in one variable

	(per qty)
Raw material	1000
making cost	25
packaging cost	20
Transportation cost	40
Total revenue cost	1085

Raw mat	1085
1110	
1120	
1130	
900	
800	

Data Table ? X

Row input cell:

Column input cell:

OK Cancel

Data table in two Variable

In the Data table in two variables, we can change **two input values in both row and column**. It includes two input cells. For example, A person wants to know about **per month installments of loan by the different rates of interest and for the different time periods for the same principal amount.**

Step 1: Create a table to find PMT.

EMI Table

Principle	100000
Time(months)	24
Rate of interest	9%
PMT	(4,568.47)

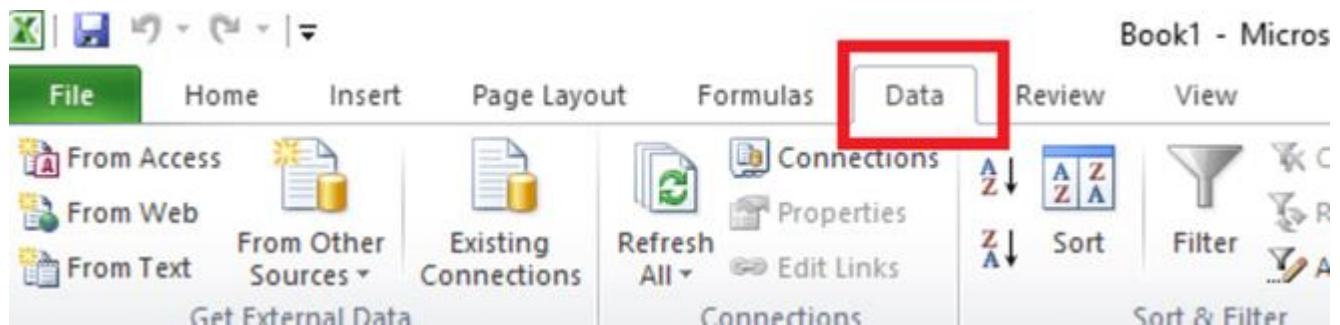
Step 2: Copy the last cell in which you get output in another cell

EMI Table		
Principle	100000	(4,568.47)
Time(months)	24	
Rate of interest	9%	
PMT	(4,568.47)	

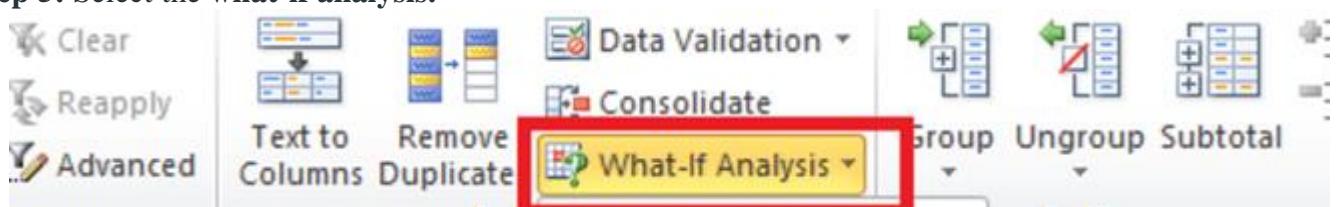
Step 3: Write both values you want to change in both **columns and rows**.

(4,568.47)	25	26	27	30	32
8.50%					
8%					
7.50%					
7%					
6.50%					
6%					

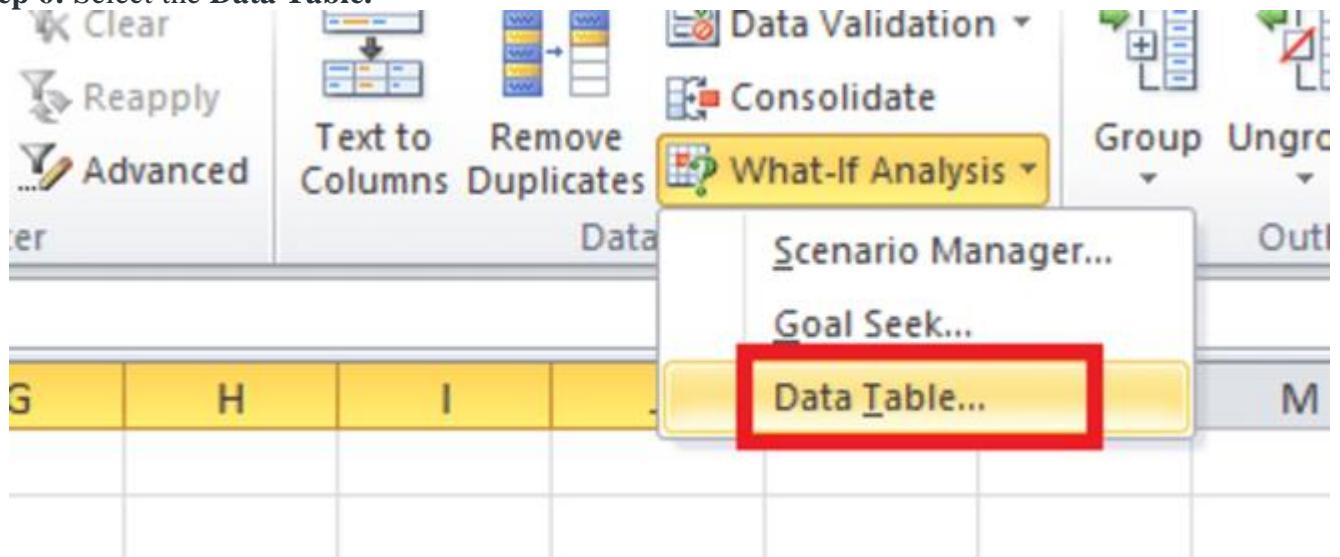
Step 4: Go to the **Data** tab of the **toolbar**.



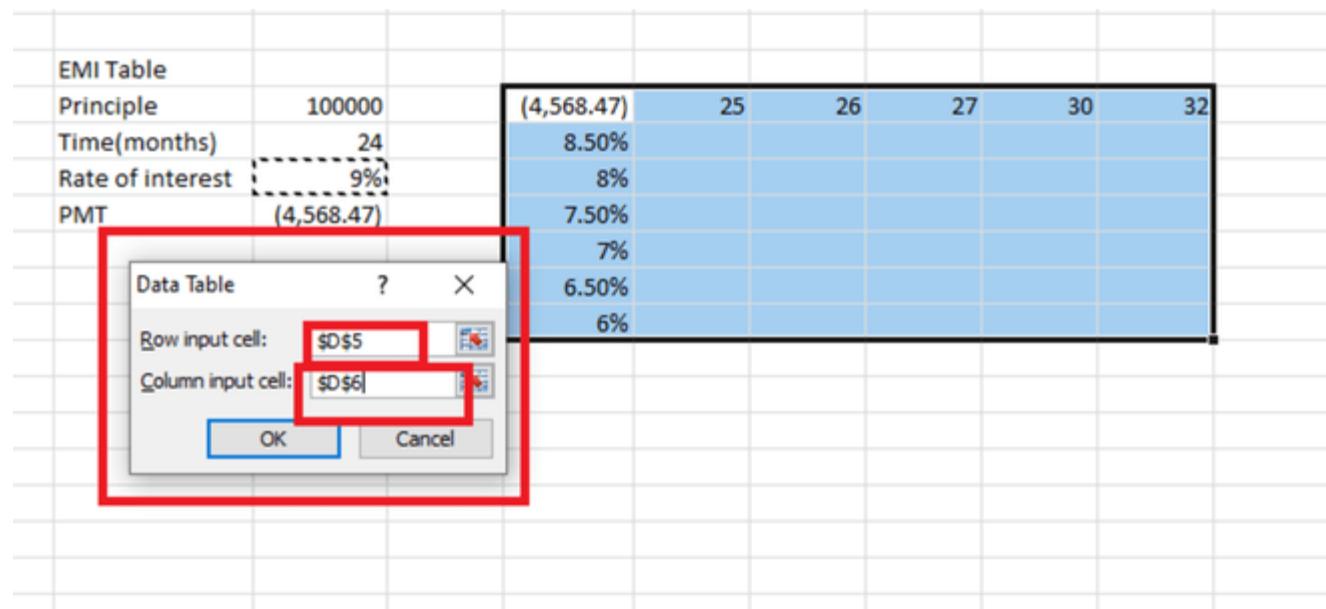
Step 5: Select the what-if analysis.



Step 6: Select the Data Table.



Step 7: A dialogue box appears in which you have to select the cell in which you want to change the value in both row and column. The **Row input cell value** is **\$D\$5** and the **column input cell value** is **\$D\$6**.



Step 8: Click **ok** and see the result.

The screenshot shows the final output table generated by the Data Table function. It consists of 7 columns and 7 rows of data, enclosed in a black border. The columns represent different interest rates: 25.00, 26.00, 27.00, 30.00, and 32.00. The rows represent different time periods: 8.50%, 8%, 7.50%, 7%, 6.50%, and 6%. The first row contains the values (4,568.47), 25.00, 26.00, 27.00, 30.00, and 32.00. Subsequent rows show the corresponding PMT values for each combination of rate and period.

(4,568.47)	25.00	26.00	27.00	30.00	32.00
8.50%	(4,378.73)	(4,224.75)	(4,082.21)	(3,711.78)	(3,503.54)
8%	(4,355.88)	(4,201.89)	(4,059.33)	(3,688.83)	(3,480.54)
7.50%	(4,333.10)	(4,179.09)	(4,036.52)	(3,665.97)	(3,457.63)
7%	(4,310.39)	(4,156.38)	(4,013.79)	(3,643.19)	(3,434.81)
6.50%	(4,287.75)	(4,133.73)	(3,991.14)	(3,620.50)	(3,412.09)
6%	(4,265.19)	(4,111.16)	(3,968.56)	(3,597.89)	(3,389.45)

Experiment No: 5**Aim:**

Cleaning Data with Text Functions: use of UPPER and LOWER, TRIM function, Concatenate.

Procedure:

Data cleaning includes removing unwanted characters from text.

Consider the following

Product Data

54482100AFES | CONTROLLER SERVER 1TB H | 304.00
54482100JCP9 | DESKTOP UNIT | 225.00
54482700BAAS | DESKTOP WINDOWS 8.1 SERVER | 2302.00
54482600BAAS | DESKTOP WINDOWS 8.1 WKST | 355.00
54482100BAAS | DESKTOP WINDOWS 10| 182.00
54482200BAAS | DESKTOP WINDOWS DESKTOP OS | 255.00
54482500BAAS | DESKTOP WINDOWS OS | 354.00
54483000BAAS | MINITOWER NO OS | 1840.00
54483000KEBB | MINI TOWER | 2550.00

This is the raw data that you have obtained on product information containing the Product ID, Product description and the price. The character “|” separates the field in each row.

When you import this data into Excel worksheet, it looks as follows –

A	B
1	
2	Product Data
3	54482100AFES CONTROLLER SERVER 1TB H 304.00
4	54482100JCP9 DESKTOP UNIT 225.00
5	54482700IBAAS DESKTOP WINDOWS 8.1 SERVER 2302.00
6	54482600IBAAS DESKTOP WINDOWS 8.1 WKST 355.00
7	54482100IBAAS DESKTOP WINDOWS 10 182.00
8	54482200IBAAS DESKTOP WINDOWS DESKTOP OS 255.00
9	54482500IBAAS DESKTOP WINDOWS OS 354.00
10	54483000IBAAS MINITOWER NO OS 1840.00
11	54483000KEBB MINI TOWER 2550.00

As you observe, the entire data is in a single column. You need to structure this data to perform data analysis. However, initially you need to clean the data.

You need to remove any nonprintable characters and excess spaces that might be present in the data. You can use the CLEAN function and TRIM function for this purpose.

S.No.	Function & Description
-------	------------------------

1. **CLEAN**
Removes all nonprintable characters from text
2. **TRIM**
Removes spaces from text
 - Select the Cells C3 – C11.
 - Type =TRIM (CLEAN (B3)) and then press CTRL + Enter.

The formula is filled in the cells C3 – C11.

A	B	C
2	Product Data	Data Cleaning
3	54482100AFES CONTROLLER SERVER 1TB H 304.00	=TRIM(CLEAN(B3))
4	54482100JCP9 DESKTOP UNIT 225.00	=TRIM(CLEAN(B4))
5	54482700BAAS DESKTOP WINDOWS 8.1 SERVER 2302.00	=TRIM(CLEAN(B5))
6	54482600BAAS DESKTOP WINDOWS 8.1 WKST 355.00	=TRIM(CLEAN(B6))
7	54482100BAAS DESKTOP WINDOWS 10 182.00	=TRIM(CLEAN(B7))
8	54482200BAAS DESKTOP WINDOWS DESKTOP OS 255.00	=TRIM(CLEAN(B8))
9	54482500BAAS DESKTOP WINDOWS OS 354.00	=TRIM(CLEAN(B9))
10	54483000BAAS MINITOWER NO OS 1840.00	=TRIM(CLEAN(B10))
11	54483000KEBB MINI TOWER 2550.00	=TRIM(CLEAN(B11))

The result will be as shown below –

Raw Data		Nonprintable Characters and Excess Spaces removed	
A	B	C	D
2	Product Data	2	Data Cleaning
3	54482100AFES CONTROLLER SERVER 1TB H 304.00	54482100AFES CONTROLLER SERVER 1TB H 304.00	
4	54482100JCP9 DESKTOP UNIT 225.00	54482100JCP9 DESKTOP UNIT 225.00	
5	54482700BAAS DESKTOP WINDOWS 8.1 SERVER 2302.00	54482700BAAS DESKTOP WINDOWS 8.1 SERVER 2302.00	
6	54482600BAAS DESKTOP WINDOWS 8.1 WKST 355.00	54482600BAAS DESKTOP WINDOWS 8.1 WKST 355.00	
7	54482100BAAS DESKTOP WINDOWS 10 182.00	54482100BAAS DESKTOP WINDOWS 10 182.00	
8	54482200BAAS DESKTOP WINDOWS DESKTOP OS 255.00	54482200BAAS DESKTOP WINDOWS DESKTOP OS 255.00	
9	54482500BAAS DESKTOP WINDOWS OS 354.00	54482500BAAS DESKTOP WINDOWS OS 354.00	
10	54483000BAAS MINITOWER NO OS 1840.00	54483000BAAS MINITOWER NO OS 1840.00	
11	54483000KEBB MINI TOWER 2550.00	54483000KEBB MINI TOWER 2550.00	

Formatting Data with Text Functions

Excel has several built-in text functions that you can use for formatting data containing text. These include –

Functions that format the Text as per your need –

S.No.	Function & Description
-------	------------------------

1. **LOWER**

Converts text to lowercase

S.No.	Function & Description
1.	UPPER Converts text to uppercase
2.	PROPER Capitalizes the first letter in each word of a text value

Functions that convert and/or format the Numbers as Text –

S.No.	Function & Description
1.	DOLLAR Converts a number to text, using the \$ (dollar) currency format
2.	FIXED Formats a number as text with a fixed number of decimals
3.	TEXT Formats a number and converts it to text

Functions that convert the Text to Numbers –

Sl. No.	Function & Description
1.	VALUE Converts a text argument to a number

Executing Data Operations with the Text Functions

You might have to perform certain Text Operations on your Data. For example, if Login-IDs for the Employees are changed to a New Format in an Organization, based on the Format Change, Text Replacements might have to be done.

Following Text Functions help you in performing Text Operations on your data containing Text –

S.No.	Function & Description
1.	REPLACE Replaces characters within text

2. SUBSTITUTE

Substitutes new text for old text in a text string

3. CONCATENATE

Joins several text items into one text item

4. CONCAT

Combines the text from multiple ranges and/or strings, but it does not provide the delimiter or Ignore Empty arguments.

