

EX.NO:1

DATE:

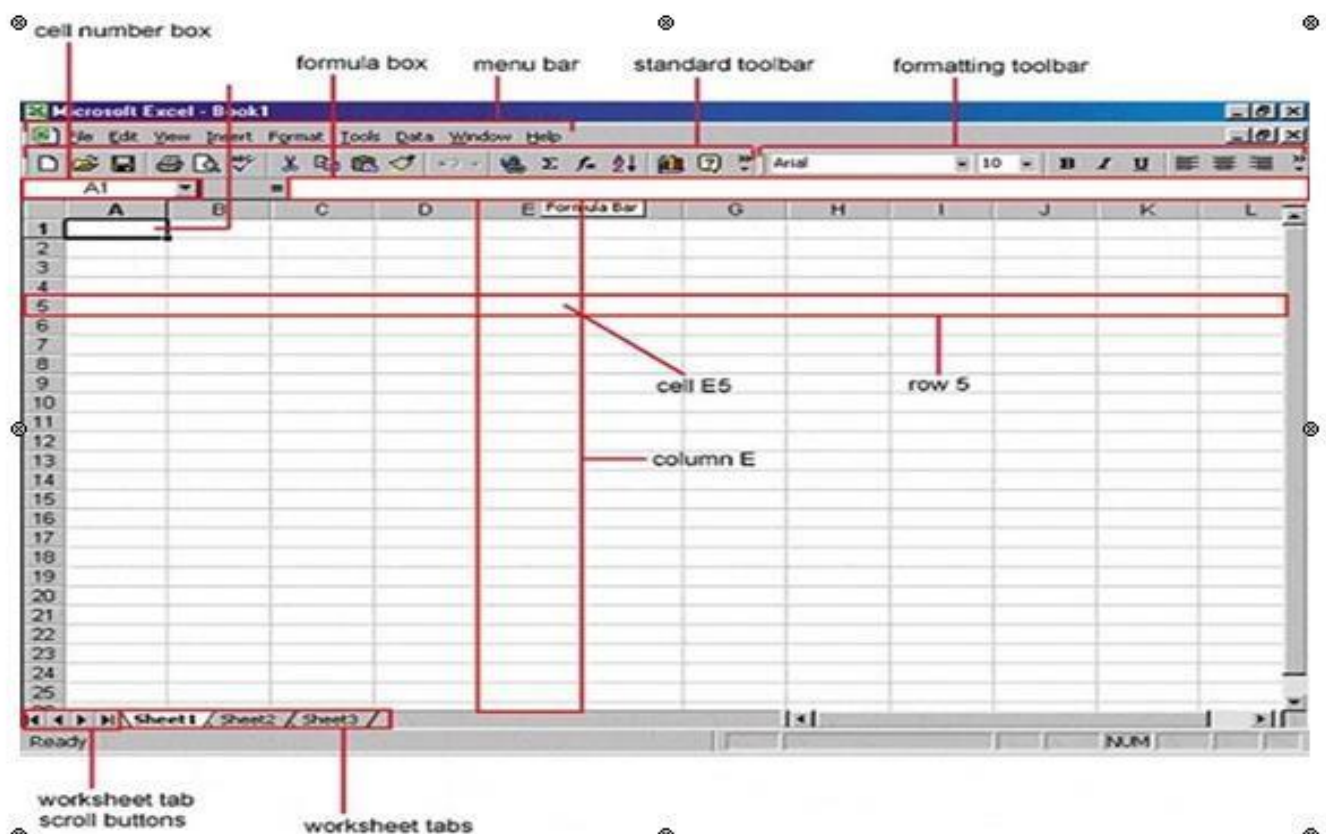
EXPLORE THE FEATURES OF MS-EXCEL.

AIM:

To explore the features of Ms-Excel.

Features of MS Excel

MS Excel is used for processing the data that is in tabular form and then performing mathematical functions on it to analyze it. This is what the Excel window looks like (version 2007):



Excel is a tool for coordinating and performing calculations on data. It can examine data, compute statistics, create pivot tables, and express data as a chart or graph. MS Excel performs the following basic functions:

In MS Excel, there are rows and columns. The intersection of rows and columns makes a cell. So each of the cells is an individual unit of data. Each cell has a cell address which is the number of rows and the alphabet of the column it appears in. No two cells have the same address ever.

Home and Insert

The Home & Insert menu of MS Excel is similar to MS Word. Users can change the formatting of the content from home & include pie charts, tables, and other files related to data from the insert menu.

Fontsize,fontcolor,fontstyles,alignment,backgroundcolor,formattingoptions and styles, insertion, deletion, and editing in the cells options are also available.

One can insert images and figures, header, and footer, charts, and sparklines and even attach graphs, equations, and symbols.

