Data Analytics with Excel		Semester	3
Course Code	**BCS358A**	*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 spread sheets, 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, 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.
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. Analyse 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 tables and different sort of charts.
12	Generation of report & presentation using Autofilter &macro.

Course outcomes (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 Outline and PivotTables.
- Use Consolidation to summarise and report results from multiple worksheets.
- Apply Macros and Autofilter to solve the given real world scenario.

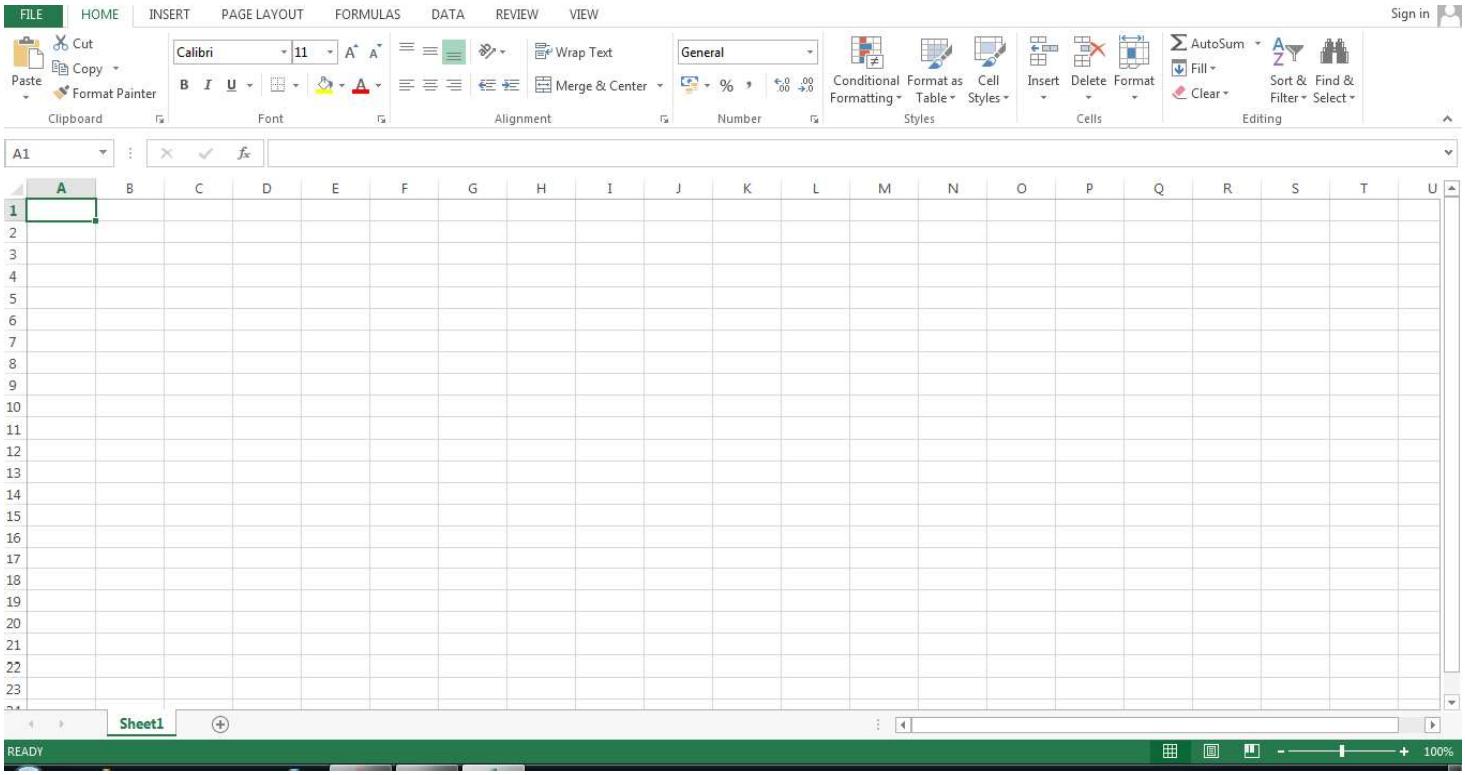
An Introduction to MS Excel

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 sparklines, 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, analysing 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
- Forecasting
- Automating Repetitive Tasks

Experiment No: 1

Aim:

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

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>=35andbut<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: Typing Student database in Excel2007**

Type the student database with the required fields starts fromA1 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: To find 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	466
3	Manikandan R	91	94	97	98	99	479
4	Kishore Pruthvi	90	91	94	93	96	464
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	

- ## 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										

- ## 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,"Distincti
on",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 the 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	First Class
3	Manikandan R	91	94	97	98	99	479	95.8	Pass	Distinction
4	Kishore Pruthvi	90	91	94	93	96	464	92.8	Pass	First Class
5	Lohan V	92	99	94	90	93	468	93.6	Pass	First Class
6	Meghanath	90	92	91	90	99	462	92.4	Pass	First Class
7	Manikanth	92	93	96	97	93	471	94.2	Pass	First Class
8	Rahul R	99	93	95	98	97	482	96.4	Pass	Distinction
9										

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	First Class
3	Manikandan R	91	94	97	98	99	479	95.8	Pass	Distinction
4	Kishore Pruthvi	90	91	94	93	96	464	92.8	Pass	First Class
5	Lohan V	92	99	94	90	93	468	93.6	Pass	First Class
6	Meghanath	90	92	91	90	99	462	92.4	Pass	First Class
7	Manikanth	92	93	96	97	93	471	94.2	Pass	First Class
8	Rahul R	99	93	95	98	97	482	96.4	Pass	Distinction

Experiment No: 2

Aim:

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

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."

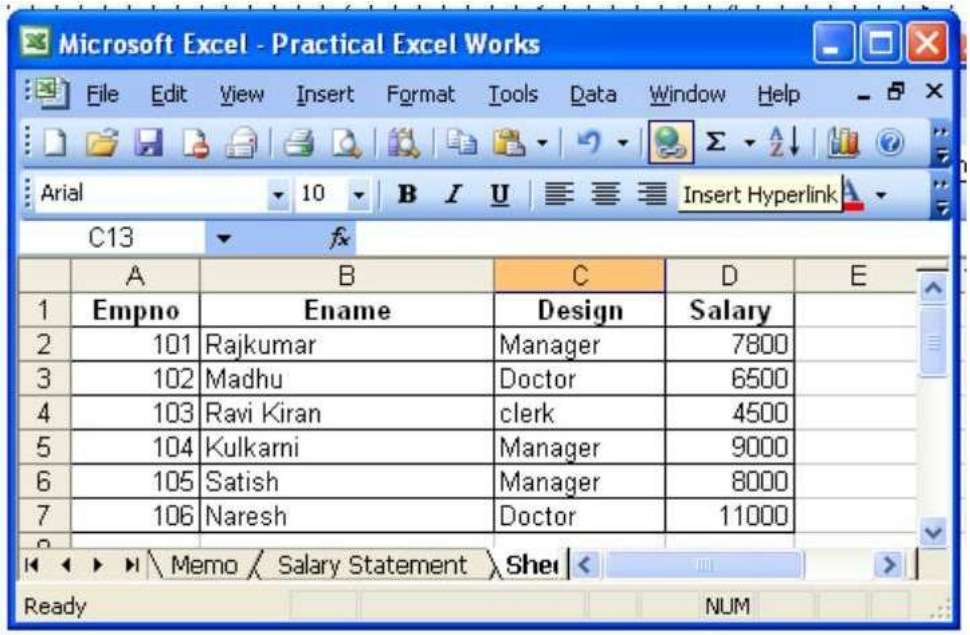
Complex Sorting:

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	B	C	D
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>=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

DA = C3*3%

HRA = C3*5%

GROSS = C3+D3+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 Basicpay, 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
1	BHARATH	12000
2	HANU	10000
3	MANJU	15000
4	RAMA	10000
5	SASH	11000
6	SITA	9000

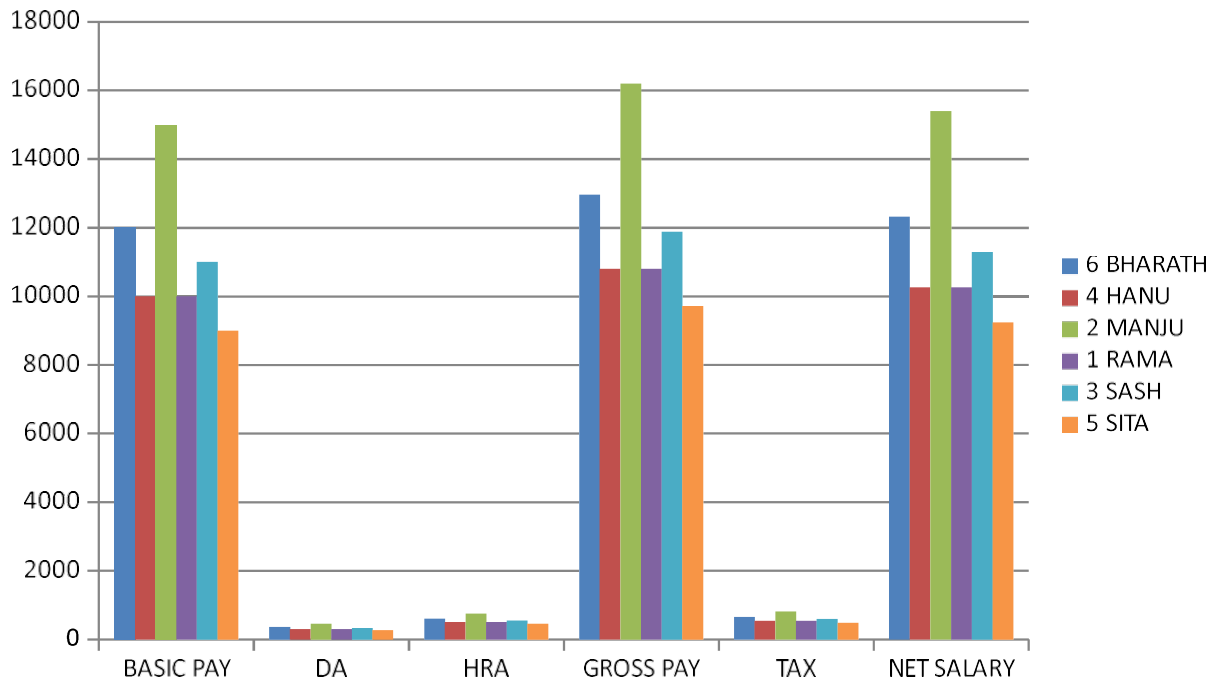
MAX (BASIC PAY)	15000
MIN (BASIC PAY)	9000
COUNT (BPAY>=10000)	5