TEXTJOIN

Combines the text from multiple ranges and/or strings, and includes a delimiter you specify between each text value that will be combined. If the delimiter is an empty text string, this function will effectively concatenate the ranges.

6. REPT

Repeats text a given number of times

Experiment No: 6

Aim:

Cleaning Data Containing Date and Time Values: use of DATE VALUE function, DATE ADD and DATED IF, TIMEVALUE functions.

Procedure:

We can convert –

- A **Date** in Serial Format to a **Date** in Year-Month-Day Format
- A **Date** in Year-Month-Day Format to a **Date** in Serial Format

Date in Serial Format

A **Date** in serial format is a positive integer that represents the number of days between the given date and January 1, 1900. Both the current **Date** and January 1, 1900 are included in the count. For example, 42354 is a **Date** that represents 12/16/2015.

Date in Month-Day-Year Formats

Excel supports different **Date** Formats based on the **Locale** (Location) you choose. Hence, you need to first determine the compatibility of your **Date** formats and the Data Analysis at hand. Note that certain **Date** formats are prefixed with *(asterisk) –

- **Date** formats that begin with *(asterisk) respond to changes in regional date and time settings that are specified for the operating system
- **Date** formats without an *(asterisk) are not affected by operating system settings

For understanding purpose, you can assume United States as the Locale. You find the following **Date** formats to choose for the **Date** - 8th June, 2016 –

- *6/8/2016 (affected by operating system settings)
- *Wednesday, June 8, 2016 (affected by operating system settings)
- 6/8
- 6/8/16
- 06/08/16
- 8-Jun
- 8-Jun-16
- 08-Jun-16
- Jun-16
- June-16
- J
- J-16
- 6/8/2016
- 8-Jun-2016

If you enter only two digits to represent a year and if –

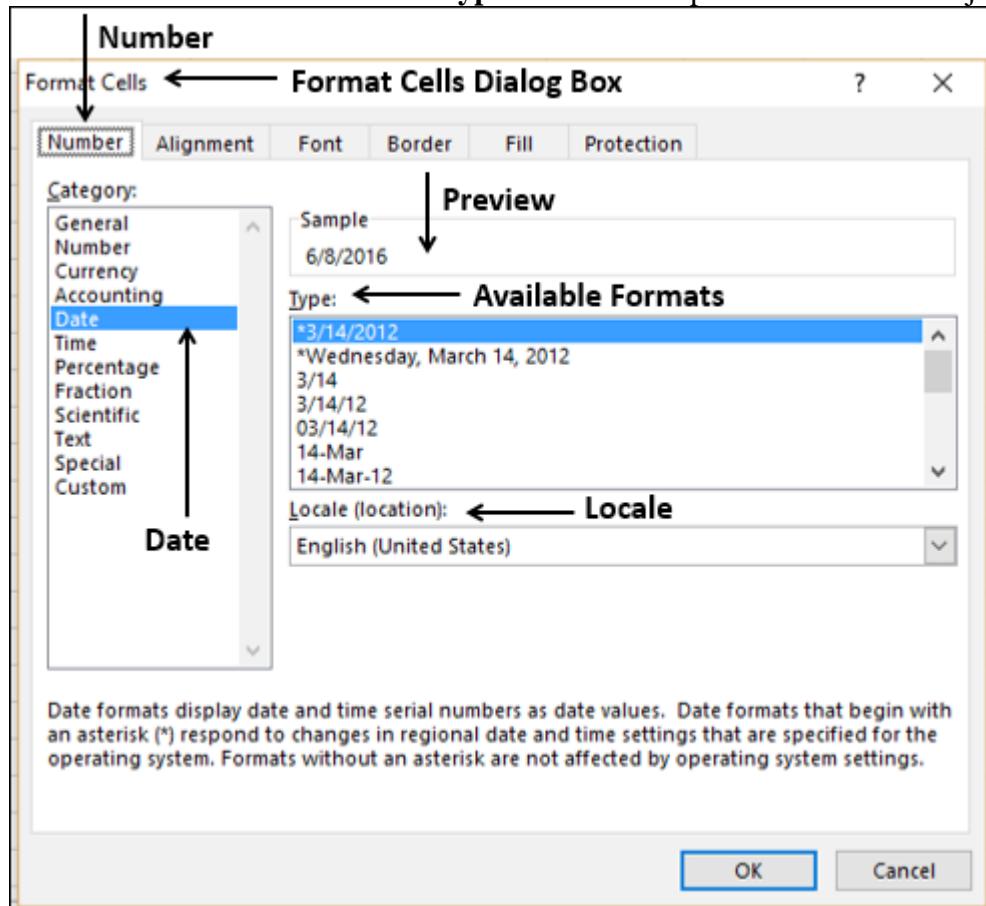
- The digits are 30 or higher, Excel assumes the digits represent years in the twentieth century.
- The digits are lower than 30, Excel assumes the digits represent years in the twenty-first century.

For example, 1/1/29 is treated as January 1, 2029 and 1/1/30 is treated as January 1, 1930.

Converting Dates in Serial Format to Month-Day-Year Format

To convert dates from serial format to Month-Day-Year format, follow the steps given below –

- Click the **Number** tab in the **Format Cells** dialog box.
- Click **Date** under **Category**.
- Select **Locale**. The available **Date** formats will be displayed as a list under **Type**.
- Click on a **Format** under **Type** to look at the preview in the box adjacent to **Sample**.



After choosing the Format, click **OK**.

Converting Dates in Month-Day-Year Format to Serial Format

You can convert dates in Month-Day-Year format to Serial format in two ways –

- Using **Format Cells** dialog box
- Using Excel **DATEVALUE** function

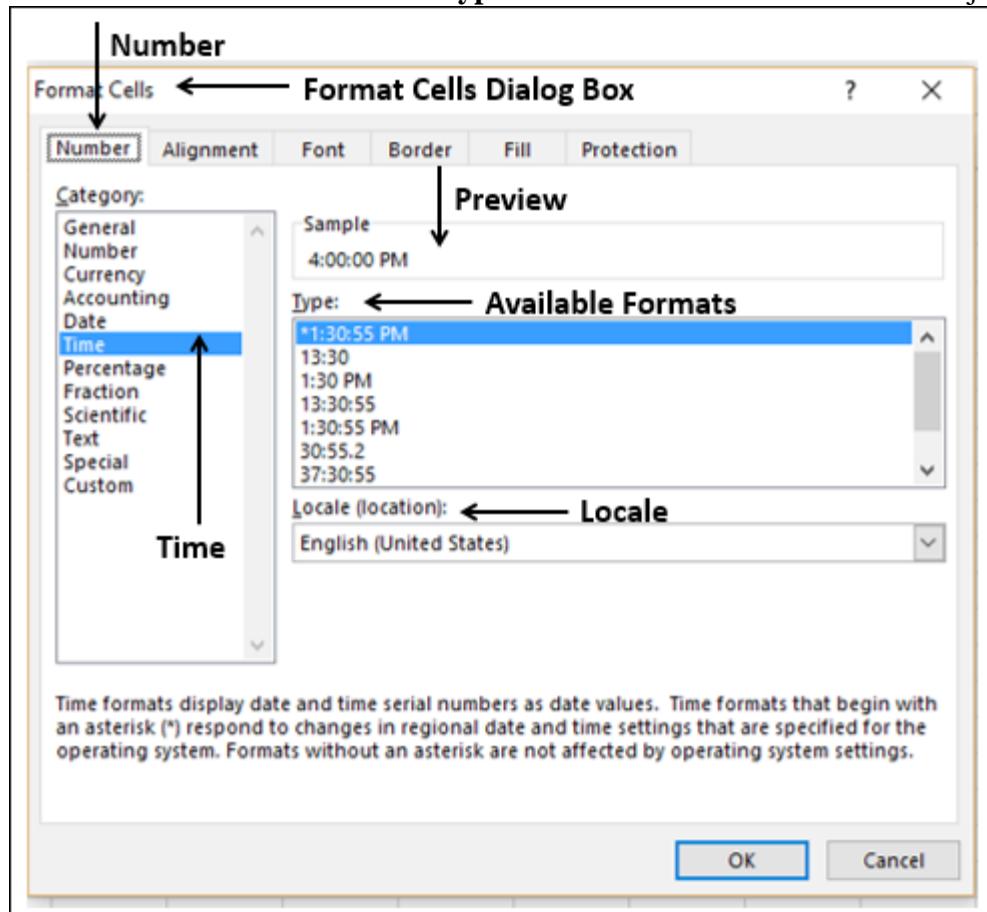
Using Format Cells dialog box

- Click the **Number** tab in the **Format Cells** dialog box.
- Click **General** under **Category**.

Converting Times in Serial Format to Hour-Minute-Second Format

To convert serial time format to hour-min-sec format follow the steps given below –

- Click the **Number** tab in the **Format Cells** dialog box
- Click **Time** under **Category**.
- Select the **Locale**. Available **Time** formats will be displayed as a list under **Type**.
- Click on a **Format** under **Type** to look at the Preview in the box adjacent to **Sample**.



After choosing the Format, click **OK**

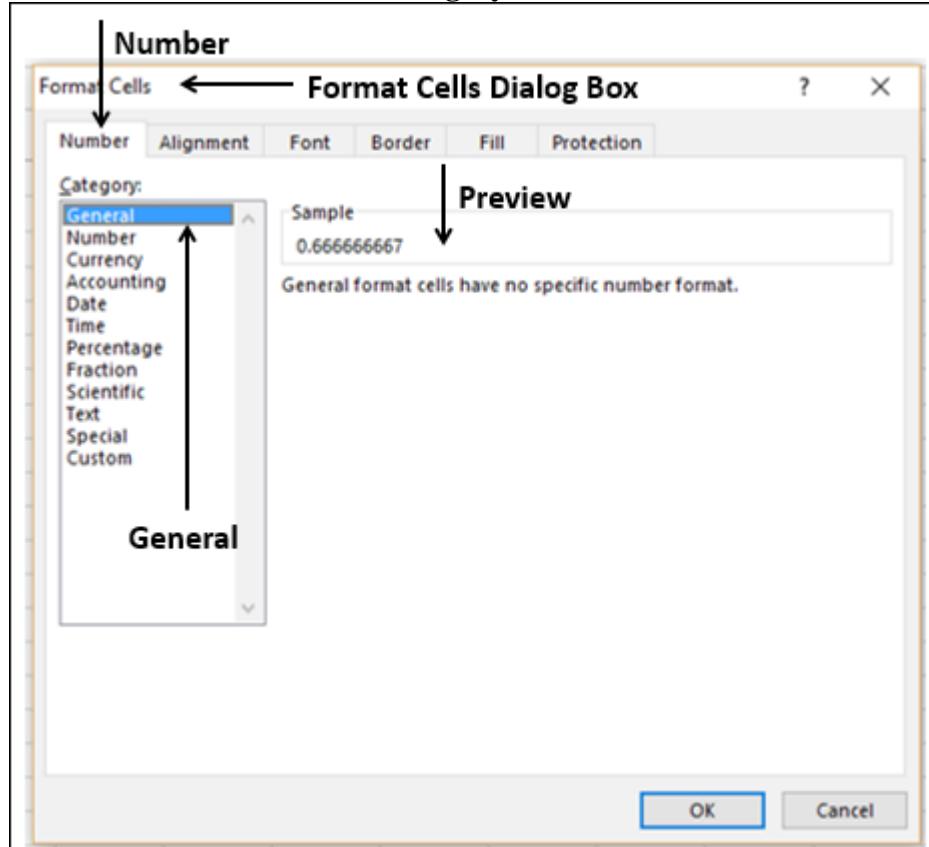
Converting Times in Hour-Minute-Second Format to Serial Format

You can convert Time in **Hour-Minute-Second** format to serial format in two ways –

- Using **Format Cells** dialog box
- Using Excel **TIMEVALUE** function

Using Format Cells dialog box

- Click the **Number** tab in the **Format Cells** dialog box.
- Click **General** under **Category**.



Using Excel TIMEVALUE Function

You can use Excel **TIMEVALUE** function to convert **Time** to **Serial Number** format. You need to enclose the **Time** argument in “”. For example,

TIMEVALUE ("16:55:15") results in 0.70503472

Obtaining the Current Time

If you need to perform calculations based on current time, simply use the Excel function **NOW ()**. The result reflects the date and time when it is used.

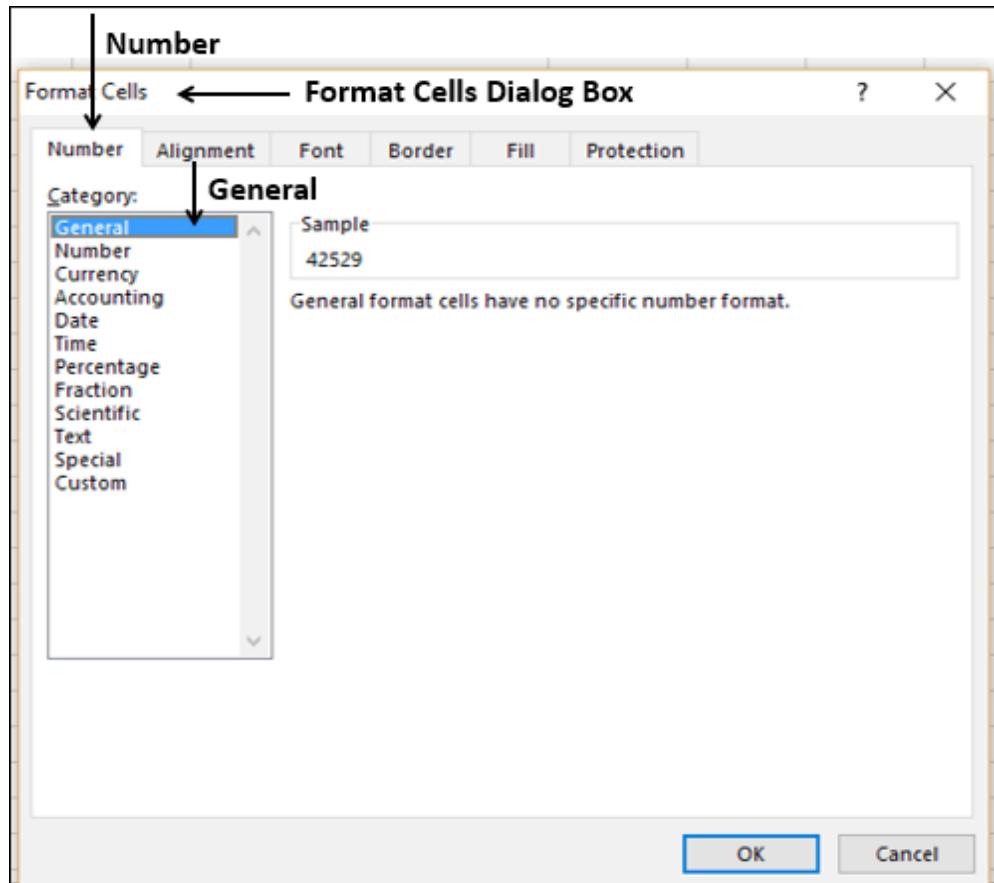
The following screen shot of **Now ()** function usage has been taken on 17th May, 2016 at 12:22 PM.

Calculation			Result		
A	B	C	A	B	C
1			1		
2	Current Time	=NOW()	2	Current Time	5/17/2016 12:22

Obtaining Time from Hour, Minute and Second

Your data might have the information about hours, minutes and seconds separately. Suppose, you need to get the Time combining these 3 values to perform any calculation. You can use Excel Function Time for getting the Time values.

Calculation				Result			
A	B	C	D	A	B	C	D
1				1			
2	Hour	Minute	Second	2	Hour	Minute	Time
3	15	25	30	3	15	25	30
			=TIME(B3,C3,D3)				3:25:30 PM



Using Excel DATEVALUE Function

You can use Excel **DATEVALUE** function to convert a **Date** to **Serial Number** format. You need to enclose the **Date** argument in “”. For example,

=DATEVALUE ("6/8/2016") results in 42529

Obtaining Today's Date

If you need to perform calculations based on today's date, simply use the Excel function TODAY (). The result reflects the date when it is used.

The following screenshot of TODAY () function usage has been taken on 16th May, 2016 –

The screenshot shows a portion of an Excel spreadsheet. In the first row (row 1), columns A, B, and C are labeled A, B, and C respectively. In the second row (row 2), column A contains the number '1', column B contains the text 'Today's Date', and column C is empty. The cell B2 contains the formula '=TODAY()'. An arrow labeled 'Calculation' points to the formula in B2. Another arrow labeled 'Result' points to the value '5/16/2016' displayed in the cell B2.

Experiment No: 7

Aim:

Conditional Formatting: formatting, parsing, and highlighting data in spreadsheets during data analysis.

Conditional formatting is used to change the appearance of cells in a range based on your specified conditions. The conditions are rules based on specified numerical values or matching text. Changing the appearance of cells can visually highlight interesting data points for analysis.

Procedure:

1. Open Excel and Load Data:
2. Choose Formatting Rules.
3. Apply Conditional Formatting:
4. Visual Comparison
5. Presentation:

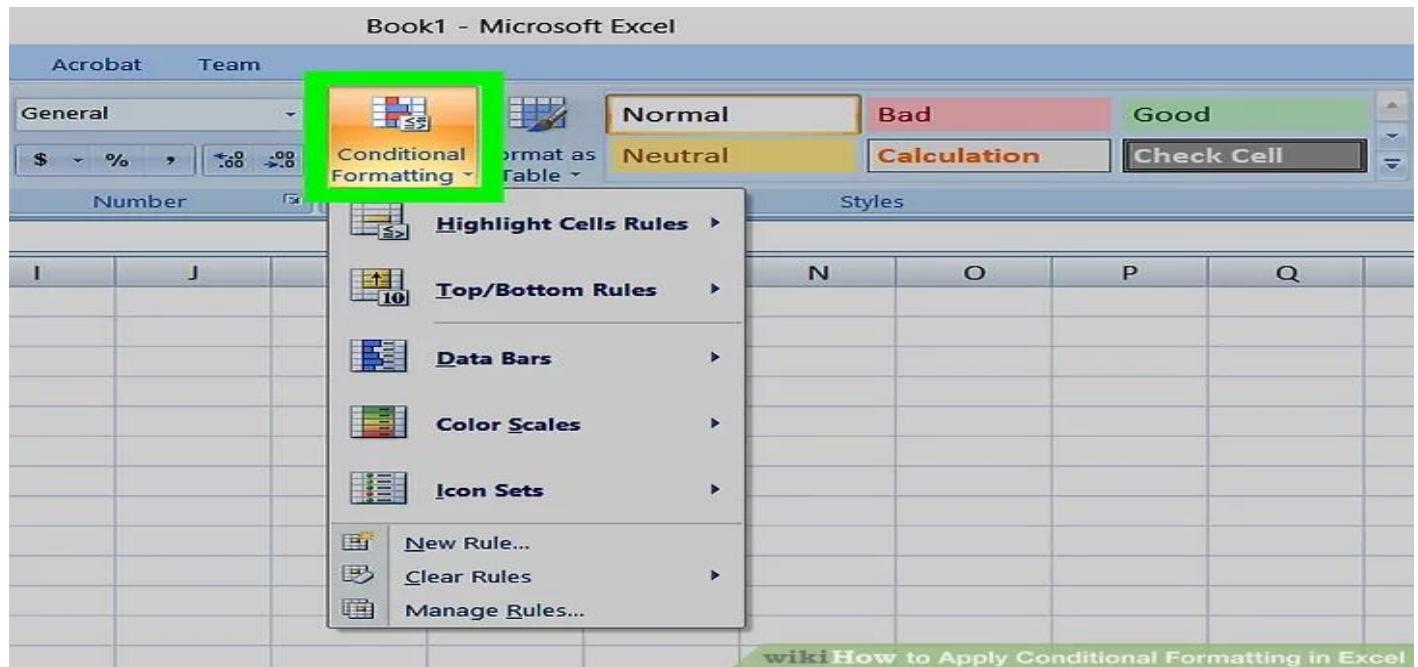
Step: 1 Open Excel and Load Data

Excel offers several built-in conditional formatting rules you can apply to your data.

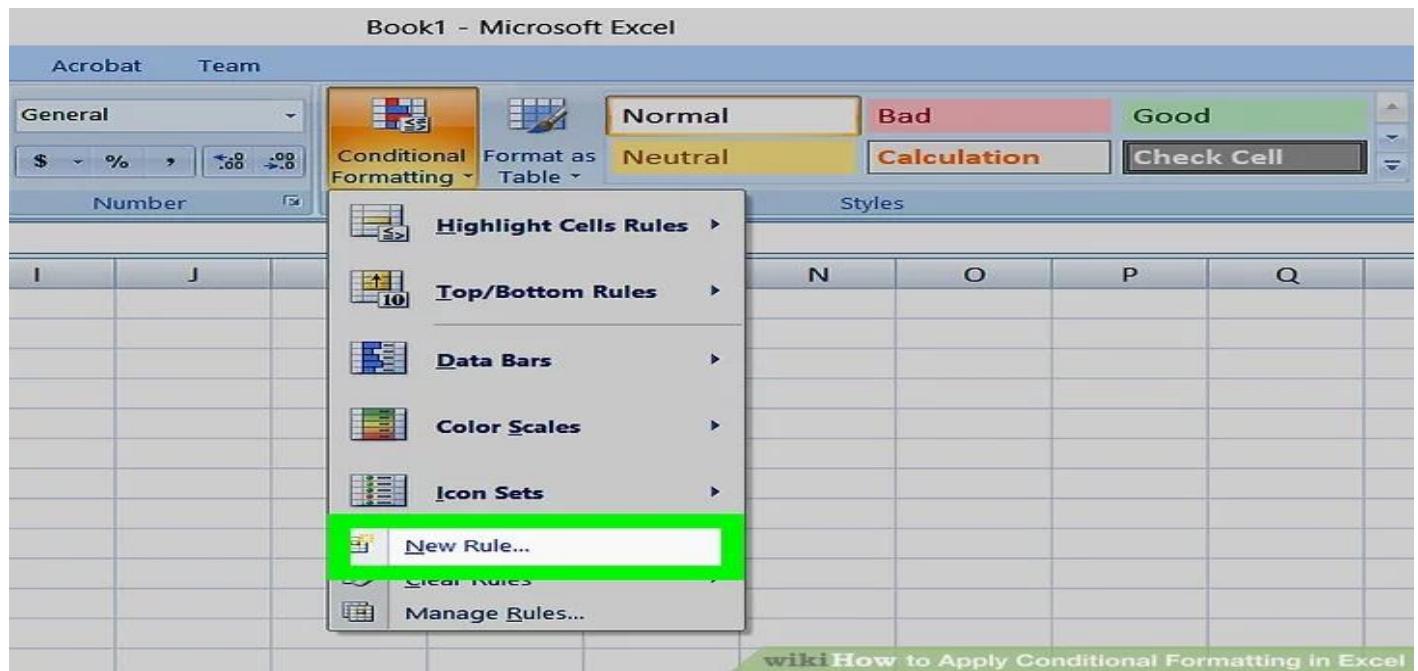
SL.No	Name	Test 1	Test 2	TOTAL /50	FINAL Percentage
1	Priya Adhikari	21	25	46	92
2	priya	24	23	47	94
3	Raksha Shetty	AB	AB	0	0
4	Vidya Ashok	21	22	43	86
5	Saba Fatima	7	10	20	40
6	Rohith J	6	10	20	40
7	Priyanka Sharma	21	24	45	90
8	Samyuktha	11	14	25	50
9	Tejaswini K M	3	13	20	40
10	Rhishyanth shaji	AB	AB	0	0
11	prakash	8	6	20	40
12	Sivas.S	22	23	45	90
13	SYED HANZALA	20	19	39	78
14	Sankar Paikira	2	2	20	40
15	Jeeva	16	24	40	80
16	Vasanth	3	12	20	40
17	Balu	0	0	20	40
18	Shiva Shankar S	18	20	38	76
19	Vikas V	6	12	20	40
20	kavitha	10	13	23	46

Step:2

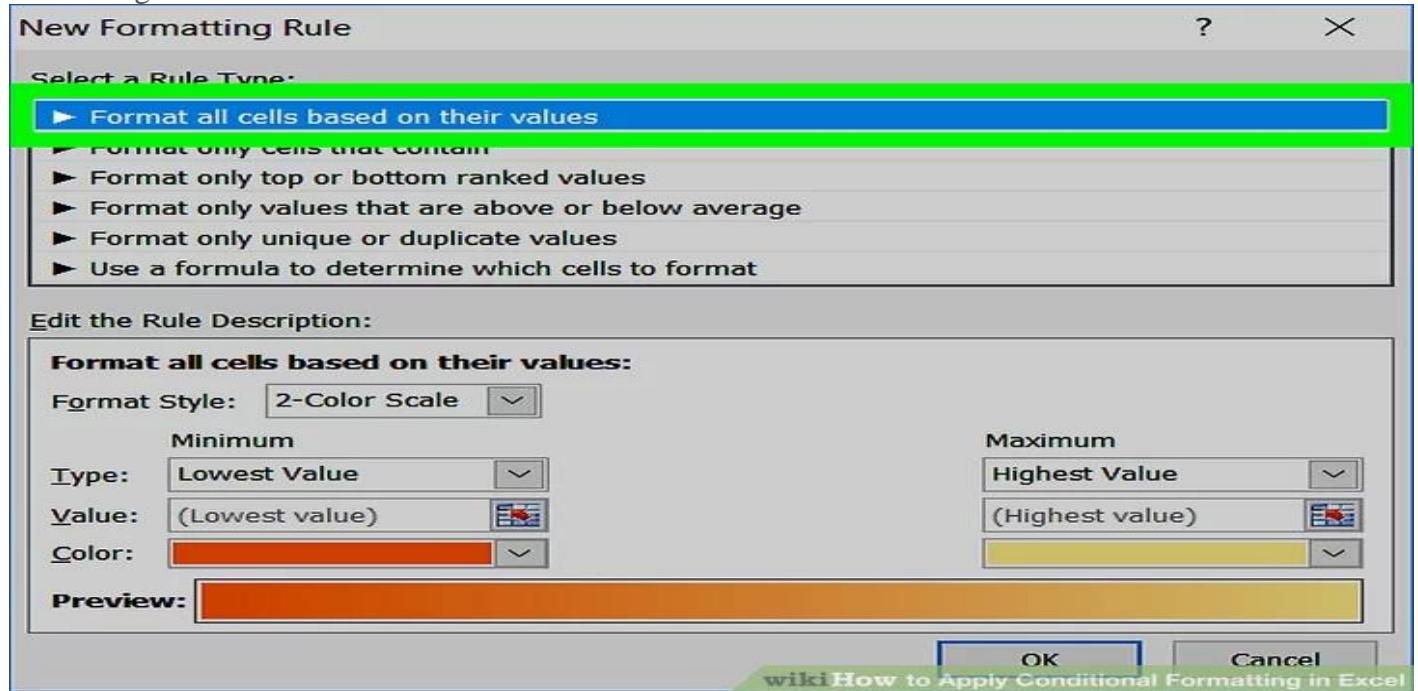
Click the Home tab. It's at the top of the Excel window. This is where you'll find the Conditional Formatting option.



Step 3: Click Conditional Formatting. You'll find this in the "Styles" section of the **Home** toolbar. Clicking it prompts a drop-down menu to appear.

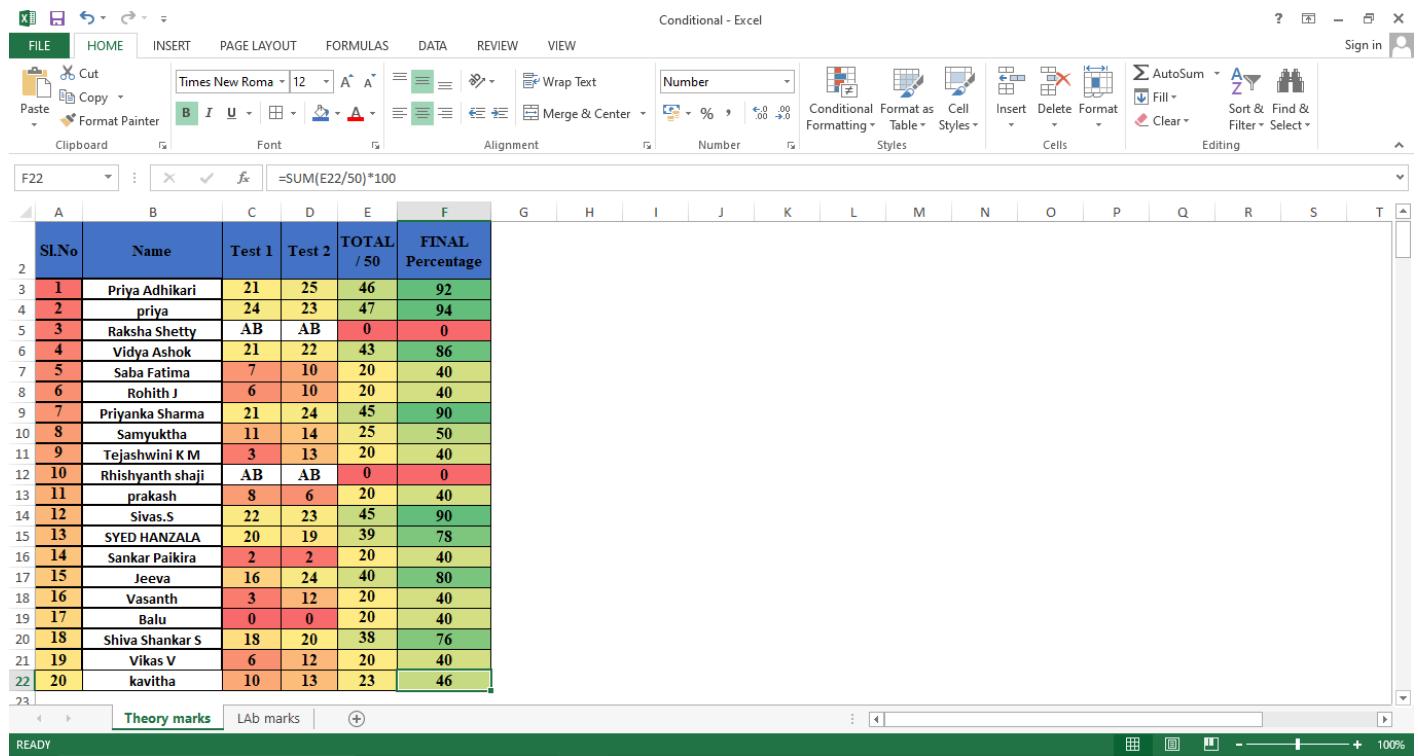


Step 4: Click New Rule.... It's near the bottom of the drop-down menu. Doing so opens the Conditional Formatting window.



Step 5: Save your spreadsheet. Click **File**, then click **Save** to save your changes, or press **Ctrl + S** (or **⌘ Command + S** on a Mac). If you want to save this document as a new document, do the following:

- **Windows** - Click **File**, click **Save As**, double-click **This PC**, click a save location on the left side of the window, type the document's name into the "File name" text box, and click **Save**.