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


18000
16000
14000
12000
10000
8000
6000
4000
2000
0
BASIC PAY
DA
HRA
GROSS PAY
TAX
NET SALARY
6 BHARATH
4 HANU
2 MANJU
1 RAMA
3 SASH
5 SITA

Experiment No: 3

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

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

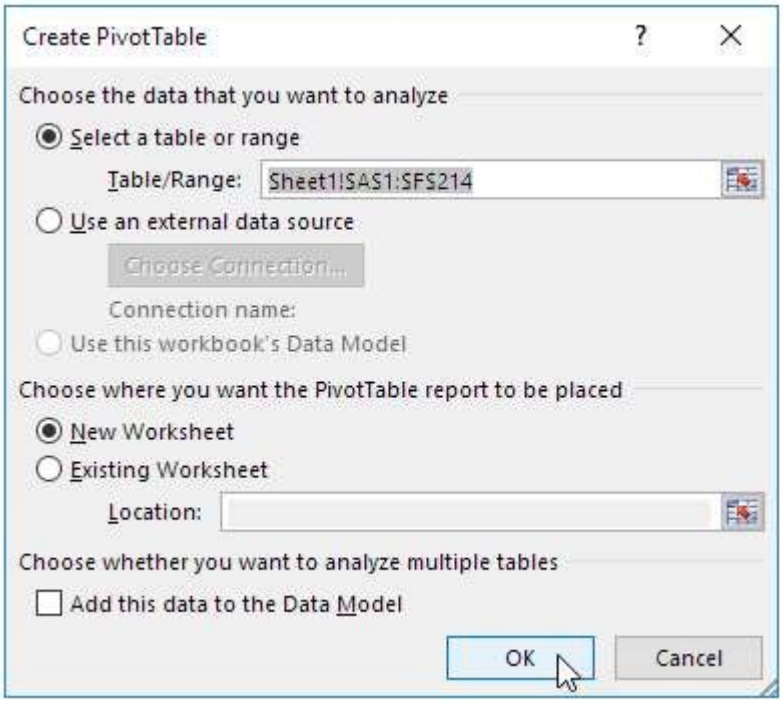
To insert a pivot table, execute the following steps.

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.



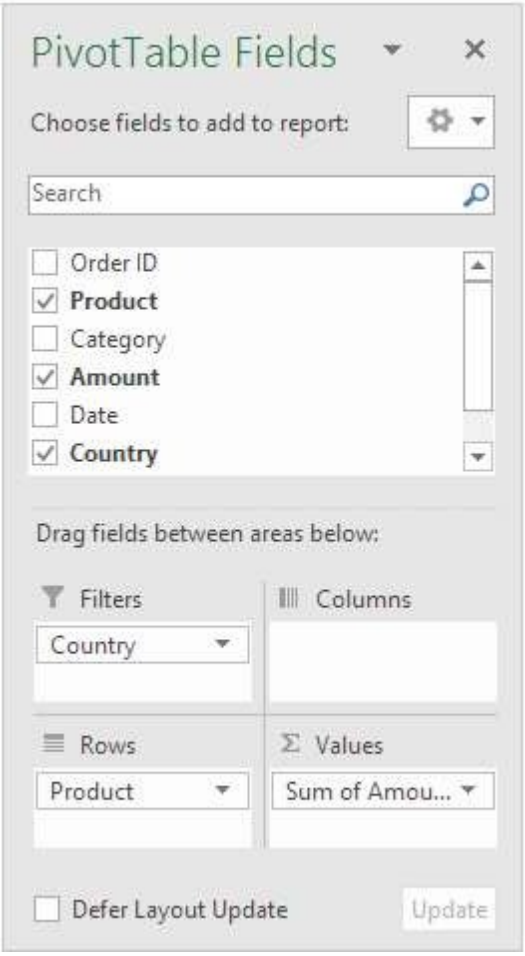
Drag fields

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.

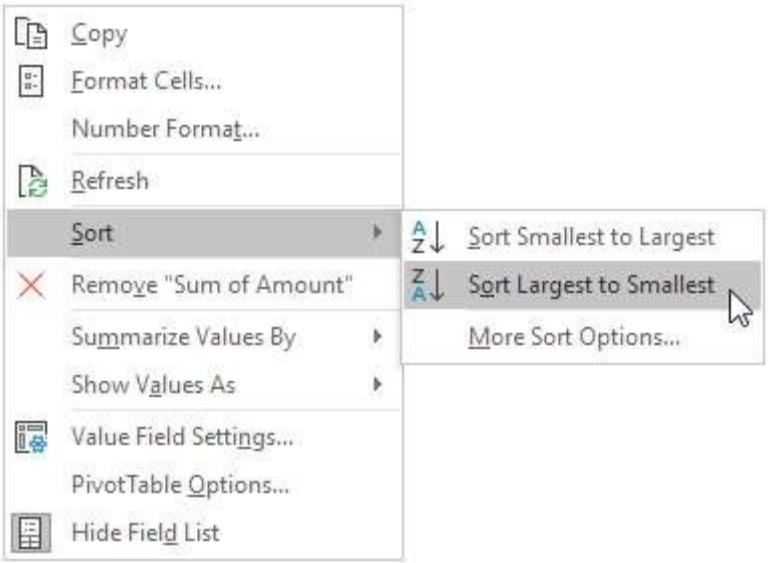
	A	B	C
1	Country	(All)	
2			
3	**Row Labels**	**Sum of Amount**	
4	Apple	191257	
5	Banana	340295	
6	Beans	57281	
7	Broccoli	142439	
8	Carrots	136945	
9	Mango	57079	
10	Orange	104438	
11	**Grand Total**	**1029734**	
12			

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)	
2			
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			

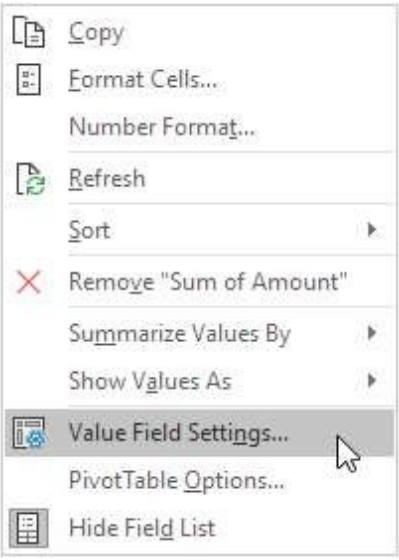
Note: you can use the standard filter (triangle next to Row Labels) to only show the amounts of specific products.

Change Summary Calculation

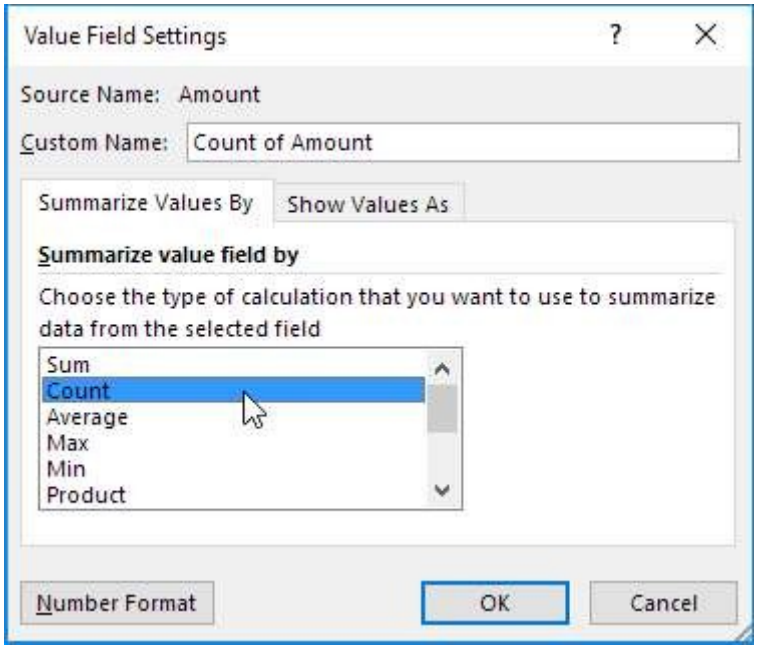
By default, Excel summarizes your data by either summing or counting the items. To change the type of calculation that you want to use, execute the following steps.

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

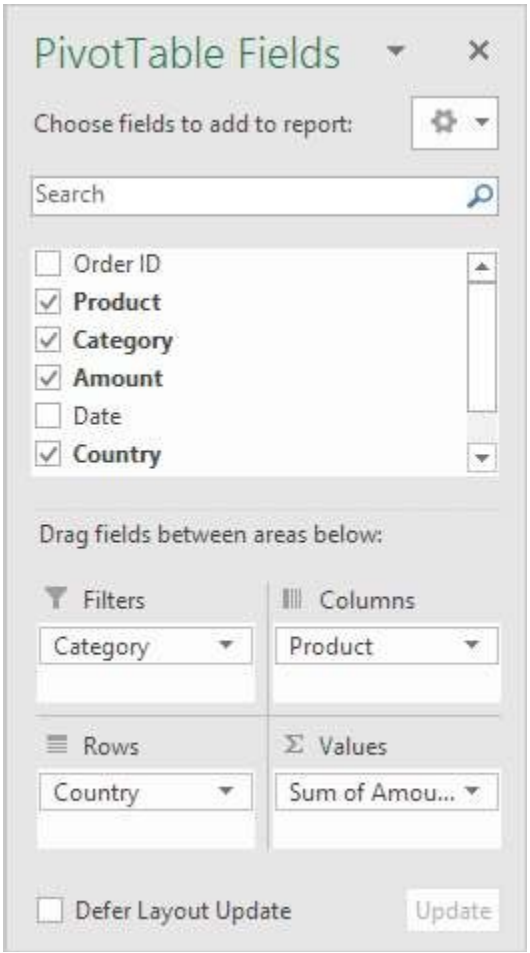
If you drag a field to the Rows area and Columns area, you can create a two-dimensional pivot table. First, insert a pivot table. Next, to get the total amount exported to each country, of each product, drag the following fields to the different areas.