The screenshot shows an Excel spreadsheet titled "Conditional - Excel". The table has columns for Sl.No, Name, Test 1, Test 2, TOTAL / 50, and FINAL Percentage. The rows are color-coded based on the value in the FINAL Percentage column. The first two rows (Sl.No 1 and 2) have a light red background. Rows 3 through 22 have a light green background. Row 23 (the total row) has a light blue background. The formula $=SUM(E22/50)*100$ is visible in the formula bar at the top.

Sl.No	Name	Test 1	Test 2	TOTAL / 50	FINAL Percentage
1	Priya Adhikari	21	25	46	92
2	priya	24	23	47	94
3	Raksha Shetty	AB	AB	0	0
4	Vidya Ashok	21	22	43	86
5	Saba Fatima	7	10	20	40
6	Rohith J	6	10	20	40
7	Priyanka Sharma	21	24	45	90
8	Samyuktha	11	14	25	50
9	Tejaswini K M	3	13	20	40
10	Rhishyant shaji	AB	AB	0	0
11	prakash	8	6	20	40
12	Sivas.S	22	23	45	90
13	SYED HANZALA	20	19	39	78
14	Sankar Paikira	2	2	20	40
15	Jeeva	16	24	40	80
16	Vasanth	3	12	20	40
17	Balu	0	0	20	40
18	Shiva Shankar S	18	20	38	76
19	Vikas V	6	12	20	40
20	kavitha	10	13	23	46
23					

Conclusion:

Conditional Formatting in Excel is a versatile tool that empowers users to transform raw data into visually appealing and meaningful representations. By applying formatting rules based on specific conditions, we can uncover hidden patterns, identify outliers, and gain valuable insights from our data. Mastering Conditional Formatting will undoubtedly enhance our data analysis capabilities and drive better decision-making in various personal and professional contexts.

Experiment No: 8

Working with Multiple Sheets: work with multiple sheets within a work book is crucial for organizing and managing data, perform complex calculations and create comprehensive reports.

Aim:

Investigate the impact of working with multiple sheets within a workbook on data organization, complex calculations, and report creation in spreadsheet software, and assess the benefits of this approach in practical scenarios.

Procedure:

- Set up workbooks in which several worksheets have a similar format or structure.
- Get information for these worksheets from another worksheet.
- Summarize the results from these worksheets into a summary worksheet.

Step 1:

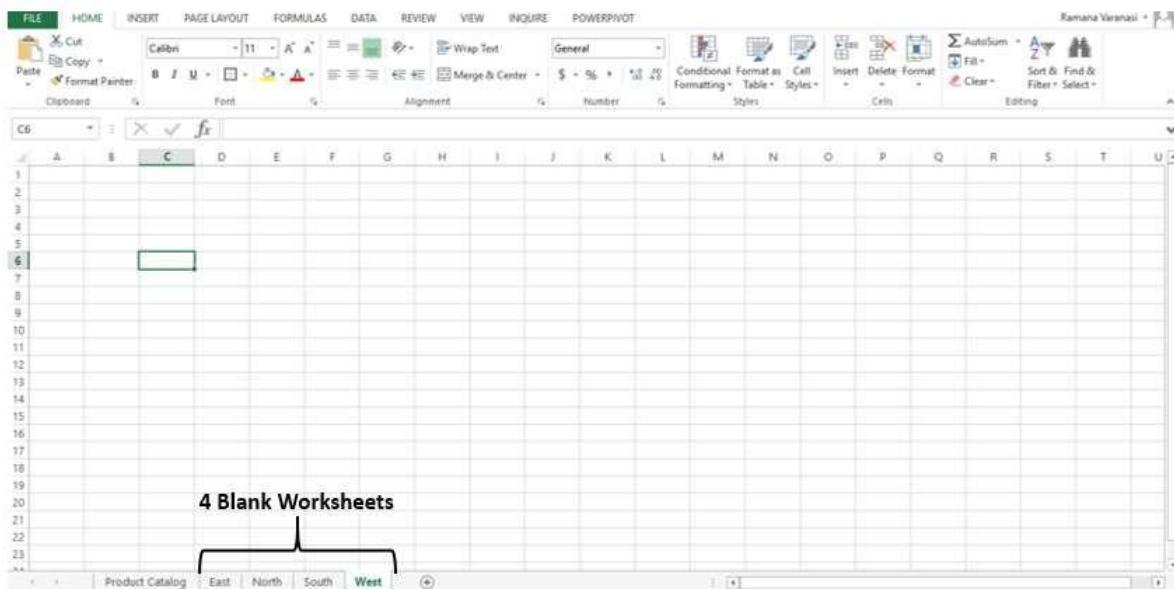
- ✓ Start with a blank workbook.
- ✓ Set up product catalog worksheet with products and prices.
- ✓ Name the worksheet **Product Catalog**.
- ✓ Assume the catalog is revised on the first of every month.

Product Catalog	
Last updated on:	5/25/2016
Product	Price
Refrigerator	18000
Television	35000
Washing Machine	12000
Air Conditioner	40000

The above figure show the price of a product at selling time is determined by the current cost of the product.

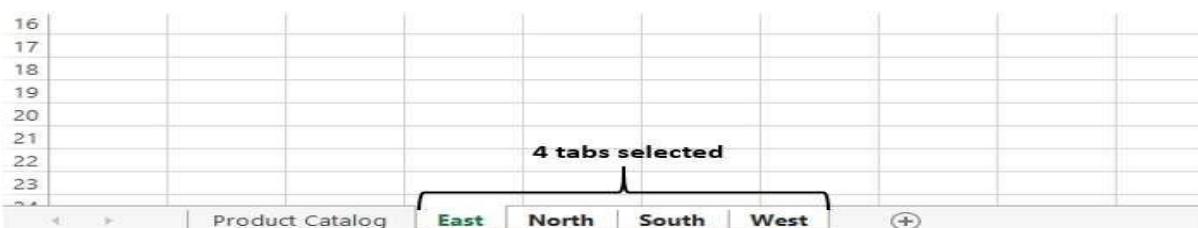
Step 2: Multiple Worksheets with same Structure

Next, you have to setup worksheets for the Region East,North, South, and West, in that order with same structure.



These four worksheets should have the same structure.

- ✓ Click the tab East. The East worksheet opens.
- ✓ Press the shift key and click on the tab West. All the 4 tabs will be selected.



Now, whatever editing you do in the East worksheet will get automatically reflected in the other three selected worksheets.

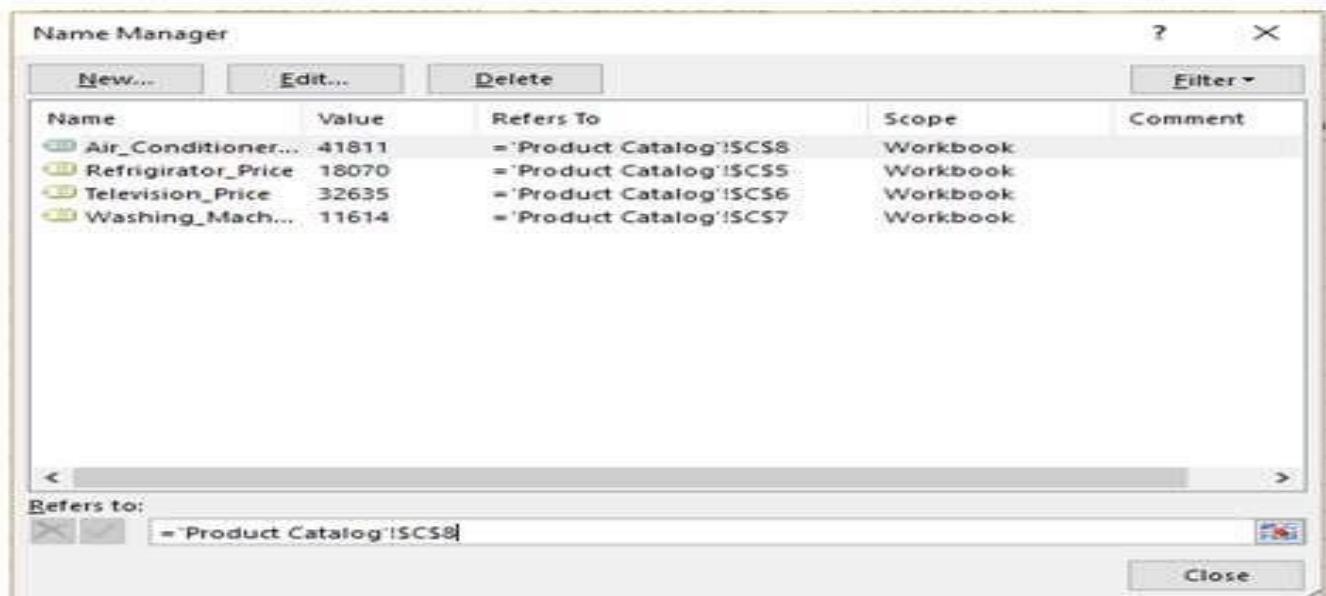
In the East worksheet,

- Add the column headers—Sl. No., Month, Product, Price, No. of Units, Total Amount.
- Add the Sl. No., Month April and the 4 Product Names.
- Format the Table.

The same structure appears in the other worksheets North, South and West.

Step 3: Creating a Formula across Multiple Worksheets

Define names for the price values of the products in the product catalog worksheet. Set the Scope as Workbook for all the names.



Once again select all the four worksheets – East, North, South and West. In the East worksheet, for each product, in the price column, give the formula as the Price Value Name. So the price of a product is as per the product catalog that is updated on the first of every month.

				Product Price from Product Catalog		
1	A	B	C	D	F	G
2	S. No.	Month	Product	Price	No. of Units	Total Amount
3	1	April	Refrigerator	=Refrigerator_Price		
4	2	April	Television	=Television_Price		
5	3	April	Washing Machine	=Washing_Machine_Price		
6	4	April	Air Conditioner	=Air_Conditioner_Price		
7						
8						

Repeat the same steps for each Month. Therefore, for the worksheets for the regions East, North, South, and West, you have successfully set the same structure and placed the price information for each product based

on them on the from product catalog worksheet.

Step 4: Calculations in the Worksheets

The next step is to fill in the information of No. of Units sold for each Product in each Month and in each Region. Therefore, you need to work separately on these worksheets.

For each region, for each product -

- Fill No. of Units sold.
- Calculate the corresponding Total Amount as Price*No. of Units.

S. No.	Month	Product	Price	No. of Units	Total Amount
1	April	Refrigerator	16725	16	267600
2	April	Television	36416	29	1056064
3	April	Washing Machine	12337	29	357773
4	April	Air Conditioner	38009	25	950225
5	May	Refrigerator	16944	32	542208
6	May	Television	35437	19	673303
7	May	Washing Machine	12047	16	192752
8	May	Air Conditioner	39959	15	599385
9	June	Refrigerator	18648	29	540792
10	June	Television	33915	24	813960
11	June	Washing Machine	12810	15	192150
12	June	Air Conditioner	41062	27	1108674
13	July	Refrigerator	17138	29	497002
14	July	Television	34840	21	731640
15	July	Washing Machine	12876	31	399156
16	July	Air Conditioner	38856	28	1087968
17	August	Refrigerator	16290	29	472410
18	August	Television	35694	22	785268
19	August	Washing Machine	12252	29	355308
20	August	Air Conditioner	35911	19	682309

In each worksheet (East, North, South and West), calculate subtotals month-wise.

The screenshot shows an Excel spreadsheet with a data table and a 'Subtotal' dialog box overlaid. The data table contains columns for S. No., Month, Product, Price, No. of Units, and Total Amount. The 'Subtotal' dialog box is set to group by 'Month' and sum 'Total Amount'. The main table data is as follows:

S. No.	Month	Product	Price	No. of Units	Total Amount
1	April	Refrigerator	16725	16	267600
2	April	Television	36416	29	1056064
3	April	Washing Machine	13337	29	357773
4	April	Air Conditioner	36009	25	950225
5	May	Refrigerator	18944	32	542208
6	May	Television	35437	19	673303
7	May	Washing Machine	12047	16	192752
8	May	Air Conditioner	39959	15	599385
9	June	Refrigerator	18648	29	540792
10	June	Television	33915	24	813960
11	June	Washing Machine	12810	15	192150
12	June	Air Conditioner	41062	27	1108674
13	July	Refrigerator	17138	29	497002
14	July	Television	34840	21	731640
15	July	Washing Machine	12876	31	399156
16	July	Air Conditioner	38856	28	1087968
17	August	Refrigerator	16290	29	472410
18	August	Television	35694	22	785268
19	August	Washing Machine	12252	29	355308
20	August	Air Conditioner	35911	19	682309

	A	B	C	D	E	F	G
1							
2	S. No.	Month	Product	Price	No. of Units	Total Amount	
3	1	April	Refrigerator	16725	16	267600	
4	2	April	Television	36416	29	1056064	
5	3	April	Washing Machine	12337	29	357773	
6	4	April	Air Conditioner	38009	25	950225	
7		April Total				2631662	
8	5	May	Refrigerator	16944	32	542208	
9	6	May	Television	35437	19	673303	
10	7	May	Washing Machine	12047	16	192752	
11	8	May	Air Conditioner	39959	15	599385	
12		May Total				2007648	
13	9	June	Refrigerator	18648	29	540792	
14	10	June	Television	33915	24	813960	
15	11	June	Washing Machine	12810	15	192150	
16	12	June	Air Conditioner	41062	27	1108674	
17		June Total				2655576	
18	13	July	Refrigerator	17138	29	497002	
19	14	July	Television	34840	21	731640	
20	15	July	Washing Machine	12876	31	399156	
21	16	July	Air Conditioner	38856	28	1087968	
22		July Total				2715766	

	A	B	C	D	E	F	G
1							
2	S. No.	Month	Product	Price	No. of Units	Total Amount	
7		April Total				2631662	
12		May Total				2007648	
17		June Total				2655576	
22		July Total				2715766	
27		August Total				2295295	
32		September Total				3271872	
37		October Total				2659952	
42		November Total				2475657	
47		December Total				2457555	
52		January Total				2447194	
57		February Total				2703515	
62		March Total				2878112	
63		Grand Total				31199804	
64							
65							
66							
67							
68							
69							
70							
71							

Click the Outline Level 2. You will get all month-wise Totals.

Step 5: Summarizing Data in Multiple Worksheets

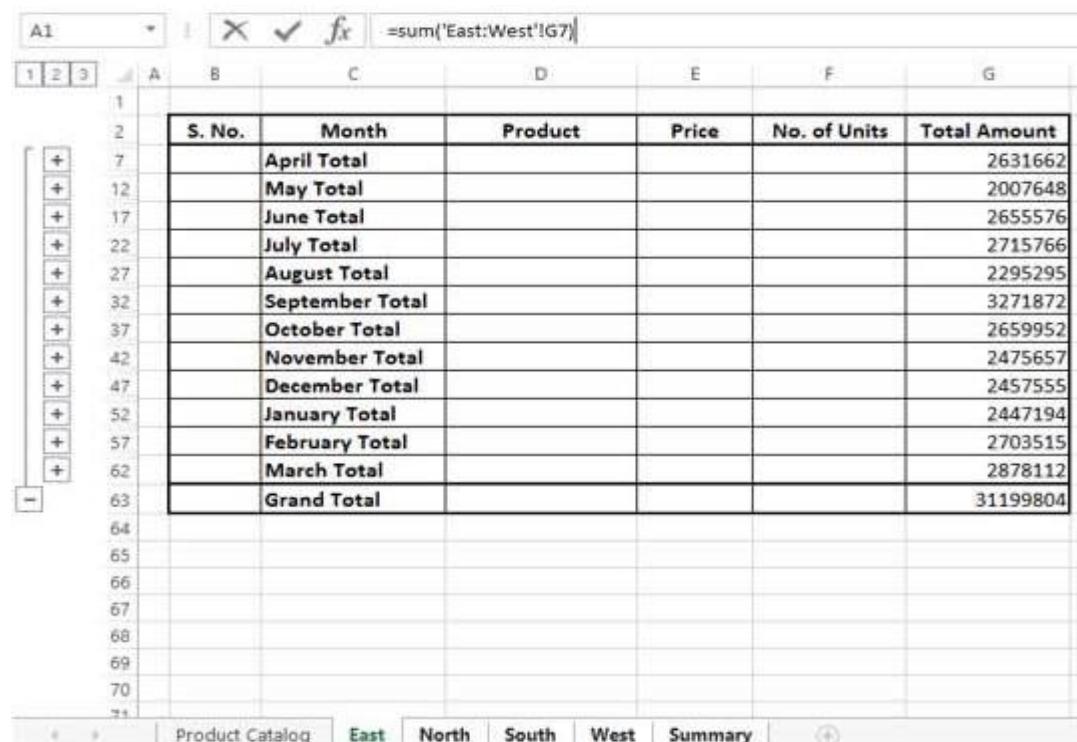
- ✓ Add a worksheet and name it Summary.
- ✓ Create the structure for Summary worksheet.