1. Country field to the Rows area.

2. Product field to the Columns area.

3. Amount field to the Values area.

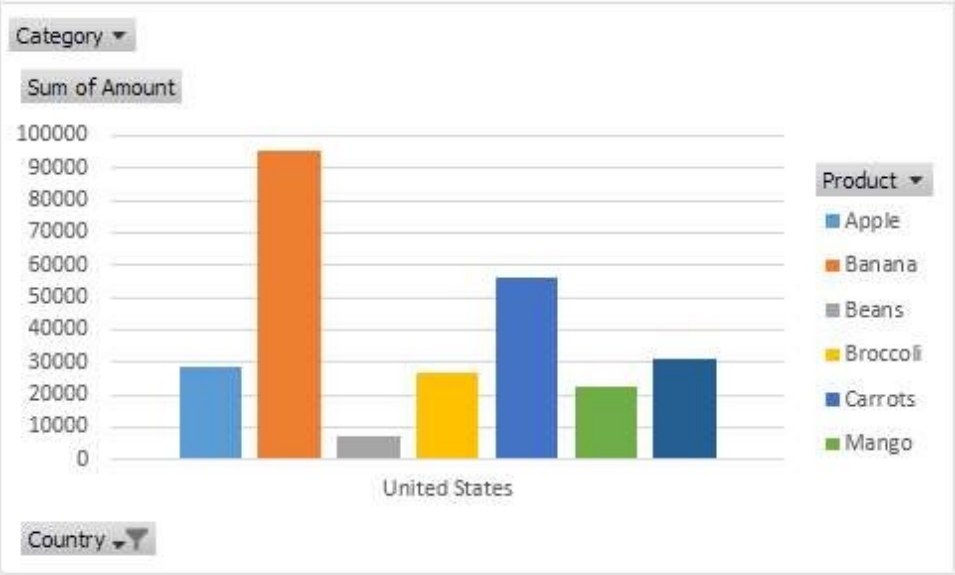
4. Category field to the Filters area.



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 **DATE**

CONDITIONAL FORMATTING-1

OBJECTIVES

To use Microsoft EXCEL to:

- Understand the conditional formatting
- Highlight cells rules (Greater Than, Less Than, Equal To, Between, Duplicate, Unique etc.)
- Use Top/Bottom rules (Top 10, Bottom 10, Above Average, Below Average etc.)
- Data Bars, Color Scales and Icon Sets
- Clear rules

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

INTRODUCTION

What is Conditional Formatting

- Conditional formatting in Excel is a feature that allows users to automatically format cells or ranges of cells based on specified conditions or criteria.
- This dynamic formatting feature is incredibly useful for data analysis, visualization, and making your spreadsheets more informative)

S.No	Aspect	Normal Formatting	Conditional Formatting
1	Definition	Static formatting applied manually to cells or ranges	Dynamic formatting applied automatically based on conditions
2	Usage	Suitable for consistent visual appearance of data	Valuable for data analysis, visualization, and trends
3	Purpose	Used for general aesthetic formatting and styling	Used for highlighting data, identifying trends, and analysis
4	Location	Applies to individual cells or selected cell ranges	Typically applies to a range of cells based on criteria
5	Change Control	Requires manual updates when formatting needs change.	Automatically adjusts as data and conditions change
6	Application	Typically applied uniformly to selected cells	Selective formatting based on specified criteria
7	Example	Adjusting font size, cell colors, borders, etc.	Highlighting cells greater than a certain value, color scales, etc.

5.1 HIGHLIGHT CELL RULES PROCEDURE:

Q. Highlight the cells which have SSLC marks greater than 85% in Red, less than 75% in Yellow and between 75 to 85% in Green.

1. Select the data range (SSLC marks under column 'H') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Greater Than > Enter the value '85' > Ok
2. Select the data range (SSLC marks under column 'H') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Less Than > Enter the value '75' > Click the drop down button > select Yellow color > Ok
3. Select the data range (SSLC marks under column 'H') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Between > Enter the values '75' & '85' > Click the drop down button > select Green color > Ok
4. Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet.

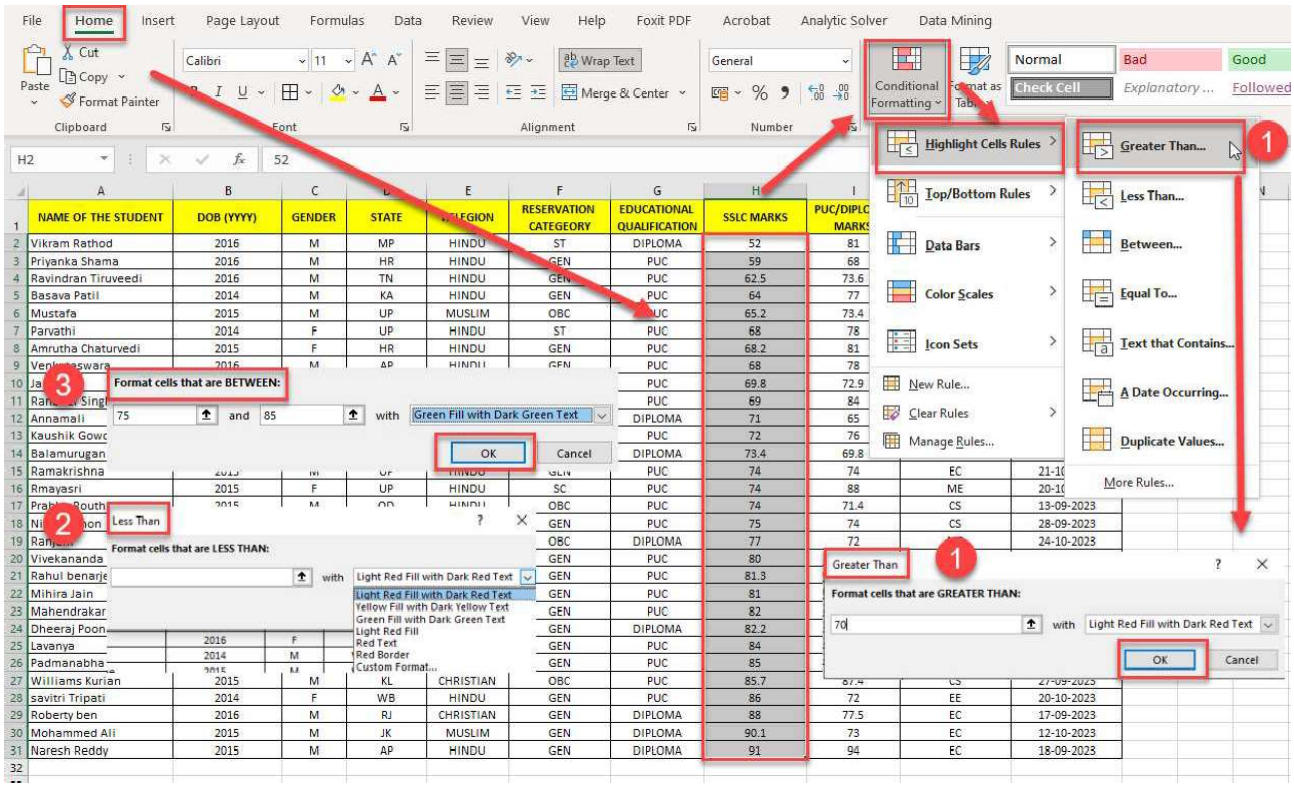


Figure. 5.1: Conditional Formatting-Cell Rules

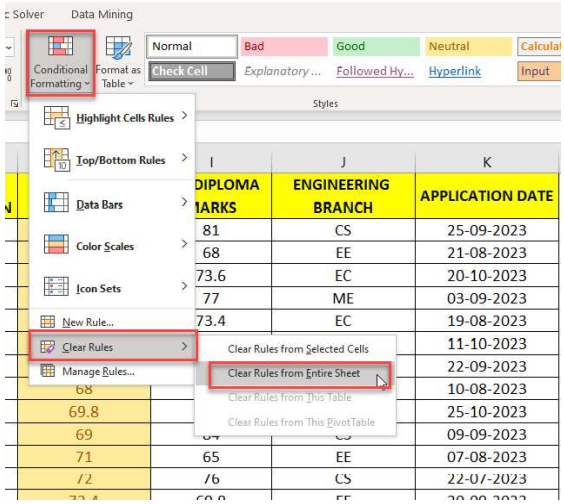


Figure. 5.2: Conditional Formatting-Clear Rules

Q. Highlight the cells whose DOB is equal to 2016.

- Select the data range (SSLC marks under column 'B') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Equal To > Enter the value '2016' > Ok

Q. Highlight the cells whose educational qualification is "DIPLOMA".

- Select the data range (SSLC marks under column 'G') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Text That Contains > Enter 'DIPLOMA' > Ok

Q. Highlight the duplicate cells in the column "STATE".

- Select the data range (SSLC marks under column 'D') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Duplicate Values > Select 'Duplicate' > Select Color from the drop-down menu > Ok

Q. Highlight the unique cells in the column "STATE".

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (SSLC marks under column 'D') > Click on 'Conditional Formatting' button in Style group > Highlight Cell Rules > Duplicate Values > Select 'Unique' > Select Color from the drop-down menu > Ok

5.2 TOP/BOTTOM RULES PROCEDURE:

Q. Highlight the Top 5 values of PUC/DIPLOMA marks.

- Select the data range (SSLC marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Top/Bottom Rules > Top 10 Items > Enter the value '5' > Select Color from the drop-down menu > Ok

Q. Highlight the Bottom 5 values of PUC/DIPLOMA marks.

- Select the data range (SSLC marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Top/Bottom Rules > Bottom 10 Items > Enter the value '5' > Select Color from the drop-down menu > Ok

Q. Highlight the Top 20% values of PUC/DIPLOMA marks.

- Select the data range (SSLC marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Top/Bottom Rules > Top 10% > Enter the value '20' > Select Color from the drop-down menu > Ok

Q. Highlight the cells which are above the average value of the selected data range (PUC/DIPLOMA marks).

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (SSLC marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Top/Bottom Rules > Above Average > Select Color from the drop-down menu > Ok

Q. Highlight the cells which are below the average value of the selected data range (PUC/DIPLOMA marks).

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (PUC/Diploma marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Top/Bottom Rules > Below Average > Select Color from the drop-down menu > Ok

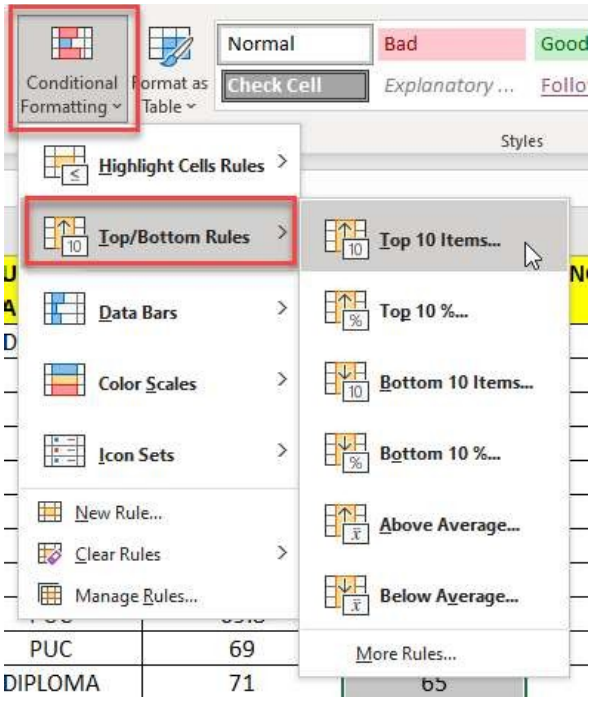


Figure. 5.3: Conditional Formatting-Top/Bottom Rules

5.3 DATA BARS PROCEDURE:

- Data bars in Excel are a type of conditional formatting that allows users to visually represent data in a range of cells using horizontal bars.
- The length of each bar corresponds to the value in the cell, providing a quick and intuitive way to compare data within the selected range
- Data bars are particularly useful for visualizing data trends and making quick comparisons within a dataset. They are commonly used in dashboards, reports, and data analysis to highlight patterns, identify outliers, and emphasize the relative significance of data points.

Q. Represent the selected data range (PUC/Diploma marks) using Data Bars

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (PUC/Diploma marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Data Bars > Select any color pattern from the Gradient Fill or Solid Fill

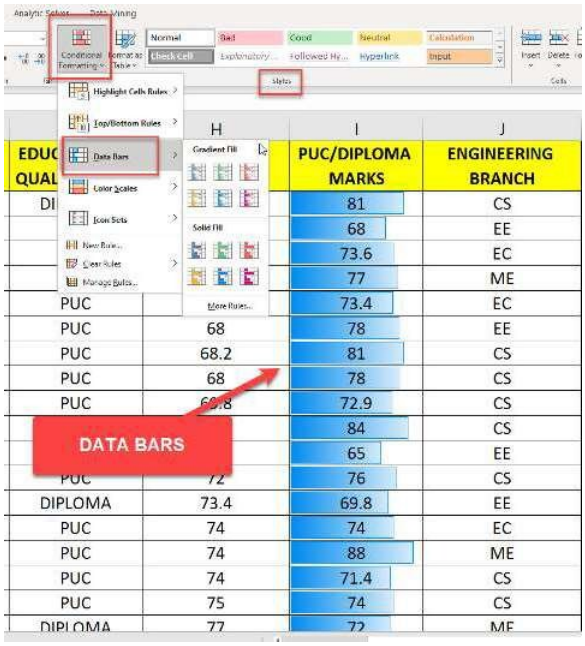


Figure. 5.4: Data Bars

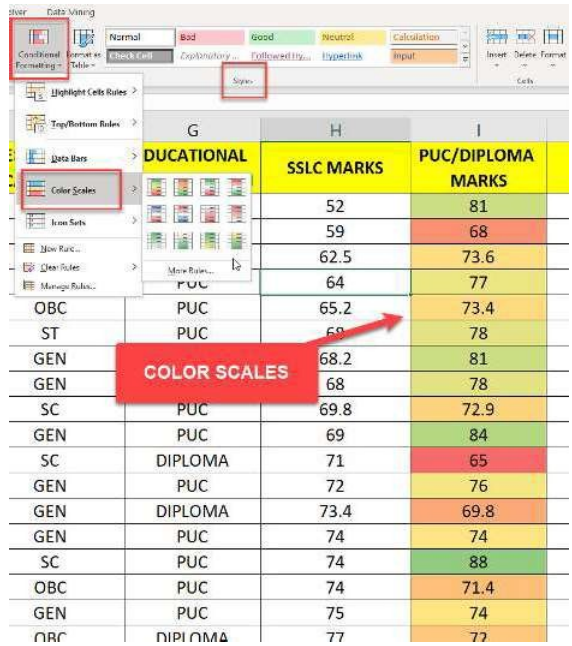


Figure. 5.5: Color Scales

5.4 COLOR SCALES PROCEDURE:

- Color scales in Excel are a form of conditional formatting that allows users to visually represent data using a range of colors.
- Color scales are useful for quickly identifying high and low values within a dataset, making it easier to spot trends and patterns. Color scales are particularly useful for heatmaps, data analysis, and reporting.
- Color scales can also be used in combination with other conditional formatting options, such as data bars and icon sets, to create comprehensive data visualizations that highlight important information in the spreadsheets

Q. Represent the selected data range (PUC/Diploma marks) using Color Scales

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (PUC/Diploma marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Color Scales > Select any color pattern

5.5 ICON SETS PROCEDURE:

- Icon Sets in Excel are a type of conditional formatting that allows users to represent data using icons or symbols based on specified conditions.
- These icons can provide a quick visual way to convey information and highlight data patterns.

- Icon Sets are commonly used for tasks like data visualization, performance tracking, and progress reporting

Q. Represent the selected data range (PUC/Diploma marks) using Icon Sets

- Go to 'Home' tab in Excel ribbon > Click on 'Conditional Formatting' button in Style group > Clear Rules > Clear Rules from Entire Sheet
- Select the data range (PUC/Diploma marks under column 'I') > Click on 'Conditional Formatting' button in Style group > Icon Sets > Select any color pattern

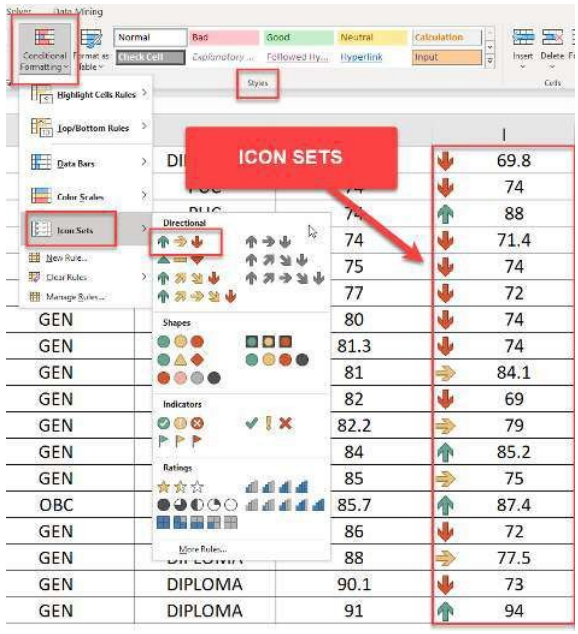


Figure. 5.6: Icon Sets

SUMMARY:

Upon completing this exercise, you will have the ability to perform conditional formatting, highlighting the data and using of Data Bars, Color scales and Icon Sets.

EXPERIMENT NO – 5 **DATE**

CONDITIONAL FORMATTING-2

OBJECTIVES

To use Microsoft EXCEL to:

- Understand the various formatting options
- Learn the Parsing
- Know how to highlight the data during data analysis

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

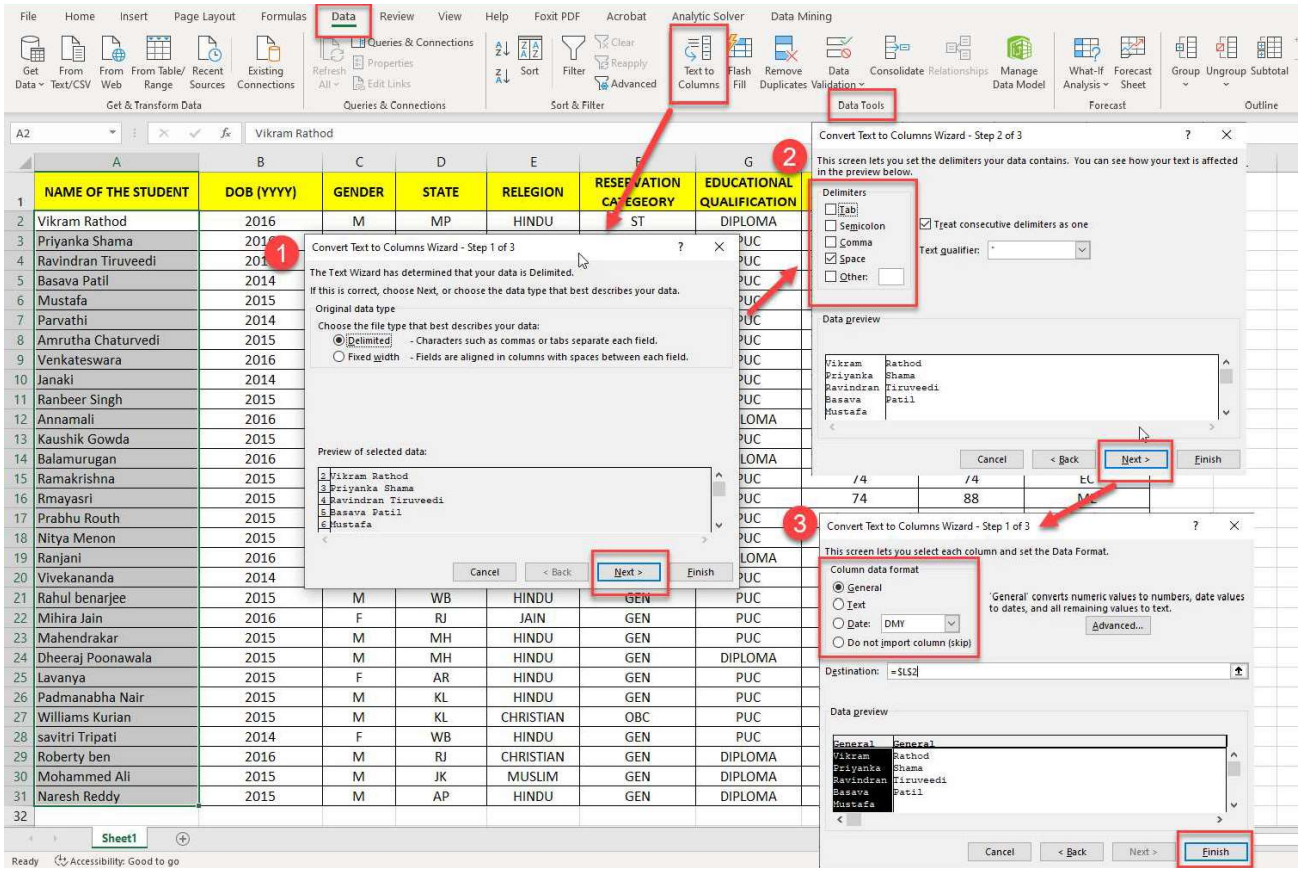
INTRODUCTION

What is Parsing of data?