	A	B	C	D	E	F	G	H
1								
2		Month	Total Sales					
3		April	=sum()					
4		May	SUM(number1, [number2], ...)					
5		June						
6		July						
7		August						
8		September						
9		October						
10		November						
11		December						
12		January						
13		February						
14		March						
15		Total						
16								
17								
18								
19								
20								
21								
22								

The screenshot shows a Microsoft Excel spreadsheet titled 'Summary'. The table has two columns: 'Month' and 'Total Sales'. The formula bar at the top shows '=sum()' and the formula =SUM(number1, [number2], ...) is visible in the cell C3. The tabs at the bottom are labeled 'Product Catalog', 'East', 'North', 'South', 'West', and 'Summary', with 'Summary' being the active tab. The cells A1 through A22 are empty.

- ✓ Select the worksheet East.
- ✓ Select the cell G7.
- ✓ With East tab pressed, click the tab West.
- ✓ The tabs East to West get selected.
- ✓ The formula in the formula bar appears as

=sum('East:West'!G7)



The screenshot shows the 'East' worksheet in Excel. The formula bar at the top displays the formula `=sum('East:West'!G7)`. The table below contains monthly totals from April to March, along with a Grand Total row.

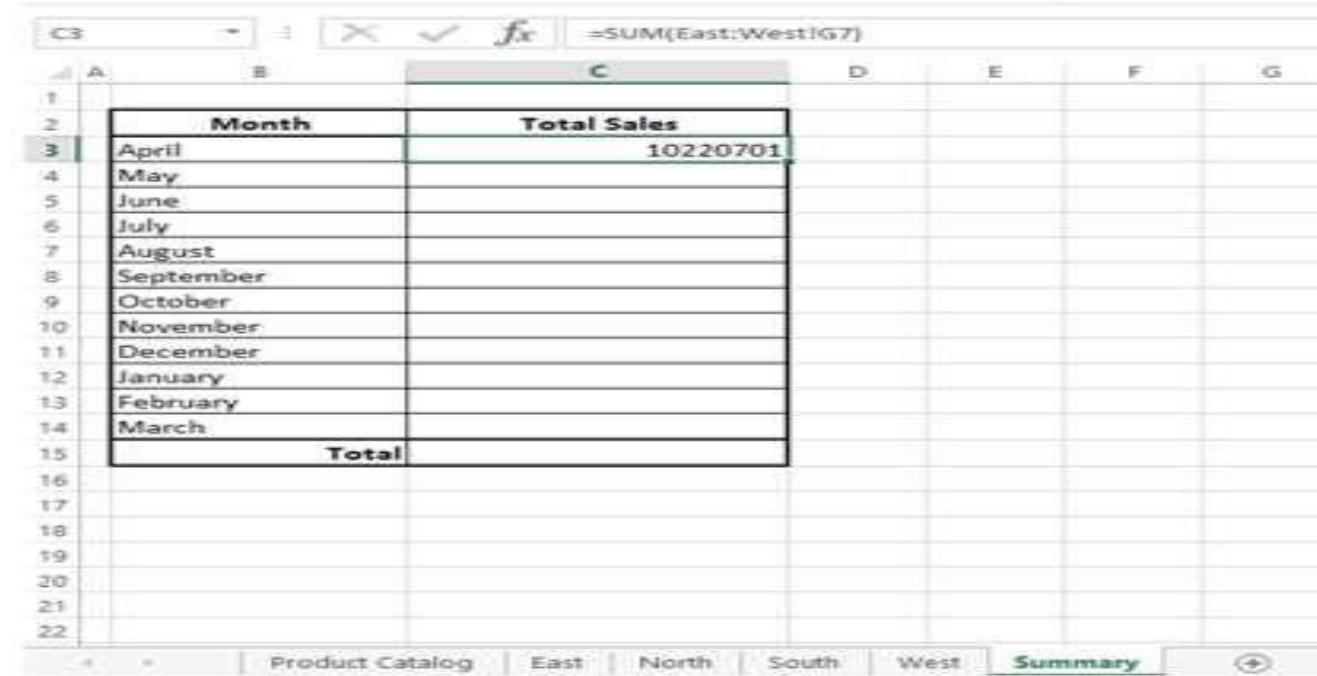
S. No.	Month	Product	Price	No. of Units	Total Amount
7	April Total				2631662
12	May Total				2007648
17	June Total				2655576
22	July Total				2715766
27	August Total				2295295
32	September Total				3271872
37	October Total				2659952
42	November Total				2475657
47	December Total				2457555
52	January Total				2447194
57	February Total				2703515
62	March Total				2878112
63	Grand Total				31199804

Note that you are still in the **East** worksheet. Press Enter.

You will be in the Summary worksheet. In the formula bar, you will see the formula as

`=SUM(East:West!G7)`

The calculated value appears in the cell C3.



The screenshot shows the 'Summary' worksheet in Excel. The formula bar at the top displays the formula `=SUM(East:West!G7)`. The table below lists months and their total sales, with the total for all months in the last row.

Month	Total Sales
April	10220701
May	
June	
July	
August	
September	
October	
November	
December	
January	
February	
March	
Total	

- ✓ Copy the formula to the cells C4 to C14.
- ✓ Click Show Formulas in the Formula Auditing group under the FORMULAS tab.
- ✓ All the formulas in the column Total Sales appear

A	B	C
1		
2	Month	Total Sales
3	April	=SUM(East:West!G7)
4	May	=SUM(East:West!G12)
5	June	=SUM(East:West!G17)
6	July	=SUM(East:West!G22)
7	August	=SUM(East:West!G27)
8	September	=SUM(East:West!G32)
9	October	=SUM(East:West!G37)
10	November	=SUM(East:West!G42)
11	December	=SUM(East:West!G47)
12	January	=SUM(East:West!G52)
13	February	=SUM(East:West!G57)
14	March	=SUM(East:West!G62)
15	Total	

This is exactly how you wanted to summarize the results from each region.

- ✓ Click in the cell C15.
- ✓ Type =sum(C3:C14)

A	B	C
1		
2	Month	Total Sales
3	April	=SUM(East:West!G7)
4	May	=SUM(East:West!G12)
5	June	=SUM(East:West!G17)
6	July	=SUM(East:West!G22)
7	August	=SUM(East:West!G27)
8	September	=SUM(East:West!G32)
9	October	=SUM(East:West!G37)
10	November	=SUM(East:West!G42)
11	December	=SUM(East:West!G47)
12	January	=SUM(East:West!G52)
13	February	=SUM(East:West!G57)
14	March	=SUM(East:West!G62)
15	Total	=sum(C3:C14)

Your summarized results are ready in the Summary worksheet.

A	B	C	D	E	F	G	H
1							
2	Month	Total Sales					
3	April	10,220,701					
4	May	9,419,796					
5	June	10,592,470					
6	July	9,927,996					
7	August	9,322,352					
8	September	10,405,543					
9	October	10,101,672					
10	November	9,830,276					
11	December	9,625,740					
12	January	10,491,556					
13	February	11,181,341					
14	March	9,247,650					
15	Total	120,367,093					
16							
17							
18							
19							
20							
21							
22							

The ribbon at the bottom shows tabs for Product Catalog, East, North, South, West, and Summary, with Summary selected.

Conclusion:

Working with multiple sheets within a workbook in spreadsheet software is a powerful approach for data organization, complex calculations, and report creation. It enhances data management, accuracy, and collaboration. The benefits include improved data organization, streamlined complex calculations, and efficient report creation.

Experiment No: 9

Aim:

Create worksheet with following fields: Empno, Ename, Basic Pay(BP), Travelling Allowance(TA), Dearness Allowance(DA), House Rent Allowance(HRA), Income Tax(IT), Provident Fund(PF), Net Pay(NP). Use appropriate formulas to calculate the above scenario.

Analyse the data using appropriate chart and report the data.

Procedure:

Step 1: Data Preparation

Step 2: Calculate required data using formula

Step 3: Explore different Charts

Step 4: Analysis using Charts

Step 1: Data Preparation

- Open your Excel spreadsheet.
- Fill up details for Employee Number, Employee Name and Basic Pay
- Add other required columns to be calculated

OCTOBER 2023													
SNO	EMP NO	EMP NAME	ALLOWANCES				TOTAL ALLOWANCE	DEDUCTIONS				TOTAL DEDUCTIONS	NET PAY
			BASIC PAY	DA	TA	HRA		GROSS PAY	EPF	TDS			
1	459498583	Astha Puri	25000										

Step 2: Calculate required data using formula

Use the following formula to calculate all other required data

DA = 40% of Basic Pay

TA = 10% of Basic Pay

HRA = 50% of Basic Pay

EPF = 12 % of Gross Pay

TDS = 10 % of Gross Pay if annual Gross pay exceeds 500000

Using the above you should be able to fill up the data required and final sheet looks like below

OCTOBER 2023													
SNO	EMP NO	EMP NAME	BASIC PAY	ALLOWANCES			TOTAL ALLOWANCE	DEDUCTIONS			TOTAL DEDUCTION S	NET PAY	
				DA	TA	HRA		GROSS PAY	EPF	TDS			
1	459498583	Astha Puri	25000	10000	2500	12500	25000	50000	6000	5000	11000	39000	
2	235765887	Bijal Pande	30000	12000	3000	15000	30000	60000	7200	6000	13200	46800	
3	433675895	Chirag Sharma	50000	20000	5000	25000	50000	100000	12000	10000	22000	78000	
4	243455776	Divya Soni	35000	14000	3500	17500	35000	70000	8400	7000	15400	54600	
5	546556877	Erum Rastogi	15000	6000	1500	7500	15000	30000	3600	0	3600	26400	
6	655675687	Farhan Patel	40000	16000	4000	20000	40000	80000	9600	8000	17600	62400	
7	465576678	Geet Sahu	60000	24000	6000	30000	60000	120000	14400	12000	26400	93600	
8	434476878	Himesh Surya	22000	8800	2200	11000	22000	44000	5280	4400	9680	34320	
9	454557678	Imran Abha	38000	15200	3800	19000	38000	76000	9120	7600	16720	59280	
10	245766987	Jitendra Pande	55000	22000	5500	27500	55000	110000	13200	11000	24200	85800	
Total				370000	148000	37000	185000	370000	740000	88800	71000	159800	580200

Step 3: Explore Different Charts

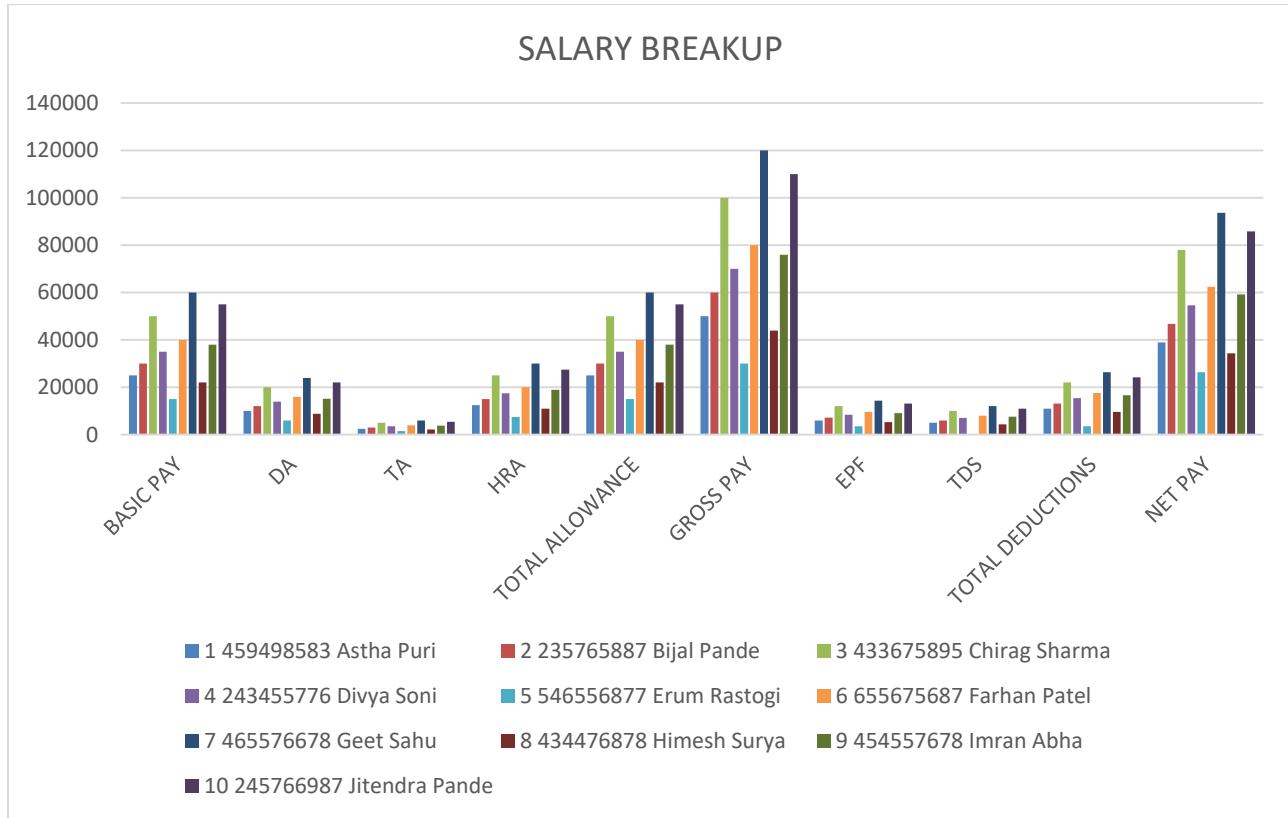
Charts are visual representations of data used to make it more understandable. There are different chart types like Pie Chart, Line Chart, Column Chart etc.

You can see the Charts in Insert section in Excel.