- Parsing refers to the process of extracting specific parts or elements from a text string or value and placing them in separate cells.
- This can be particularly useful when user has data that is not well-structured, and user needs to break it down into more manageable components.

Parsing of data by Test to 'Columns' option

- Open Exercise#4 spread sheet.
- Select the data range (Names of the Student under column 'A')
- Go to 'Data' tab from Excel ribbon > select 'Text to Columns' from 'Data Tools' group
- Select 'Delimited' > Next > Select 'Space' under delimiter (based on the data set, select the delimiter. You can see how the data will be separated in the 'Data Preview').
- Under Column Data Format select 'General' option > Under 'Destination' select the cells from where you want to place the separated data > Finish



SUMMARY:

Upon completing this exercise, you will have the ability to use parsing option to extract specific parts or elements from a text string and placing them in separate cells.

EXPERIMENT NO – 6 **DATE**

WHAT-IF ANALYSIS

OBJECTIVES

To use Microsoft EXCEL to:

- Understand the What-If Analysis
- Use Scenario Manager
- Use Goal Seeking
- Creating a Data Table, Charts and Graphs

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

INTRODUCTION

What is "What-If Analysis"

- What-If analysis in Excel is a powerful tool that allows users to explore different scenarios and make predictions or decisions based on changing input values.
- This feature is particularly useful for financial modeling, budgeting, and any situation where user want to understand how changes in certain variables affect the results.
- There are three primary methods for performing What-If analysis in Excel and they are (i) Scenario Manager, (ii) Goal Seek, (iii) Data Table
- **Scenario Manager** allows you to create and manage different scenarios for your data. You can define different sets of input values and compare the results of each scenario. This is useful when you have multiple variables and want to compare various combinations of values.
- **Goal Seek** helps you find the input value needed to achieve a specific goal or result. You specify a target value, a formula, and an input cell, and Excel iteratively determines the required input value.
- **One Variable Data Table** helps user to see how changing one input value impacts a single formula or result. You set up a table with different values for the input variable, and Excel calculates the results for each value.
- **Two Variable Data Table** helps user to explore how two input variables affect a single result. You set up a table with different values for both variables, and Excel calculates and displays the results in a grid format.

Case Study:

A pen manufacturing and sales data has given. Develop a sales strategy to maximize the profits for the different sales quantity using What-If analysis.

Note: Import the data sheet 'Excecise#7'.

Scenario Manager

Q. prepare a summary report how the profits of a pen sales vary with the Quantity sold 100, 200, 300, 400 and 500 using What-If Analysis Scenario manager option? **Note:** Import the data sheet 'Excecise#7'.

1. Open Exercise#7 sheet > Go to 'Data' tab > from 'Forecast' group > Click drop down menu 'What-If Analysis' > Scenario Manager > Add > Enter Scenario Name as 'Qty 200' > Enter Changing Cells as 'C5' (or) select the respective cell by using mouse > Enter Comment as 'When Qty is 200' > Ok > Enter Value as '200' > Ok
2. Now scenario for 'Qty 200' is created. Similarly create multiple scenarios for the 300, 400 and 500.
3. Now from the Scenario Manager you can check different scenarios variable and their target values automatically.
4. Once the multiple scenarios are created generate a scenario summary for the given dataset by Data Tab > What-If Analysis > Scenario Manager > Summary > Select Report types as 'Scenario Summary' > Select Result Cell as 'C10' (target value) > Ok

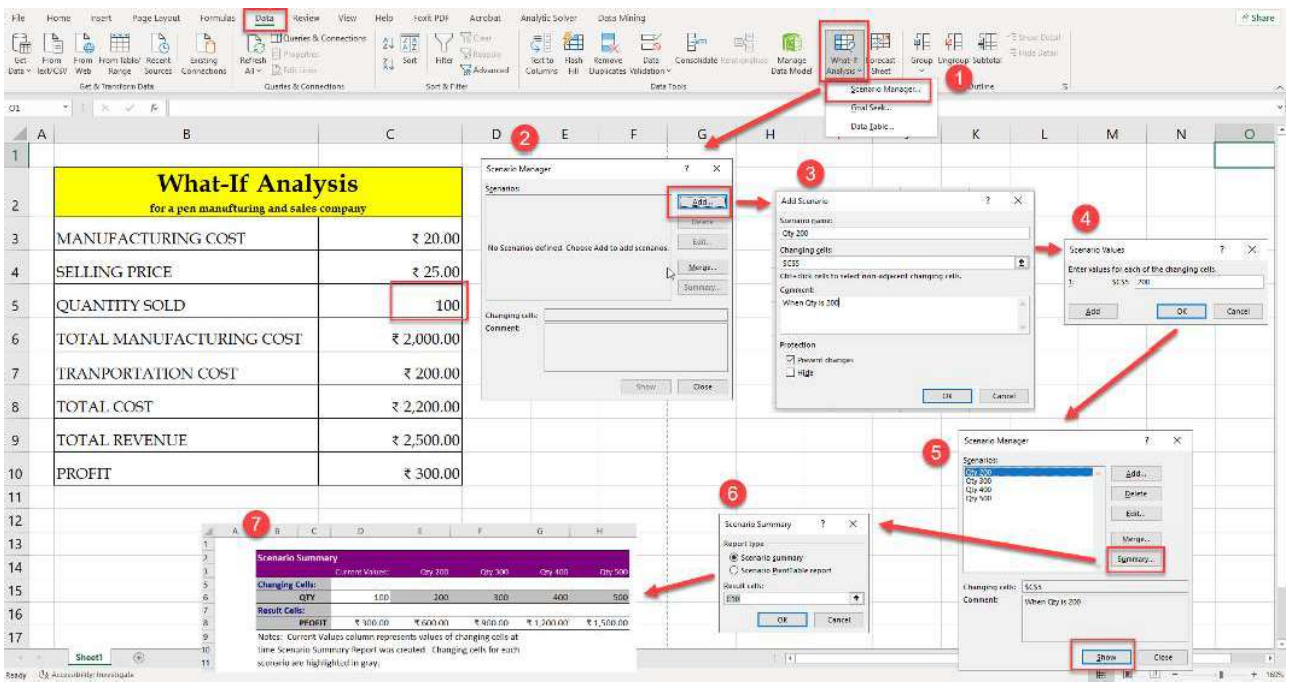


Figure. 7.1: Scenario Manager

Goal Seek

Q. Determine the pen quantity to be sold to get the profit of ₹. 500 using What-If Analysis Goal Seek option? **Note:** Import the data sheet 'Excecise#7'.

1. Open Exercise#7 sheet > Go to 'Data' tab > from 'Forecast' group click drop down menu 'What-If Analysis' > Goal Seek > Enter Set Cell as 'C10' > Enter To Value as '500' > Enter By Change Cell as 'C5' > Ok

2. Now the Excel will perform calculations and display the values of carriable value (C5) and the target value (C10) in the data
3. You can change the 'C5' cell value to a integer by Select Cell 'C5' > Home tab > Numbers Group > Decrease Decimal > now it will show the answer as '167'.