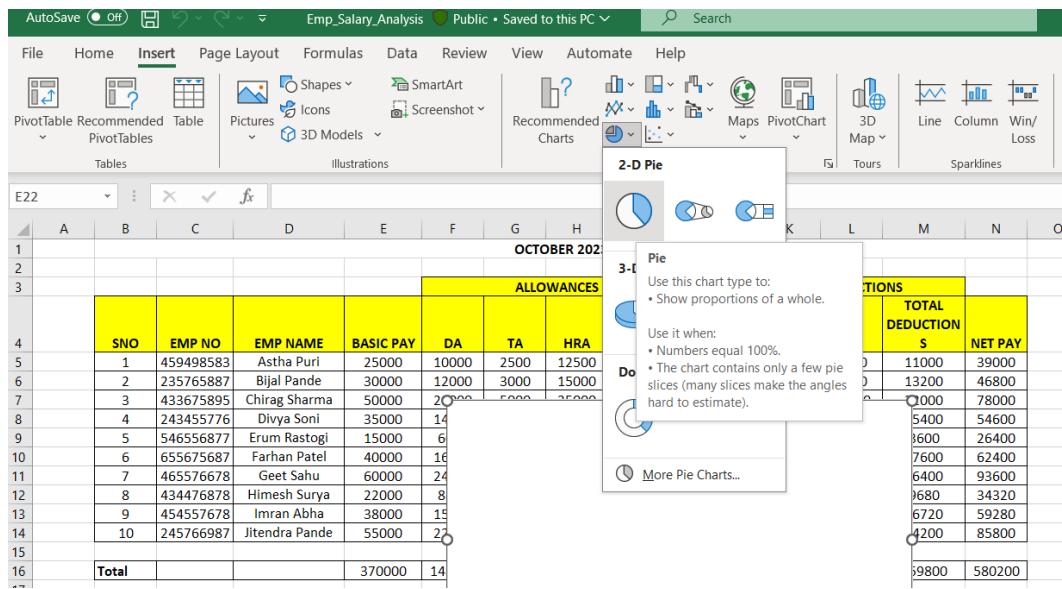
Step 4: Analysis using Charts

Lets analyse the salary of all the employee. we can use the Bar chart for this

Output Chart looks like below:

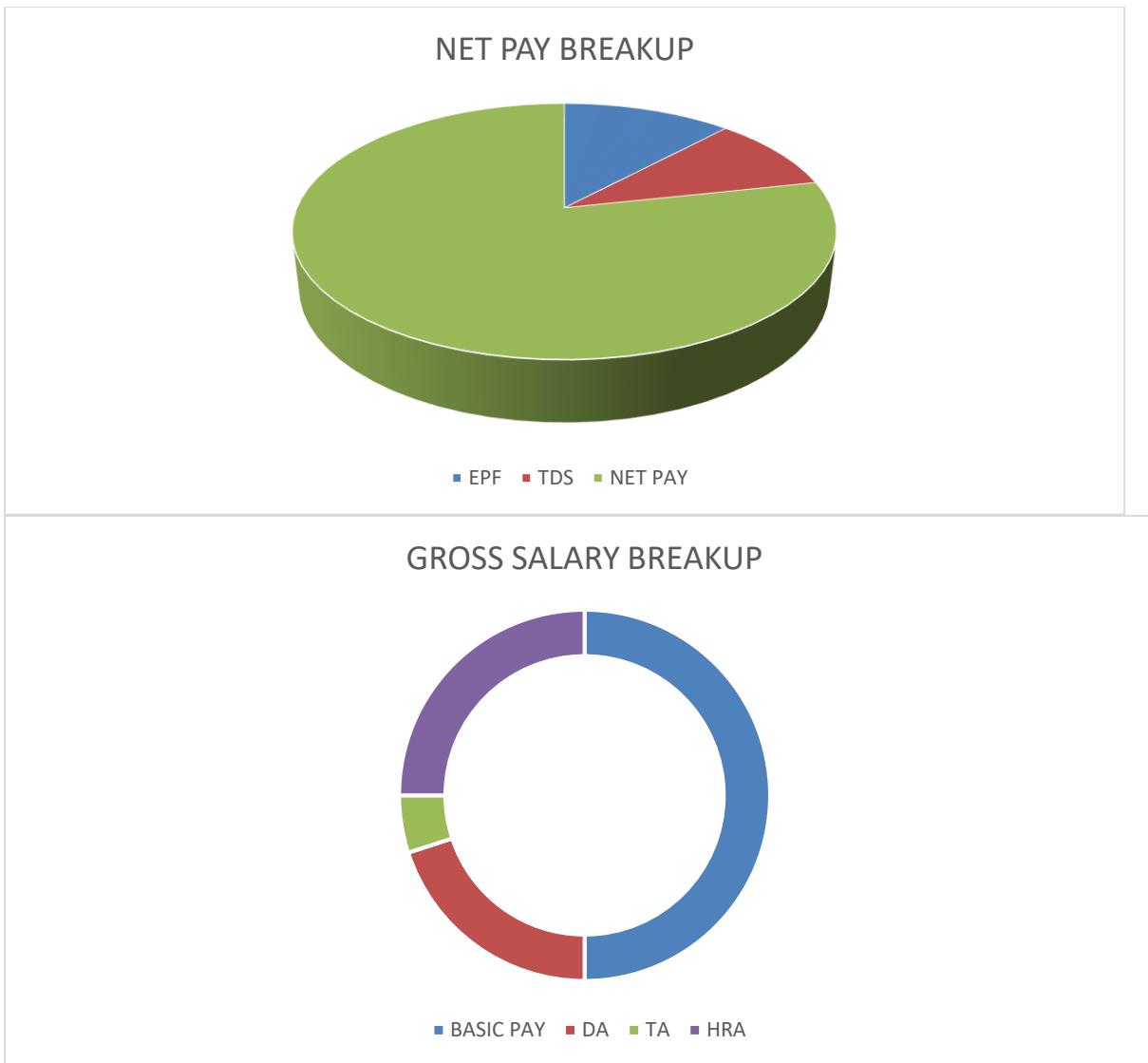


Let's Analyse the Breakup of Gross Pay and Net Pay using Pie Chart.



Output Chart looks like below:

You can visually see the breakup and if you hover the pointer above each piece of pie it will show you the numeric values.



Conclusion:

The worksheet simplifies the process by automating the calculation of Gross Pay, Deductions, and Net Pay, thus reducing the risk of errors and expediting the payroll process.

Experiment No: 10

Aim:

Create worksheet on Inventory Management: Sheet should contain Product code, Product name, Product type, MRP, Cost after % of discount, Date of purchase. Use appropriate formulas to calculate the above scenario. Analyse the data using appropriate chart and report the data.

Procedure:

Step 1: Data Preparation

Step 2: Calculate required data using formula

Step 3: Explore different Charts

Step 4: Analysis using Charts

Step 1: Data Preparation

- Open your Excel spreadsheet.
- Fill up details for Product Code, Product Name, Product Type, MRP, Discount %, Quantity and Date of Purchase.
- Add other required columns to be calculated

S No	Product C	Product N	Product T	MRP	Discount %	Net Price	Quantity	Total Price	Date of Purchase
1	P344482	Redmi not	Electronics	10000	5		1		01-01-2023
2	P894594	Cooker	Household	2000	10		1		05-02-2023

Step 2: Calculate required data using formula

Use the following formula to calculate all other required data

$$\text{Net Price} = \text{MRP} - \text{MRP} * \text{Discount \%}$$

$$\text{Total Price} = \text{Net Price} * \text{Quantity}$$

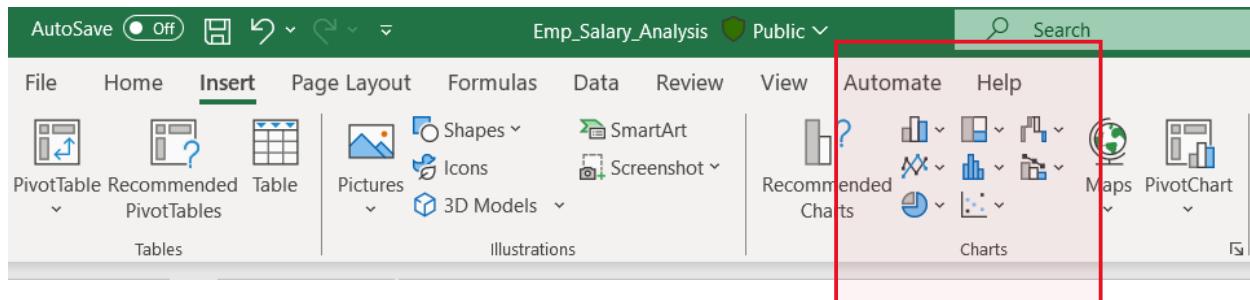
Using the above you should be able to fill up the data required and final sheet looks like below

S No	Product Code	Product Name	Product Type	MRP	Discount %	Net Price	Quantity	Total Price	Date of Purchase
1	P344482	Redmi note	Electronics	10000	5	9500.00	1	9500.00	01-01-2023
2	P894594	Cooker	Household	2000	10	1800.00	1	1800.00	05-02-2023
3	P986985	Sofa	Furniture	15000	25	11250.00	1	11250.00	12-03-2023
4	P637649	Soap	Household	50	1	49.50	15	742.50	20-03-2023
5	P352445	Paste	Household	100	2	98.00	10	980.00	25-03-2023
6	P293749	TV	Electronics	25000	10	22500.00	1	22500.00	28-04-2023
7	P248560	Rice	Household	70	2	68.60	30	2058.00	08-05-2023
8	P473596	Bed	Furniture	25000	5	23750.00	1	23750.00	10-06-2023
9	P257570	BT Speaker	Electronics	2500	5	2375.00	1	2375.00	15-07-2023
10	P247595	Oil	Household	120	1	118.80	5	594.00	22-08-2023
11	P469379	ToorDal	Household	150	1	148.50	10	1485.00	08-09-2023
12	P426573	Sugar	Household	60	1	59.40	20	1188.00	17-10-2023

Step 3: Explore Different Charts

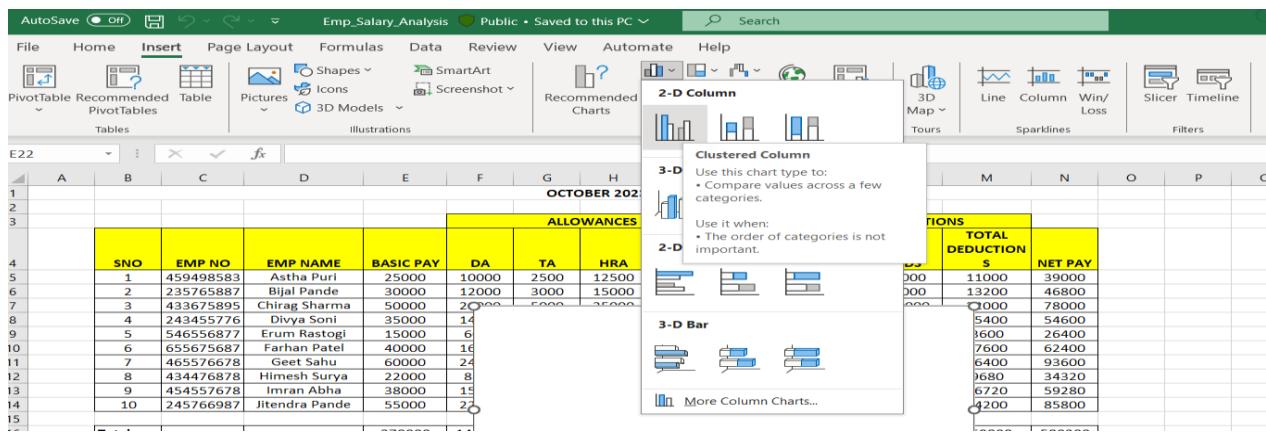
Charts are visual representations of data used to make it more understandable. There are different chart types like Pie Chart, Line Chart, Column Chart etc.

You can see the Charts in Insert section in Excel.



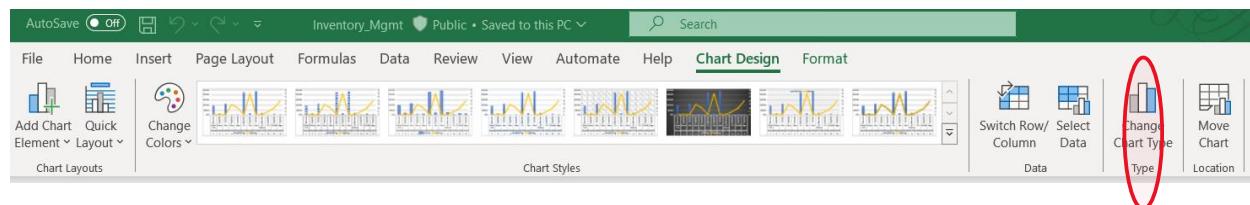
Step 4: Analysis using Charts

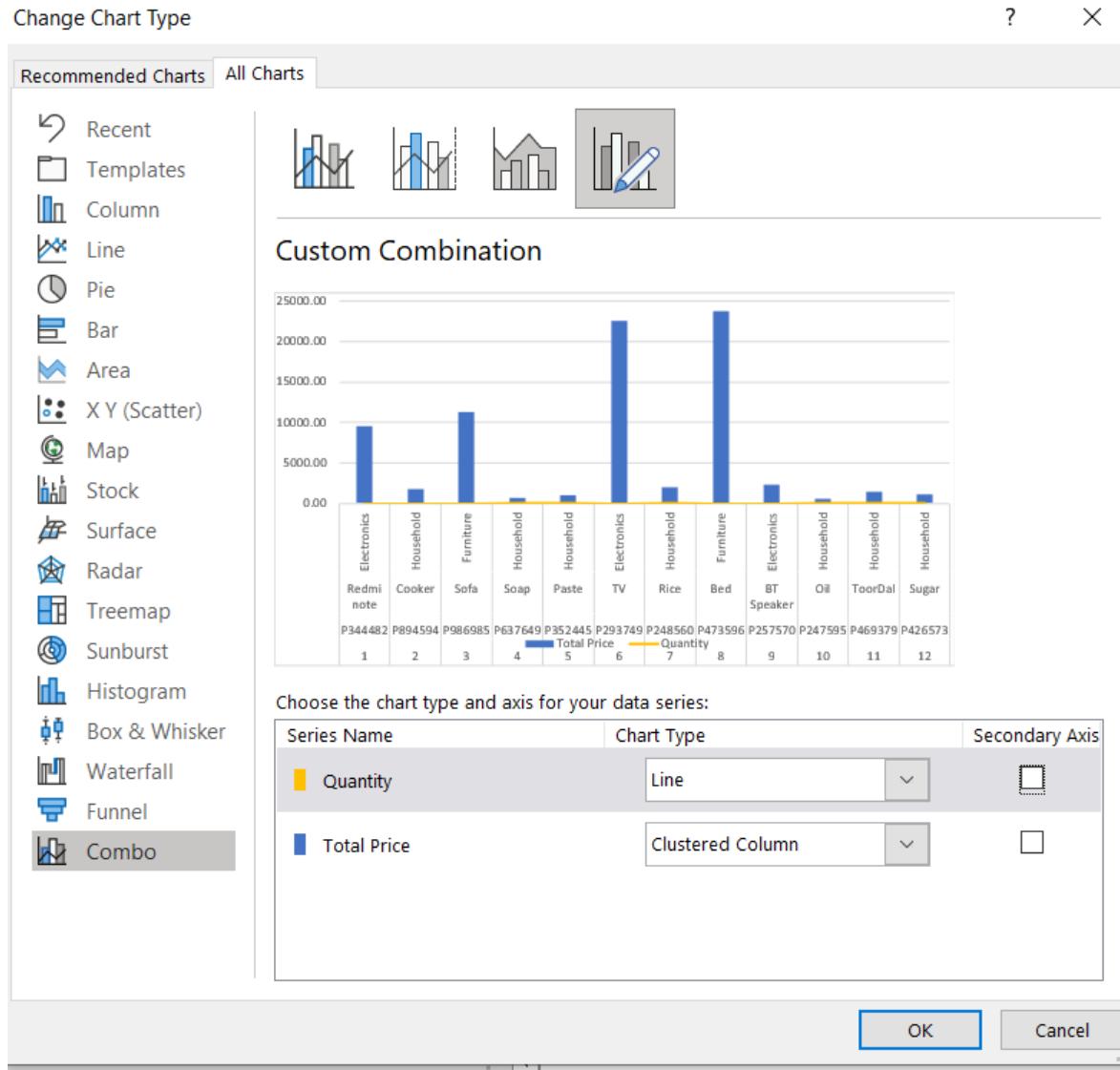
Lets analyse the salary of all the employees, we can use the Bar chart for this.



As we have many data points like Quantity, Price and Date of Purchase, it will be useful to have secondary axis, this is called Combo Chart.