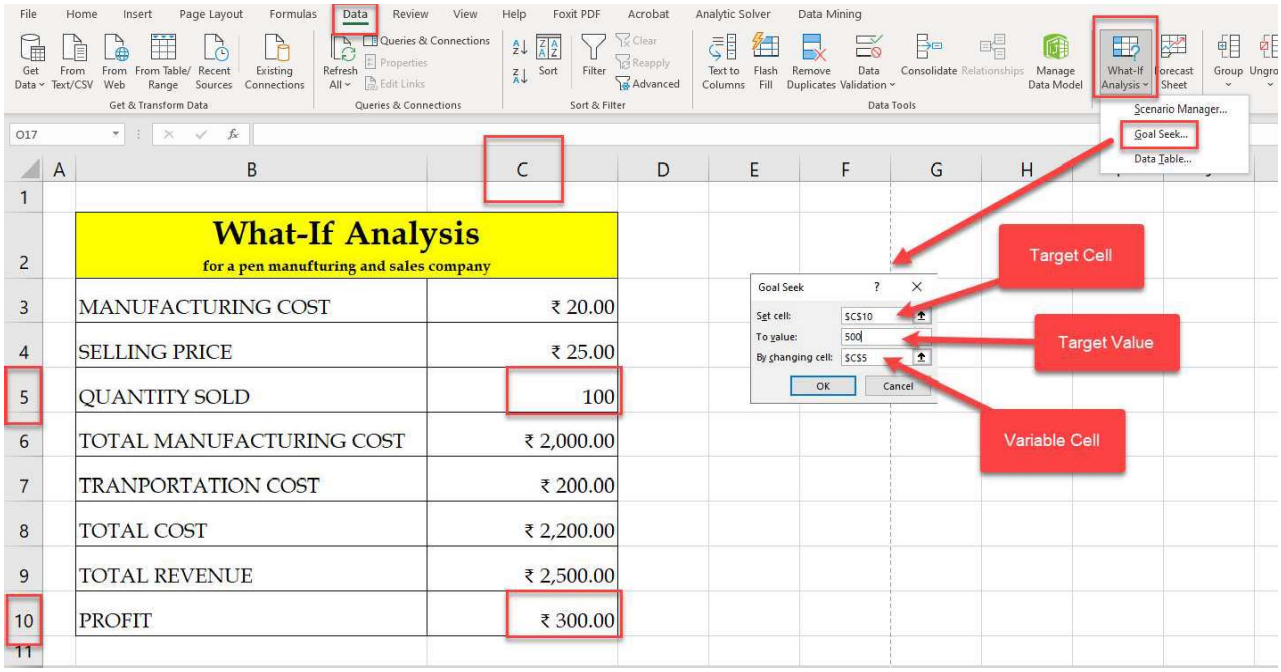
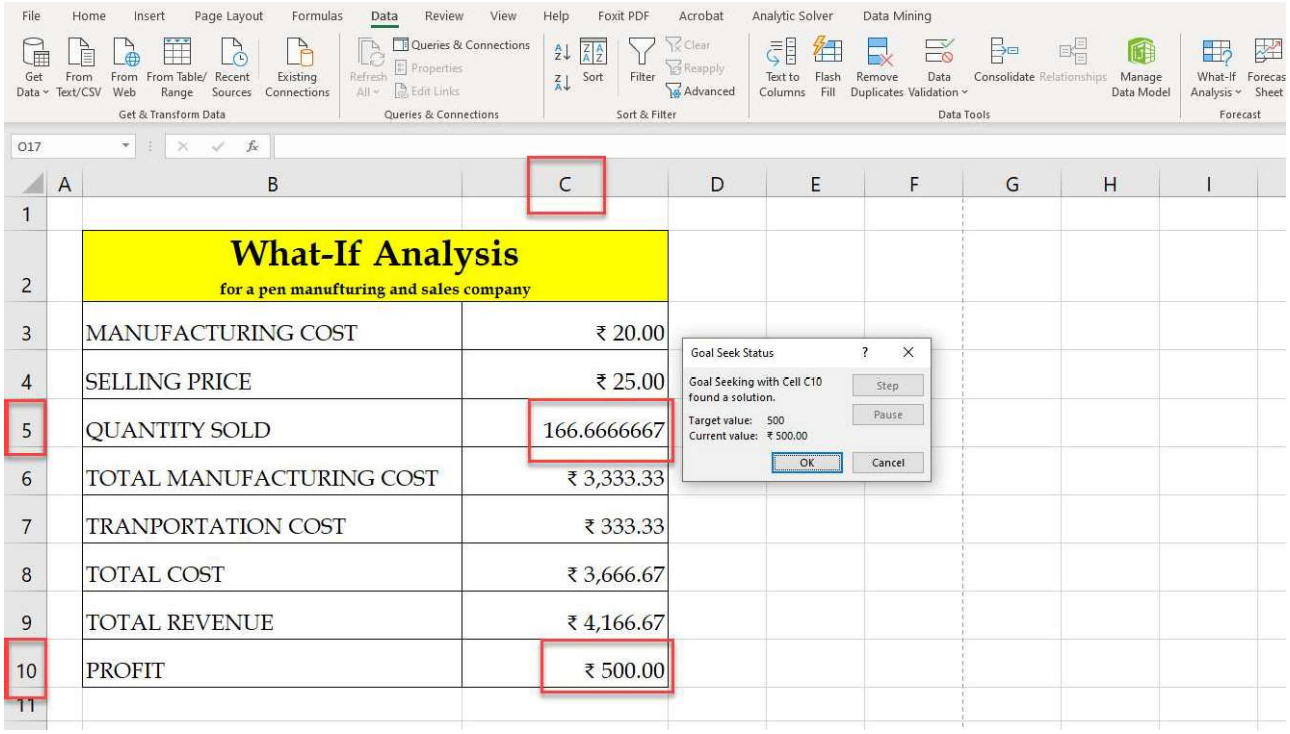


Figure. 7.2: Goal Seek Options



What-If Analysis for a pen manufturing and sales company	
MANUFACTURING COST	₹ 20.00
SELLING PRICE	₹ 25.00
QUANTITY SOLD	166.6666667
TOTAL MANUFACTURING COST	₹ 3,333.33
TRANPORTATION COST	₹ 333.33
TOTAL COST	₹ 3,666.67
TOTAL REVENUE	₹ 4,166.67
PROFIT	₹ 500.00

Figure. 7.3: Goal Seek Result Status

Data Table

Q. Develop a data table to compare the profits against different quantity sold (100, 200, 300, 400, 500, 600 700 and 800) using What-If Data Table option? **Note:** Import the data sheet 'Excecise#7'.

1. Open Exercise#7 sheet > At any random cell, type 'QTY' and PROFIT'.
2. Under QTY enter '100' and PROFIT enter '=C10'
3. Under QTY enter the different values of Quantity Sold '200, 300, 400, 500, 600, 700 and 800'
4. Select the table which has created and Go to 'Data' tab > from 'Forecast' group click drop down menu 'What-If Analysis' > Data Table > for column input cell select enter 'C5' or select by mouse > Ok

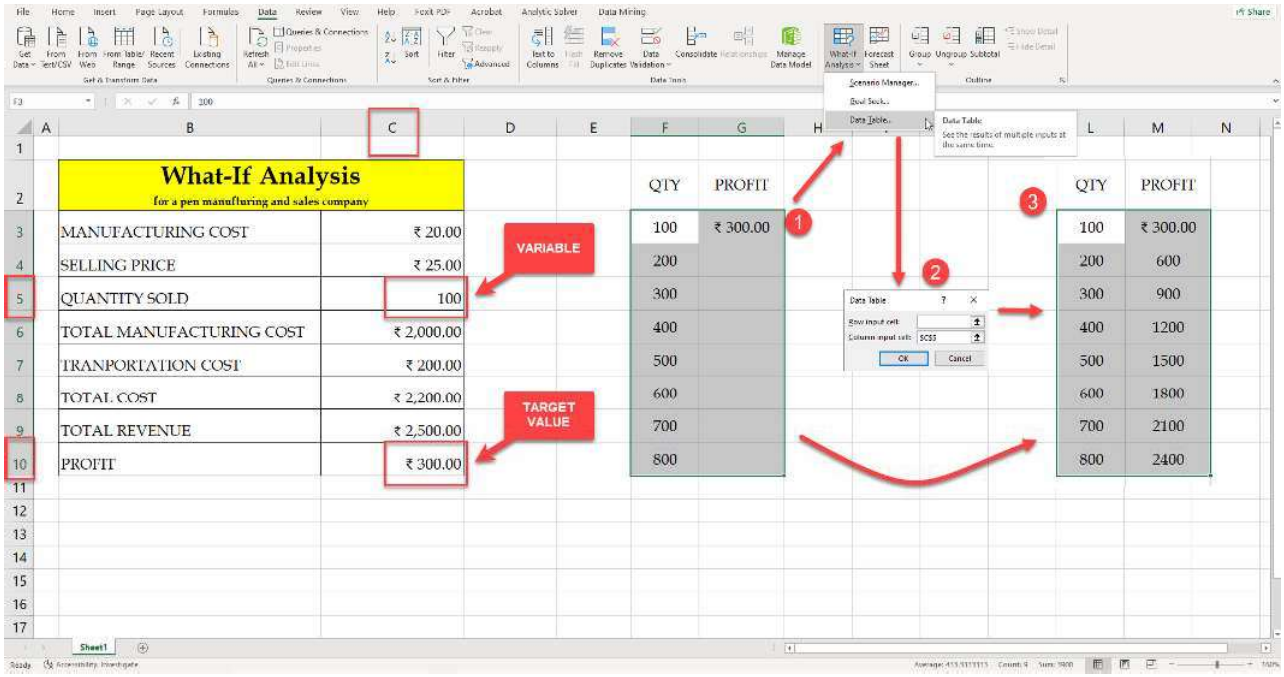


Figure. 7.4: Data Table options

SUMMARY:

Upon completing this exercise, you will have the ability to use What-If analysis for the real-world problems to improve the sales or efficiency of a process.

EXPERIMENT NO – 7 **DATE**

CLEANING DATA

OBJECTIVES

To use Microsoft EXCEL to:

- Understand the cleaning of data functions
- Learn text functions UPPER, LOWER, TRIM, CONTATINATE, REPLACE, SUBSTITUTE etc.
- Learn DATEVALUE, DATEADD, DATEDIF, TIMEVALUE functions

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

PROCEDURE:

Excel offers several aggregate functions that allow you to perform calculations on sets of data, summarizing and analyzing it effectively. These functions are useful for tasks such as finding sums, averages, maximum or minimum values, and more

UPPER: It is a text function that converts all the letters in a text string to uppercase. This can be helpful when you want to standardize the case of text or make text consistent throughout your spreadsheet.

Syntax: = UPPER(text) (or) =UPPER(A1) (A1- is cell number)

LOWER: It is a text function that converts all the letters in a text string to lowercase. This can be helpful when you want to standardize the case of text or make text consistent throughout your spreadsheet.

Syntax: = LOWER(text) (or) =LOWER(A1) (A1- is cell number)

PROPER: It is a text function that capitalizes the first letter of each word in a text string while converting all other letters to lowercase. This can be helpful when you want to standardize the case of text or make text consistent throughout your spreadsheet.

Syntax: =PROPER(text) (or) =PROPER(A1) (A1- is cell number)

TRIM: This function allows user to remove any leading, trailing, or extra spaces within a text string. It is particularly useful when dealing with text imported from external sources or when you want to ensure that your data is properly cleaned and formatted.

Syntax: = TRIM(text) (or) =TRIM(A1) (A1- is cell number)

CONCATENATE: This function is used to combine, or concatenate, two or more text strings into a single text string. This function can be helpful when you want to join text from different cells or add specific characters or spaces between text elements.

Syntax-1: =CONCATENATE(text1, text2, ...) (or) =CONCATENATE(A1, B1, C1...) //combining without space between words

Syntax-2: = "Text-1"& "Text-2" (or) == "A1"& "B1" //combining without space between words

Syntax-3: =CONCATENATE(text1, " ", text2) (or)=CONCATENATE(A1, " ", B1) //combining with space between words

LEN: It returns the number of characters in a text string.