Choose a bar chart and then go to Chart Design section and click on Change Chart Type

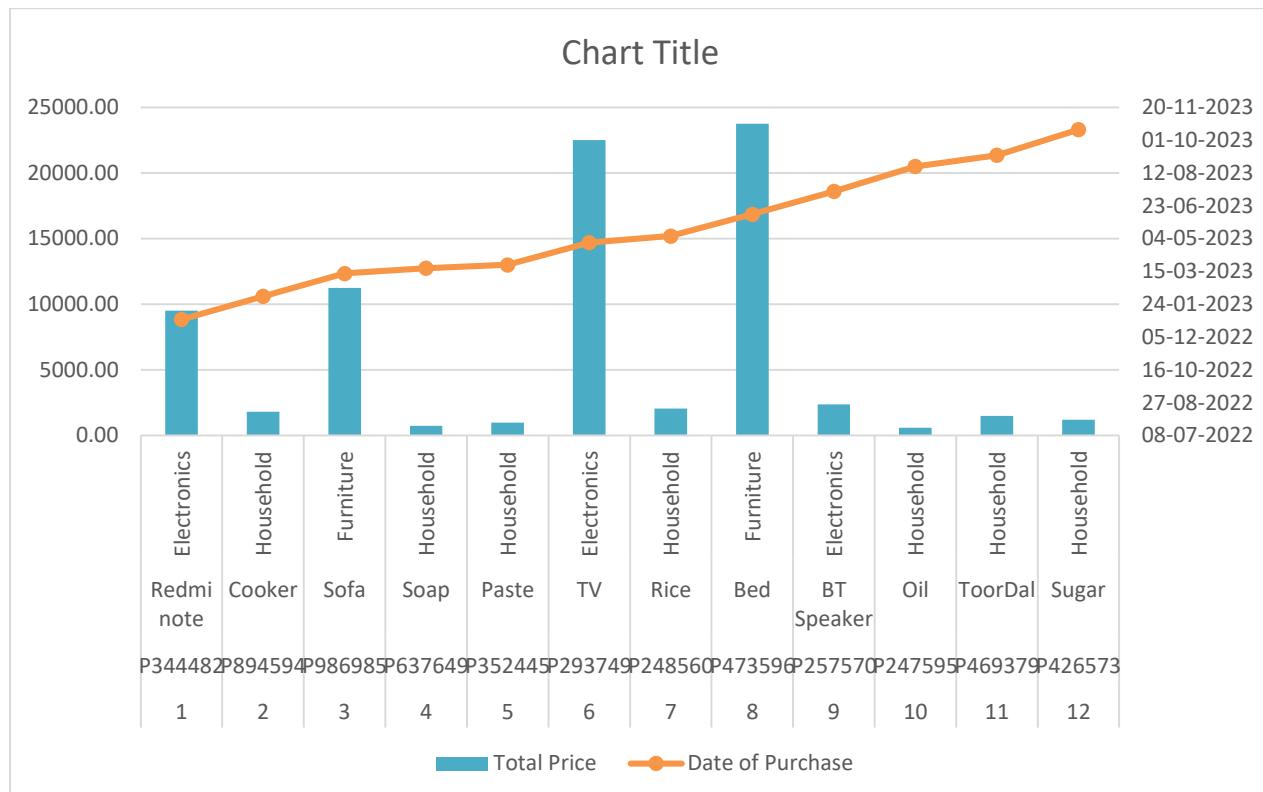
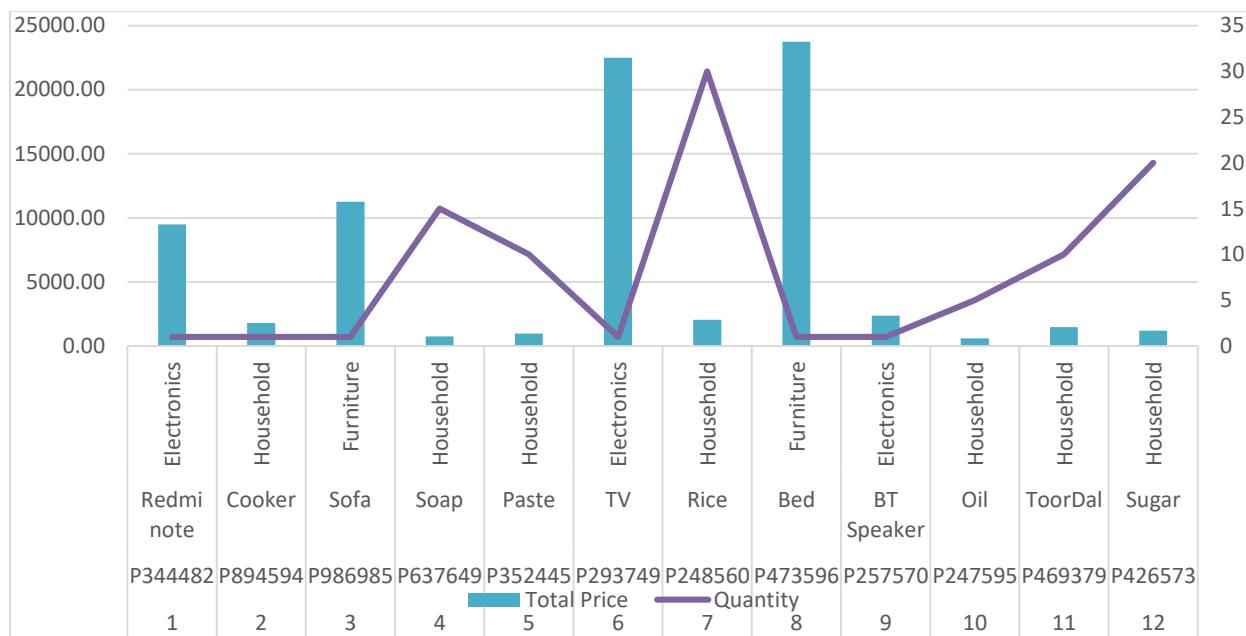




You can choose which series you want in Secondary Axis and also what chart type you need like Line or Bar etc.

Lets analyze Total Price and Quantity of the Products in a Combo Chart and Total Price and Date of Purchase of the Products in another Combo Chart.

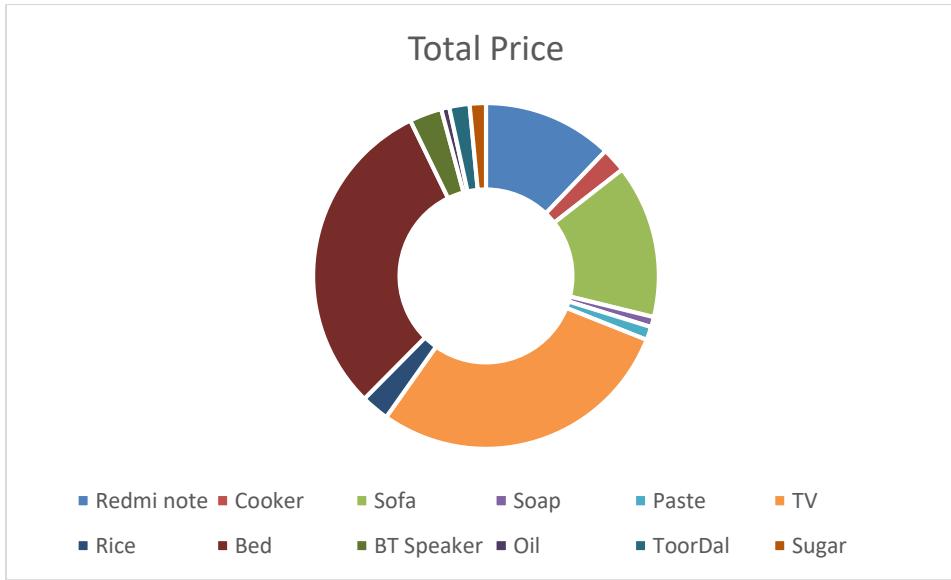
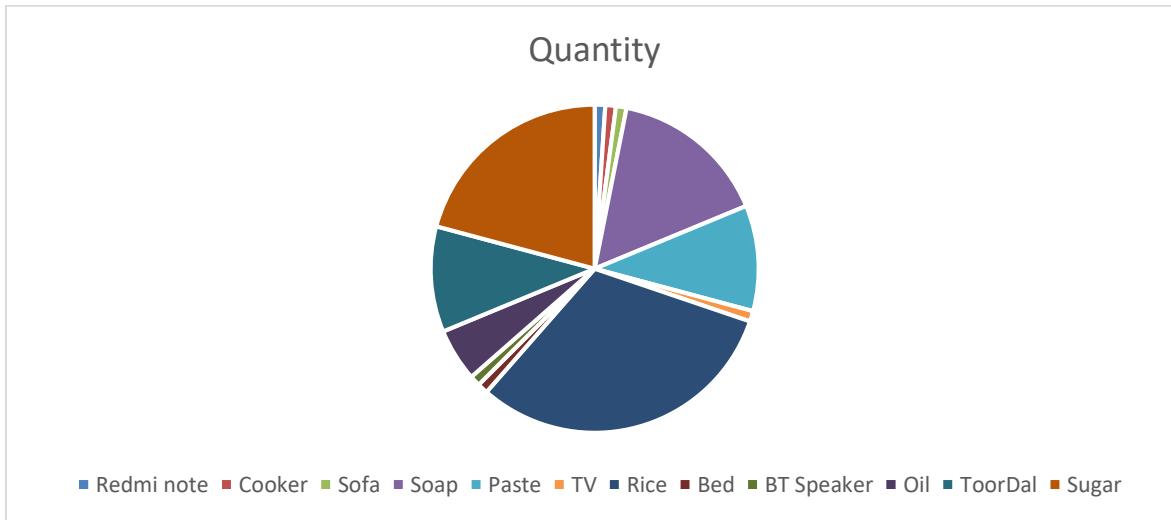
Output Chart looks like below:



Let's Analyze the Breakup of Quantity and Price using Pie Chart.

Output Chart looks like below:

You can visually see the breakup and if you hover the pointer above each piece of pie it will show you the numeric values.



Conclusion:

Creating an Inventory Management worksheet with product details, including codes, names, types, prices, and purchase dates, is a valuable tool for businesses and organizations. Using appropriate formulas, you can

calculate the cost of products after applying discounts, which provides clarity on your inventory's actual value. Additionally, generating charts allows you to visualize and analyze the data effectively.

Experiment No: 11

Aim:

Create worksheet on Sales analysis of Merchandise Store: data consisting of Order ID, Customer ID, Gender, age, date of order, month, online platform, Category of product, size, quantity, amount, shipping city and other details. Use of formula to segregate different categories and perform a comparative study using pivot tables and different sort of charts.

Procedure:

Step 1: Data Preparation

Step 2: Calculate required data using formula

Step 3: Create Different Pivot Table

Step 4: Analysis using Charts

Step 1: Data Preparation

- Open your Excel spreadsheet.

- Fill up details for Order ID, Customer ID, Gender, age, date of order, month, online platform, Category of product, size, quantity, amount, shipping city.
- Add other required columns to be calculated

S No	Order ID	Customer ID	Gender	Age	Date	Online Platform	Category	Size	MRP	Quantity	Amount	Shipping City
1	O482489	CU74936	Female	50	10-01-2023	Amazon	Saree	L	2000	2		Bangalore
2	O687799	CU90794	Male	34	15-02-2023	Flipkart	Shirt	M	500	3		Chennai

Step 2: Calculate required data using formula

Use the following formula to calculate all other required data

$$\text{Amount} = \text{MRP} * \text{Quantity}$$

Using the above you should be able to fill up the data required and final sheet looks like below

S No	Order ID	Customer ID	Gender	Age	Date	Online Platform	Category	Size	MRP	Quantity	Amount	Shipping City
1	O482489	CU74936	Female	50	10-01-2023	Amazon	Saree	L	2000	2	4000	Bangalore
2	O687799	CU90794	Male	34	15-02-2023	Flipkart	Shirt	M	500	3	1500	Chennai
3	O684349	CU23093	Male	22	23-03-2023	Mintra	Pant	S	800	1	800	Mumbai
4	O478989	CU90794	Female	70	26-04-2023	Amazon	Saree	L	1500	3	4500	Pune
5	O568498	CU25327	Male	46	18-05-2023	Flipkart	Tshirt	XL	650	5	3250	Delhi
6	O846677	CU45949	Male	12	04-06-2023	Mintra	Tshirt	S	450	6	2700	Bangalore
7	O145346	CU75096	Female	10	22-07-2023	Amazon	Frock	S	400	4	1600	Bangalore
8	O234277	CU26328	Female	43	27-08-2023	Flipkart	Saree	XL	1200	3	3600	Bangalore
9	O387349	CU35980	Female	25	30-09-2023	Mintra	Chudidhar	L	1600	2	3200	Chennai
10	O797440	CU89845	Male	32	01-10-2023	Amazon	TShirt	M	1000	1	1000	Mumbai
11	O787828	CU25374	Male	56	13-11-2023	Flipkart	Shirt	M	1100	6	6600	Pune
12	O478739	CU67054	Female	45	19-12-2023	Mintra	Saree	L	1400	4	5600	Chennai
13	O482482	CU74931	Female	22	10-01-2023	Amazon	Chudidhar	S	1300	4	5200	Mumbai
14	O687794	CU90792	Male	30	15-02-2023	Flipkart	TShirt	XL	1500	3	4500	Pune
15	O684344	CU23098	Male	27	23-03-2023	Mintra	Pant	XL	1600	4	6400	Chennai
16	O478986	CU90797	Female	60	26-04-2023	Amazon	Saree	L	900	5	4500	Delhi
17	O568491	CU25325	Male	42	18-05-2023	Flipkart	Shirt	L	1250	5	6250	Bangalore
18	O846673	CU45940	Male	8	04-06-2023	Mintra	Tshirt	S	800	3	2400	Chennai
19	O145345	CU75093	Female	16	22-07-2023	Amazon	Chudidhar	M	900	3	2700	Delhi
20	O234272	CU26322	Female	38	27-08-2023	Flipkart	Saree	L	1800	8	14400	Mumbai
21	O387341	CU35989	Female	26	30-09-2023	Mintra	Chudidhar	M	1700	5	8500	Bangalore
22	O797448	CU89841	Male	32	01-10-2023	Amazon	TShirt	M	750	4	3000	Pune
23	O787823	CU25378	Male	56	13-11-2023	Flipkart	Shirt	L	850	6	5100	Delhi
24	O478730	CU67057	Female	45	19-12-2023	Mintra	Saree	L	1300	3	3900	Mumbai

Step 3: Create Different Pivot Tables

A PivotTable is an interactive way to quickly summarize large amounts of data. You can use a PivotTable to analyze numerical data in detail and answer unanticipated questions about your data. A

PivotTable is especially designed for: Querying large amounts of data in many user-friendly ways.

You can create a pivot table by going to Insert column -> PivotTable -> From Table/Range

Below screen will be displayed, choose the data which needs to be added to pivot table and choose a New Worksheet and click OK.

S No	Order ID	Customer ID	Gender	Age	Date	Online Platform	Category	Size	MRP	Quantity	Amount	Shipping City
1	O482489	CU74936	Female	50	10-01-2023	Amazon	Saree	L	2000	2	4000	Bangalore
2	O687799	CU90794	Male	34	15-02-2023	Flipkart	Shirt	M	500	3	1500	Chennai
3	O684349	CU23093	Male	22	23-03-2023							Mumbai
4	O478989	CU90794	Female	70	26-04-2023							Chennai
5	O568498	CU25327	Male	46	18-05-2023							Delhi
6	O846677	CU45949	Male	12	04-06-2023							Bangalore
7	O145346	CU75096	Female	10	22-07-2023							Chennai
8	O234277	CU26328	Female	43	27-08-2023							Bangalore
9	O387349	CU35980	Female	25	30-09-2023							Jennai
10	O797440	CU89845	Male	32	01-10-2023							Mumbai
11	O787828	CU25374	Male	56	13-11-2023							Chennai
12	O478739	CU67054	Female	45	19-12-2023							Delhi
13	O482482	CU74931	Female	22	10-01-2024							Mumbai
14	O687794	CU90792	Male	30	15-02-2024							Chennai
15	O684344	CU23098	Male	27	23-03-2024							Jennai
16	O478986	CU90797	Female	60	26-04-2024							Delhi
17	O568491	CU25325	Male	42	18-05-2024	Flipkart	Shirt	L	1250	5	6250	Bangalore
18	O846673	CU45940	Male	8	04-06-2024	Mintra	Tshirt	S	800	3	2400	Chennai
19	O145345	CU75093	Female	16	22-07-2024	Amazon	Chudidhar	M	900	3	2700	Delhi
20	O234272	CU26322	Female	38	27-08-2024	Flipkart	Saree	L	1800	8	14400	Mumbai
21	O387341	CU35989	Female	26	30-09-2024	Mintra	Chudidhar	M	1700	5	8500	Bangalore
22	O797448	CU89841	Male	32	01-10-2024	Amazon	TShirt	M	750	4	3000	Pune
23	O787823	CU25378	Male	56	13-11-2024	Flipkart	Shirt	L	850	6	5100	Delhi
24	O478730	CU67057	Female	45	19-12-2024	Mintra	Saree	L	1300	3	3900	Mumbai

1. Pivot_CustomerInfo

Lets create a Pivot table with the Customer Information like Customer ID, Gender, Age, Category of merchandise and Quantity bought

The screenshot shows a Microsoft Excel spreadsheet titled "Merchandise SaleAnalysis". The PivotTable Fields pane on the right side is open, showing the following field mappings:

- Rows:** Customer ID, Gender, Age, Date, Online Platform, Category, Size, MRP.
- Columns:** None explicitly listed, but implied by the column headers in the table.
- Values:** Sum of Quantity.

The main table area contains data for various products (Chudidhar, Saree, Shirt, Tshirt, Frock, Pant) across different categories and sizes. The table has columns for Age, Chudidhar Total, Saree Total, Shirt Total, Tshirt Total, Frock Total, Pant Total, and Size. The rows show data for different customer IDs, gender, and age groups.

As shown in the above figure, we can choose what field can go to Row, Column, Value and Filter option which will determine what your Pivot table will show.

2. Pivot_Order_City

Let's create a Pivot table to Analyze the Order ID and Amount which was shipped to different cities and date of purchase

The screenshot shows a Microsoft Excel spreadsheet titled "Merchandise_SaleAnalysis". The PivotTable Fields pane on the right side lists fields such as Order ID, Date, Customer ID, Gender, Age, Online Platform, and Category. The PivotTable itself displays a summary of sales data by city, with columns for Date, Bangalore, Chennai, Delhi, Mumbai, Pune, and Grand Total. The data shows various order IDs and their corresponding amounts across different cities.

Step 4: Analysis using Charts

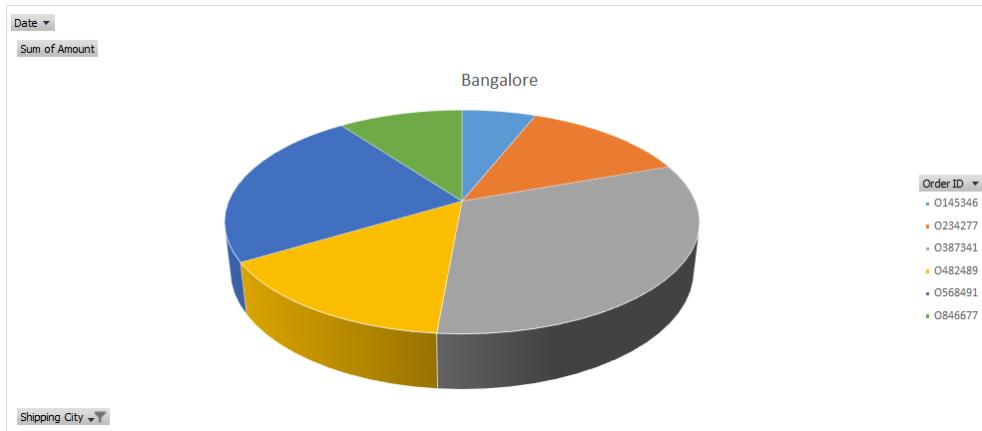
Now create a chart using the data from the Pivot table created above.

Lets choose the Pivot_Order_City and create a Pie Chart.

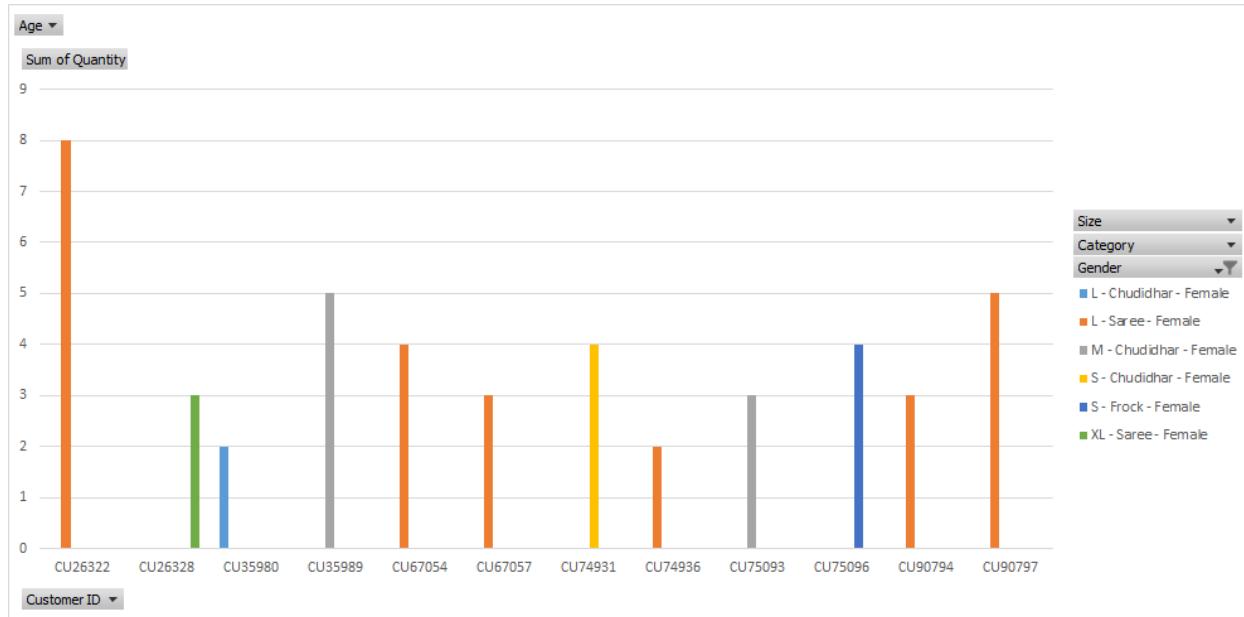
Can you spot the difference between regular chart and chart created from Pivot Table?

Yes, you will get option to filter different fields in the chart which will help you in analysis.

Below chart is filtered for Orders shipped to Bangalore City for all of this year.



Lets choose Pivot_CustomerInfo to create a bar chart



Above chart shows Customer ID filtered for Female customers with different category and size for all ages.

Conclusion:

These insights can inform our marketing and inventory strategies to better cater to our customers and optimize our operations. It is evident that data-driven decision-making is crucial for our continued success, and we will continue to monitor and analyze our sales data regularly to stay competitive in the market and meet our customer's needs effectively.

Experiment No: 12

Aim:

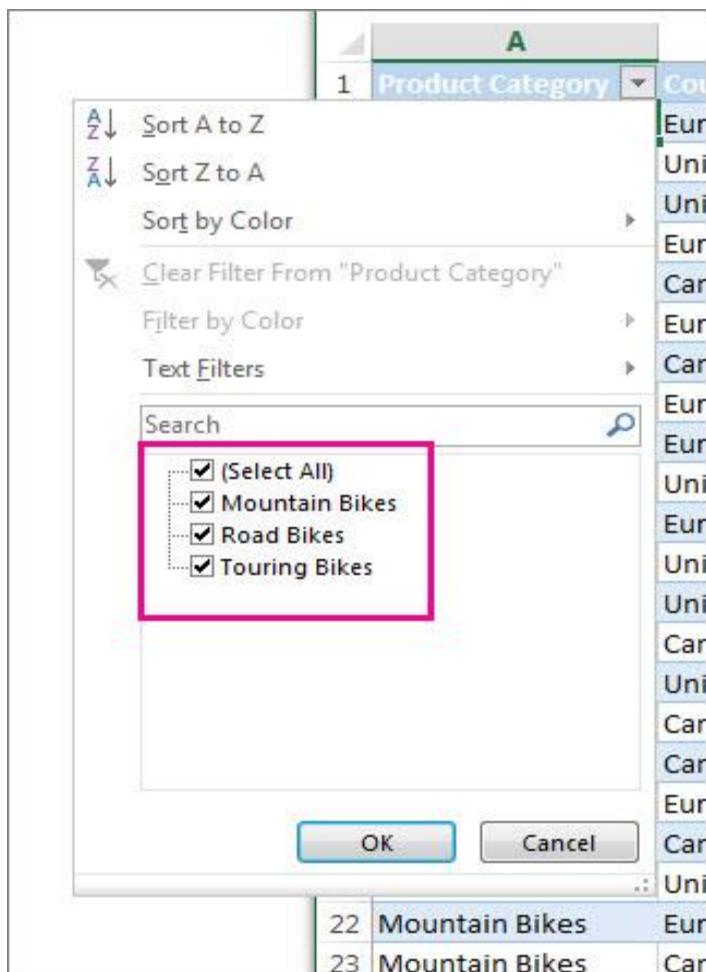
Generation of report & presentation using Auto filter & macro.

Procedure:

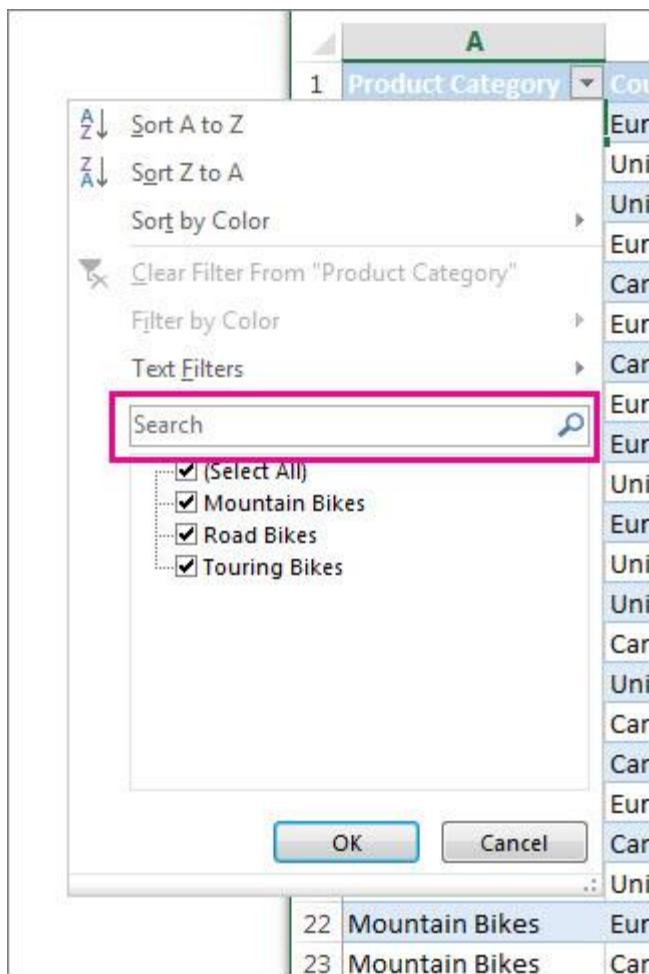
Use the AutoFilter feature to find, show, or hide values—in one or more columns of data. You can filter based on choices you make from a list, or search to find the data that you seek. When you filter data, entire rows will be hidden if the values in one or more columns don't meet the filtering criteria.

Follow these steps to apply an AutoFilter:

1. Select the data you want to filter.
2. Click **Data > Filter**.
3. Click the arrow  in the column header and decide if you want to choose specific values or search.
- 4. Choose specific values:** Uncheck (**Select All**) to clear all of the check boxes, and then check the boxes for the specific value(s) you want to see.



Search for values: In the **Search** box, type text or numbers that you seek.



Click **OK** to apply the filter.

```

PrivateSubGR()
DimnextrowAsLong
Sheets("Generate Report").Select
Sheets("Generate Report").Cells.ClearContents
Range("A1").Value="Name"
Range("B1").Value="ID"
Range("C1").Value="Product"
Range("D1").Value="Rev earned"
For x =1ToSheets.Count-1
Sheets(x).Range("A2:D50").Copy
nextrow=Sheets("Generate
Report").Range("A"&Rows.Count).End(xlUp).Offset(1,0).Row
    
```

```

Sheets("Generate Report").Cells(nextrow,1).PasteSpecial
Paste:=xlPasteValues
Next
Cells(1,5).Select
Application.CutCopyMode=False
Sheets("Generate Report").Range(Cells(1,1),
Cells(nextrow,4)).Columns.AutoFit
EndSub

```

The name of the **sales representatives**, their **Identification Number**, types of **Products**, and the **Revenue Earned** by the sales representatives are given in Columns **B**, **C**, **D**, and **E** respectively. We will generate reports using Macros in Excel. Let's say, we have two different datasets. We will generate a report using these two datasets.

	A	B	C	D	E
1					
2		Dataset 1			
3					
4	Sales Rep	ID	Product	Rev Earned	
5	John	1312001	Xiaomi	\$ 68,938.00	
6	David	1312002	OPPO	\$ 58,944.00	
7	Anny	1312003	Apple	\$ 60,006.00	
8	Vinchaint	1312004	Realme	\$ 62,591.00	
9	Roy	1312005	Xiaomi	\$ 64,764.00	
10	Joe	1312006	Blackberry	\$ 68,519.00	
11	Mark	1312007	OnePlus	\$ 57,021.00	
12	Dalton	1312008	OPPO	\$ 72,978.00	
13	Finch	1312009	Apple	\$ 77,922.00	
14	Emma	1312010	Realme	\$ 60,155.00	

	A	B	C	D	E
1					
2	Dataset 2				
3					
4	Sales Rep	ID	Product	Rev Earned	
5	Carl	1312101	Xiaomi	\$ 68,938.00	
6	Poe	1312102	OPPO	\$ 58,944.00	
7	Helen	1312103	Apple	\$ 60,006.00	
8	Vinchant	1312104	Realme	\$ 62,591.00	
9	Roy	1312105	Xiaomi	\$ 64,764.00	
10	Joe	1312106	Blackberry	\$ 68,519.00	
11	Mark	1312107	OnePlus	\$ 57,021.00	
12	Edgar	1312108	OPPO	\$ 72,978.00	
13	Finch	1312109	Apple	\$ 77,922.00	
14	Emma	1312110	Realme	\$ 60,155.00	

Thus the overview of Datasets 1 and 2 are created.

Conclusion

Macros in Excel play a pivotal role in automating tasks, making repetitive processes significantly more efficient. This automation not only saves time but also reduces the likelihood of errors that often occur during AutoFilter, on the other hand, simplifies the process of sorting and analyzing large datasets. This feature allows users to filter data based on specific criteria, providing an intuitive interface to navigate through extensive information effortlessly. Macros can be tailored to specific needs, offering users a high degree of customization.