Syntax: =LEN(text) (or) =LEN(A1) (A1- is cell number)

REPLACE: It replaces part of a text string with another text string.

Syntax: =REPLACE(A1, start_num,num_chars,new_text) (A1- is cell number)

* start_num = position of character from where the replace should happen

num_chars = number of characters to replace

new_text = text string in quotes

SUBSTITUTE: It is a text function that allows you to replace occurrences of a specified substring (text) within a larger text string with a different substring.

Syntax: = SUBSTITUTE(A1, old_text, new_text, instance_num) (A1- is cell number)

* old_text = The text you want to replace

new_text = The text you want to replace old_text with

instance_num = Specifies which occurrence of old_text to replace. If omitted, all occurrences are replaced. This is optional.

DATEVALUE: It is used to convert a text string representing a date into a serial number that Excel recognizes as a date. This function can be helpful when you have dates stored as text, and you need to perform date-related calculations or formatting.

Syntax: =DATEVALUE(date_text) (or) =DATEVALUE(A1)

The date format can be converted right-click, choose "Format Cells," and then select the date format you prefer.

DATEDIF: is used to calculate the difference between two dates and express the result in various date units, such as days, months, or years. This function may not appear in the function dropdown. However, user can still use it by typing the formula manually.

Syntax: =DATEDIF(start_date, end_date, unit)

* start_date: This is the start date from which you want to calculate the difference.

end_date: This is the end date up to which you want to calculate the difference.

unit: This is a code that represents the time unit for the result. It can be "d" for days, "m" for months, or "y" for years, among others.

TIMEVALUE: It is used to convert a text representation of a time into a serial number that Excel recognizes as a time. This is particularly useful when user has time data stored as text and you want to perform time-related calculations or formatting.

Syntax: =TIMEVALUE(time_text) (or) =TIMEVALUE(A1)

* time_text is the text string that represents the time you want to convert

FREQUENCTLY USED DATA & TIME FUNCTIONS:

TODAY(): Returns the current date.

NOW(): Returns the current date and time.

DATE(year, month, day): Creates a date based on the provided year, month, and day.

TIME(hour, minute, second): Creates a time value based on the provided hour, minute, and second.

YEAR(date): Returns the year of a date.

MONTH(date): Returns the month of a date (1 to 12).

DAY(date): Returns the day of the month (1 to 31).

HOUR(time): Returns the hour of a time.

MINUTE(time): Returns the minute of a time.

SECOND(time): Returns the second of a time.

SUMMARY:

Upon completing this exercise, you will have the skill to clean the data containing text, numbers, date etc.

EXPERIMENT NO – 8 **DATE**

WORKSHEET CREATION-1 (Employee Data)

OBJECTIVES

Working with multiple sheets is essential for efficiently managing and analyzing data in a spreadsheet. It enables you to keep your work organized and present your findings effectively in reports and presentations.

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

PROCEDURE

Creating a worksheet with the specified fields and performing calculations using appropriate formulas is a common task in spreadsheet applications like Microsoft Excel or Google Sheets. Here's a step-by-step guide to set up such a worksheet, calculate values, create a chart, and generate a report:

Step 1: Create the Worksheet

1. Open your preferred spreadsheet application (e.g., Microsoft Excel or Google Sheets).

2. Create the following column headers in the first row of your worksheet: Empno, Ename, Basic Pay(BP), Travelling Allowance(TA), Dearness Allowance(DA), House Rent Allowance(HRA), Income Tax(IT), Provident Fund(PF), Net Pay(NP).

Step 2: Input Data

3. Enter employee data in rows below the headers. For each employee, fill in Empno, Ename, BP, TA, DA, HRA, IT, and PF.

Step 3: Calculate Net Pay

4. In the "Net Pay(NP)" column, use the following formula to calculate the net pay for each employee:

Net Pay(NP) = (BP + TA + DA + HRA) - (IT + PF)

Enter this formula in the first cell under "Net Pay(NP)" and drag the fill handle (a small square at the bottom right corner of the cell) to apply the formula to all employees.

5. Select the data in the "Ename" and "Net Pay(NP)" columns. This data will be used to create a chart showing employee names and their corresponding net pay.

6. Go to the "Insert" tab (in Excel) or "Chart" (in Google Sheets) and choose the type of chart you prefer. A "Column" or "Bar" chart is typically suitable for this scenario.

7. Customize the chart as needed. You can add titles, axis labels, and other formatting options.

Step 5: Generate a Report

8. Create a new sheet in the workbook and title it "Report."

9. In the "Report" sheet, summarize the data using appropriate headings and text. For example, you can include sections like "Employee Salary Summary" and "Chart Analysis."

10. Write a brief analysis of the data, discussing key findings, trends, or insights. For instance, you can mention the highest and lowest net pay, the average net pay, or any noteworthy patterns you observe in the chart.

11. Insert the chart you created in the "Chart Analysis" section.

12. You can use functions like AVERAGE, MAX, MIN, and COUNT to calculate summary statistics for the Net Pay column in the "Report" sheet.

13. Format the report sheet to make it visually appealing and easy to read.

Step 6: Save and Share

14. Save your workbook with a descriptive name.

15. Share the report with relevant stakeholders, such as your team or management.

EXPERIMENT NO – 9 **DATE**

WORKING WITH MULTIPLE SHEETS

OBJECTIVES

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.

EQUIPMENT

3. Computer or Laptop
4. Microsoft EXCEL

PROCEDURE

1. **Creating and Renaming Sheets**:

- In Excel: Right-click on a sheet tab at the bottom of the window and select "Insert" to add a new sheet. To rename a sheet, double-click on its tab and type the new name.

- In Google Sheets: Click the "+" button at the bottom left to add a new sheet. To rename a sheet, right-click on its tab and select "Rename."

2. **Navigating Between Sheets**:

- In Excel: Simply click on the sheet tab at the bottom of the window to switch between sheets.

- In Google Sheets: Click on the sheet tab at the bottom of the window to switch between sheets.

3. **Copying and Moving Data**:

- To copy data from one sheet to another, select the cells you want to copy, copy them (Ctrl+C or Command+C), go to the destination sheet, and paste (Ctrl+V or Command+V).

- To move data, cut it (Ctrl+X or Command+X) and paste it in the target sheet.

4. **Linking Data**:

- You can create links to cells or data in one sheet from another. This is helpful for creating summary sheets or cross-referencing data. In Excel, use the "=" formula to reference data in another sheet (e.g., '=Sheet2!A1').

5. **Grouping and Ungrouping Sheets**:

- In Excel, you can group sheets by selecting multiple sheet tabs while holding down the Ctrl key. Right-click and choose "Group." This allows you to make changes to multiple sheets simultaneously. To ungroup, right-click and select "Ungroup Sheets."

- Google Sheets doesn't have native grouping of sheets, but you can use the built-in filter feature to show or hide specific sheets.

6. **Consolidating Data**:

- Use functions like VLOOKUP, HLOOKUP, or INDEX/MATCH to consolidate data from multiple sheets into a summary sheet. This is useful for creating comprehensive reports.

7. **Protecting and Hiding Sheets**:

- You can protect sheets with a password to prevent unauthorized access or editing. In Excel, right-click the sheet tab, choose "Protect Sheet," and set a password. You can also hide sheets to keep them out of view but still accessible through the "Format" menu.

8. **Using 3D Formulas**:

- In Excel, you can use 3D formulas to calculate data across multiple sheets. For example, to sum the same cell in multiple sheets, you can use the formula '=SUM(Sheet1:Sheet3!A1)'.

9. **Creating Pivot Tables and Charts**:

- Pivot tables and charts can analyze data from multiple sheets collectively, allowing you to create powerful visualizations and summaries.

10. **Printing Multiple Sheets**:

- To print multiple sheets, select the sheets you want to print by holding Ctrl and clicking their tabs, then go to the print settings and choose "Print Active Sheets" or "Print Selection.".

EXPERIMENT NO – 10 **DATE**

WORKSHEET CREATION-2 (Inventory Management)

OBJECTIVES

Creating a worksheet for inventory management is essential for tracking and analyzing product data. Here's a step-by-step guide on how to set up the worksheet, perform calculations, create a chart, and generate a report

EQUIPMENTs

1. Computer or Laptop
2. Microsoft EXCEL

PROCEDURE:

Step 1: Create the Worksheet

1. Open your preferred spreadsheet application (e.g., Microsoft Excel or Google Sheets).

2. Create the following column headers in the first row of your worksheet: Product code, Product name, Product type, MRP, Discount (%), Cost after Discount, Date of purchase.

Step 2: Input Data

3. Enter product data in rows below the headers. Fill in the details for each product, including Product code, Product name, Product type, MRP, Discount (%), and Date of purchase.

Step 3: Calculate Cost after Discount

4. In the "Cost after Discount" column, use the following formula to calculate the cost of each product after applying the discount:

Cost after Discount = MRP - (MRP * (Discount % / 100))

Enter this formula in the first cell under "Cost after Discount" and drag the fill handle to apply the formula to all products.

Step 4: Create a Chart

5. Select the data in the "Product type" and "Cost after Discount" columns. This data will be used to create a chart showing product types and their corresponding costs after discounts.

6. Go to the "Insert" tab (in Excel) or "Chart" (in Google Sheets) and choose the type of chart you prefer. A "Bar" or "Pie" chart can be suitable for this scenario, depending on the nature of your data.

7. Customize the chart as needed. Add titles, axis labels, and other formatting options.

Step 5: Generate a Report

8. Create a new sheet in the workbook and title it "Report."

9. In the "Report" sheet, summarize the data using appropriate headings and text. For example, include sections like "Inventory Summary" and "Chart Analysis."

10. Write a brief analysis of the data, discussing key findings, trends, or insights. Mention any notable product types, the total cost after discounts, or other observations.

11. You can use functions like SUM, AVERAGE, MAX, MIN, and COUNT to calculate summary statistics for the "Cost after Discount" column in the "Report" sheet.

12. Format the report sheet to make it visually appealing and easy to read.

Step 6: Save and Share

13. Save your workbook with a descriptive name.

14. Share the report with relevant stakeholders, such as your team or management.

By following these steps, you can create an inventory management worksheet, calculate values, generate a chart, and report the data in a structured and visually appealing manner. This approach is commonly used for managing and analyzing inventory data in business and retail settings

EXPERIMENT NO – 11 **DATE**

WORKSHEET CREATION-3 (Sales Analysis of a Store)

OBJECTIVES

Creating a sales analysis worksheet for a merchandise store involves organizing and analyzing a wide range of data. Here's a step-by-step guide on how to set up the worksheet, perform data segmentation, create pivot tables, and use different types of charts for comparative analysis

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

PROCEDURE:

Step 1: Create the Worksheet

1. Open your preferred spreadsheet application (e.g., Microsoft Excel or Google Sheets).

2. Create columns for the following fields: Order ID, Customer ID, Gender, Age, Date of Order, Month, Online Platform, Category of Product, Size, Quantity, Amount, Shipping City, and any other relevant details.

Step 2: Input Data

3. Enter sales data in rows below the headers. Include details for each sale, such as Order ID, Customer ID, and so on.

Step 3: Data Segmentation

4. Use Excel's or Google Sheets' filtering or sorting tools to segment the data based on different criteria. For example, you can sort data by "Category of Product" to group products by category.

Step 4: Create Pivot Tables

5. Select the data and create pivot tables for in-depth analysis. Here's an example of pivot table usage:

- Create a pivot table to show total sales by "Category of Product" and "Online Platform."

- Create another pivot table to show the average age of customers by "Gender" and "Category of Product."

Step 5: Create Charts

6. Use pivot tables or the segmented data to create various types of charts for comparative analysis:

- Create a bar chart to compare total sales by product category.

- Create a pie chart to show the distribution of sales by gender.
- Create a line chart to analyze sales trends over different months.
- Create a scatter plot to visualize the relationship between age and spending.

Step 6: Generate a Report

7. Create a new sheet in the workbook and title it "Sales Analysis Report."

8. Summarize the data, insights, and findings based on the charts and pivot tables. Explain trends, differences, and noteworthy patterns.

9. Use charts and visual representations to support your findings. For example, include the pie chart showing the gender distribution of sales and explain the significance.

10. Provide actionable recommendations or suggestions based on the analysis. For example, if a particular category of products is performing exceptionally well, suggest focusing marketing efforts on that category.

Step 7: Save and Share

11. Save your workbook with a descriptive name.

12. Share the report with relevant stakeholders, such as the merchandise store's management or marketing team.

By following these steps, you can create a comprehensive sales analysis worksheet for a merchandise store, analyze data using pivot tables and charts, and generate a report that provides valuable insights and recommendations for improving sales and marketing strategies. This approach is commonly used in retail and merchandising to optimize business operations

EXPERIMENT NO – 12 **DATE**

GENERATION OF REPORTS AND PRESENTATION

OBJECTIVES

Creating a report and presentation using auto filter and macros is a powerful way to analyze and present data in a structured and automated manner. Below is a step-by-step guide on how to generate a report and presentation using these tools

EQUIPMENT

1. Computer or Laptop
2. Microsoft EXCEL

PROCEDURE

Step 1: Prepare Your Data

1. Open your spreadsheet application (e.g., Microsoft Excel) and ensure your data is organized in a clear and structured manner with headers in the first row.

Step 2: Create a Report

2. Filter the data using Autofilter to focus on specific criteria or subsets of data relevant to your report. To apply an Autofilter:

- Select the range of data you want to filter.
- Go to the "Data" tab (in Excel) or the equivalent in your spreadsheet software.
- Click on "Filter" or "Autofilter."
- Set the criteria for your filter, such as product category, date range, or any other relevant field.
- Review and analyze the filtered data to gather insights.

3. Create a summary or report based on the filtered data. You can manually create a report by copying and pasting the filtered data into a new sheet or use Excel functions to calculate specific metrics.

Step 3: Create a Presentation

4. To create a presentation, you can use a tool like Microsoft PowerPoint or Google Slides.

5. Copy and paste the relevant information and insights from your report into presentation slides. Ensure that the presentation is well-structured and visually appealing, using charts, graphs, and visuals to convey your data effectively.

Step 4: Create Macros (Automation)

```
Sub GenerateReport()
    Dim ws As Worksheet
    Set ws = ThisWorkbook.Sheets("Sheet1")  ' Change "Sheet1" to your data sheet name
    ' Apply Autofilter based on your criteria
    ws.Range("A1").AutoFilter Field:=1, Criteria1:="YourFilterCriteria"
    ' Create a new sheet for the filtered data
    Sheets.Add(After:=Sheets(Sheets.Count)).Name = "ReportSheet"
    Copy the visible (filtered) data to the new sheet
                                                ws.AutoFilter.Range.SpecialCells(xlCellTypeVisible).Copy
Destination:=Sheets("ReportSheet").Range("A1")
     ' Turn off the Autofilter
    ws.AutoFilterMode = False
End Sub
```

6. If you want to automate the process and make it more efficient, consider creating macros (VBA scripts) to perform the filtering, report generation, and slide creation automatically.

7. In Excel, you can use the built-in Visual Basic for Applications (VBA) editor to write macros that interact with your data and presentation. Here's a simple example of a VBA macro that applies an Autofilter, copies the filtered data to a new sheet, and creates a summary report:

```vba
Sub GenerateReport()
    Dim ws As Worksheet
    Set ws = ThisWorkbook.Sheets("Sheet1")  ' Change "Sheet1" to your data sheet name
        ' Apply Autofilter based on your criteria
    ws.Range("A1").AutoFilter Field:=1, Criteria1:="YourFilterCriteria"
        ' Create a new sheet for the filtered data
    Sheets.Add(After:=Sheets(Sheets.Count)).Name = "ReportSheet"
        ' Copy the visible (filtered) data to the new sheet
                                                ws.AutoFilter.Range.SpecialCells(xlCellTypeVisible).Copy
Destination:=Sheets("ReportSheet").Range("A1")
```

```
    ' Turn off the Autofilter
    ws.AutoFilterMode = False
End Sub```
```

8. In PowerPoint or Google Slides, you can also use VBA or scripting capabilities to automate the creation of presentation slides based on your data.

Step 5: Run the Macros

9. Run the macros in Excel to perform the filtering and report generation automatically.

10. Review and refine the generated report and presentation as needed.

By following these steps, you can create a report and presentation using Auto filter and macros, which saves time and ensures consistency in data analysis and reporting. Automation is particularly useful for repetitive tasks and large datasets

VIVA QUESTIONS

1. What is Microsoft Excel, and how is it commonly used in various fields?
2. Can you explain the significance of cells, rows, and columns in an Excel spreadsheet?
3. How do Excel workbooks and worksheets differ, and what is their purpose?
4. What are the primary types of data that can be entered into cells in Excel?
5. How does the formula bar in Excel contribute to creating and editing formulas?
6. What is the purpose of an aggregate function in Excel?
7. Can you name some commonly used aggregate functions in Excel?
8. How does the SUM function differ from other aggregate functions in Excel?
9. Explain the significance of the COUNT function in data analysis.
10. In what scenarios would you use the AVERAGE function in Excel?
11. How can the MAX and MIN functions be employed in data analysis?
12. Can you provide an example where the COUNTIF function is useful for aggregation?
13. What role does the AGGREGATE function play in advanced data analysis?
14. How does the SUBTOTAL function differ from other aggregate functions?
15. Describe the importance of the GROUP BY feature in Excel for aggregate functions.
16. In what situations would you use the CONCATENATE function for aggregation?
17. How can the AGGREGATE function handle errors or hidden values in a dataset?
18. Explain the difference between the AGGREGATE function and the PivotTable feature for summarizing data.
19. How can you nest aggregate functions in Excel to perform more complex calculations?
20. Can you demonstrate the use of the AGGREGATE function to find the median of a dataset in Excel?
21. What is a PivotTable, and how does it help in data analysis in Excel?
22. Can you explain the process of creating a PivotTable in Excel?
23. How does a PivotTable differ from regular Excel tables and charts?
24. What are the key elements of a PivotTable, and how are they organized?
25. In what scenarios would you use a PivotTable to analyze data?
26. How can you group data in a PivotTable, and why is it beneficial?
27. Explain the purpose of the "Values" field in a PivotTable.
28. How can you filter data in a PivotTable to focus on specific information?

29. What is the role of the "Row Labels" and "Column Labels" in a PivotTable?
30. How can you customize the appearance of a PivotTable for better presentation?
31. What is a PivotChart, and how does it complement PivotTables in data analysis?
32. Can you describe the process of creating a PivotChart from a PivotTable?
33. How does drilling down into data work in the context of PivotTables?
34. What is the significance of the "Slicer" feature in PivotTables?
35. Explain the concept of calculated fields in PivotTables and their applications.
36. What is the main purpose of using conditional formatting in Excel?
37. How can you apply conditional formatting to highlight cells that meet a specific criterion?
38. Can you explain the difference between "Format Cells That Contain" and "Format Cells That Are" in conditional formatting?
39. In what ways does data bars contribute to data visualization in conditional formatting?
40. How can you use the "Top/Bottom Rules" in conditional formatting to highlight specific data points?
41. What role does the "Manage Rules" option play in the conditional formatting settings?
42. Explain the purpose of the "Clear Rules" option and how it affects conditional formatting.
43. How can you create custom conditional formatting rules tailored to your specific data analysis needs?
44. In what scenarios would you use the "Format Painter" tool for conditional formatting in Excel?
45. What is the primary purpose of performing "What-If" analysis in Excel?
46. Can you explain the role of scenarios in the context of "What-If" analysis?
47. How can the Goal Seek feature be utilized for "What-If" analysis in Excel?
48. What is the difference between data tables and scenario manager in Excel's "What-If" analysis tools?
49. In what situations would you use the Solver tool for advanced "What-If" analysis in Excel?
50. Why is data cleaning an essential step in the data analysis process in Excel?
51. Can you explain the significance of removing duplicates when cleaning data in Excel?
52. How does the TRIM function contribute to cleaning and standardizing data in Excel?
53. In what situations would you use the "Text to Columns" feature for data cleaning?
54. What are some common techniques for handling missing values during the data cleaning process in Excel?
55. How can you navigate between multiple sheets in an Excel workbook?

56. Explain the purpose of linking cells or data between different sheets in Excel.
57. What is the significance of grouping and ungrouping sheets in Excel, and how is it done?
58. How can you protect or lock specific sheets in an Excel workbook, and why would you do so?
59. Describe the process of referencing data from one sheet to another in Excel.