Formulas

The unique functions that MS Excel has are Formulas & Data. Users can perform the formula on data to analyze it quickly. Users have to select the cells for that and one cell becomes one unit of data.

So, if the user selects 10 cells and applies an average formula to them, the user will get an average of the data output of those 10 cells.

To apply a formula to any data, the user needs to select it without any space. Then in the function bar, the user needs to type '=' and the abbreviation of the formula the user wishes to apply.

Data

From the Data menu, the user can perform functions without changing the original data. Users can filter, add external data from the web & sort data without changing it. For example, the user can sort the data in alphabetical order.

Page Layout

Users can apply themes, orientation, and check the page setup through the page layout option.

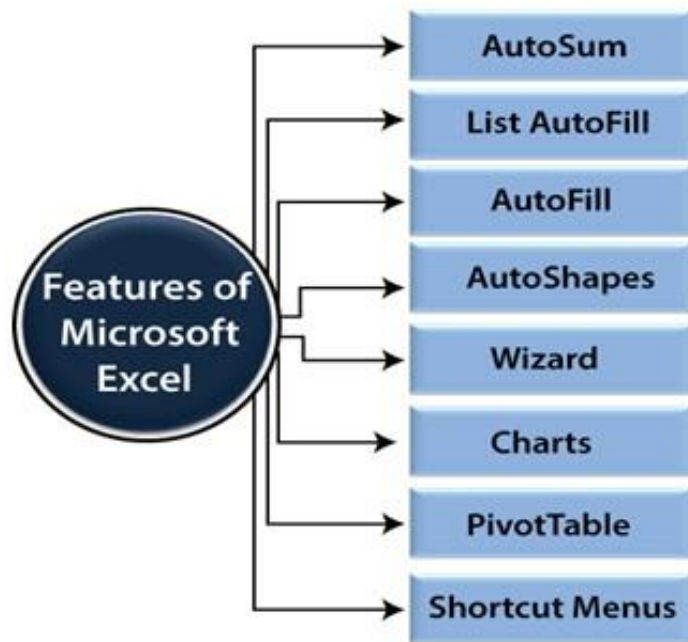
Review

Proofreading like spell check can be performed for an excel sheet in the review section and a user can even add comments or remarks in this part.

View

Different views and layouts in which the user wants the spreadsheet to be displayed can be selected here. Options to zoom in and out, full screen, and pane arrangement are available under this section.

There are several features that are available in Excel to make our task more manageable. Some of the main features are:



1. AutoFormat: It allows the Excel user to use predefined table formatting options.

2. AutoSum: AutoSum feature helps us to calculate the sum of a row or column automatically by inserting an addition formula for a range of cells.
3. List AutoFill: It automatically develops cell formatting when a new component is added to the end of a list.
4. AutoFill: This feature allows us to quickly fill cells with a repetitive or sequential record such as chronological dates or numbers and repeated documents. AutoFill can also be used to copy functions. We can also alter text and numbers with this feature.
5. AutoShapes: AutoShapes toolbar will allow us to draw some geometrical shapes, arrows, flowchart items, stars, and more. With these shapes, we can draw our graphs.
6. Wizard: It guides us to work effectively while we work by displaying several helpful tips and techniques based on what we are doing. Drag and Drop feature will help us to reposition the record and text by simply dragging the data with the help of the mouse.
7. Charts: This feature will help you to present the data in graphical form by using Pie, Bar, Line charts, and more.

8. PivotTable: It flips and sums data in seconds and allows us to execute data analysis and generating documents like periodic financial statements, statistical documents, etc. We can also analyze complex data relationships graphically.
9. Shortcut Menus: The shortcut menu helps users to make the work done

RESULT:

TheExplorethefeaturesofMs-Excelissuccessfully.

EX.NO:02 (i)

GETTHEINPUTFROMUSERANDPERFORMNUMERICAL

DATE:

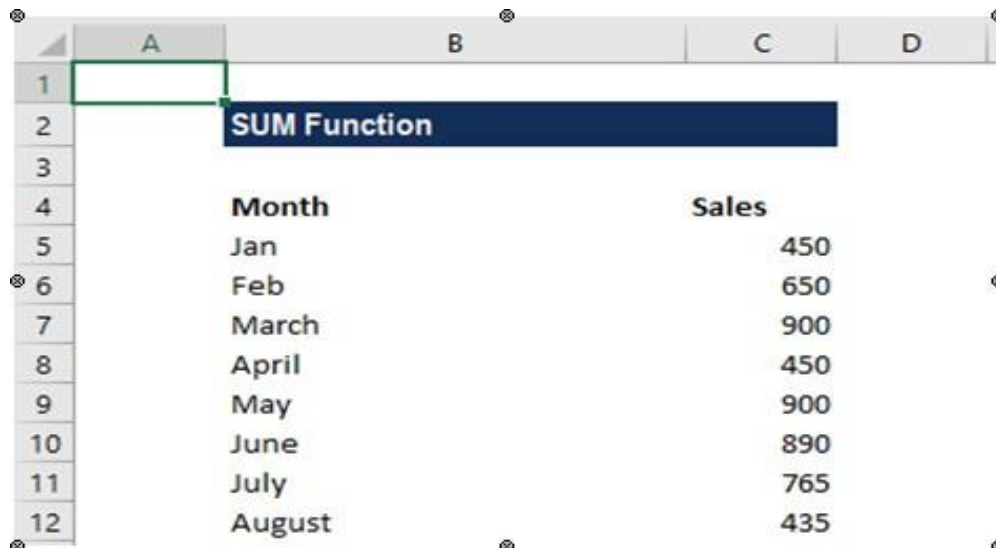
OPERATIONS(MAX,MIN,AVG,SUM,SORT,ROUND)

AIM:

Togettheinputfromuserandperformnumericaloperations(MAX,MIN,AVG, SUM,SORT,ROUND)

PROCEDURE:

Let'sconsiderthefollowingdata:



	A	B	C	D
1				
2		SUM Function		
3				
4		Month	Sales	
5		Jan	450	
6		Feb	650	
7		March	900	
8		April	450	
9		May	900	
10		June	890	
11		July	765	
12		August	435	

Step-1:SelectaSampleExcelldatasheet

Step-2:Performfollowingoperations

a. Sum:

AddingTwoManualEntries

- TypeA1(=)
- Type5+5
- Hitenter

AddingTwoCells

Selectacellandtype(=)Selecta cell

Type(+)

SelectanothercellHitenter

AddingSeveralCells

Formula:=SUM(number1,[number2],[number3].....)

1. TypeB1(=SUM)

2. DoubleclicktheSUMcommand
3. MarktherangeA1:A5
4. Hitenter

PMT		X ✓ f _x		=SUM(C5:C10)	
	A	B	C	D	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

SUM Function		
Month	Sales	
Jan		450
Feb		650
March		900
April		450
May		900
June		890
July		765
August		435

Total Sales for first six months	=SUM(C5:C10)
----------------------------------	--------------

We get the output below:

C15		X ✓ f _x		=SUM(C5:C10)	
	A	B	C	D	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

SUM Function		
Month	Sales	
Jan		450
Feb		650
March		900
April		450
May		900
June		890
July		765
August		435

Total Sales for first six months	4240
----------------------------------	------

Adding Using Absolute Reference:

	A	B	C	D
1	50	5		
2	45			
3	40			
4	35			
5	30			
6	25			
7	20			
8	15			
9	10			
10	5			

1. Select a cell and type (=)
2. Select the cell you want to lock, add two-dollar signs (\$) before the column and row
3. Type (+)
4. Fill the range

Step by step:

1. Type C1(=)
2. Select B1
3. Type dollar sign before column and row \$B\$1
4. Type (+)
5. Select A1
6. Hit enter
7. Fill the range C1:C10

C1	f_x	=\$B\$1+A1		
	A	B	C	D
1	50	5	=B\$1+A1	
2	45			
3	40			
4	35			
5	30			
6	25			
7	20			
8	15			
9	10			
10	5			

a. MAXFunction

The **MAX** function is a pre-made function in Excel, which finds the highest number in a range. It is typed =MAX
The function ignores cells with text. It will only work for cells with numbers.

How to use the =MAX function:

Select a cell
Type
=MAX
Double-click the
MAX command
Select a range
Hit enter

b. MINFunction

The **MIN** function is a pre-made function in Excel, which finds the lowest number in a range. It is typed =MIN

How to use the =MIN function:

1. Select a cell
2. Type =MIN
3. Double-click the **MIN** command
4. Select a range
5. Hit enter

c. AVERAGEFunction

The **AVERAGE** function is a pre-made function in Excel, which calculates the average (arithmetic mean).

It is typed =AVERAGE

It adds the range and divides it by the number of observations.

Note: The **AVERAGE** function ignores cells with text.

1. Select a cell
2. Type =AVERAGE
3. Double-click the **AVERAGE** command
4. Select a range
5. Hit enter
6. Next, Fill

c. finding square root using SQRT Function

SQRT(number). Where *number* is the number or reference to the cell containing the number for which you want to find the square root.

To calculate the square root of a number in A2, use this one: =**SQRT(A2)**

	A	B
1	Number	Sqaure root
2	25	5
3	16	4
4	9	3
5	4	2
6	0	0
7	-4	#NUM!
8	-9	#NUM!

f. ROUND Function

The ROUND Formula in Excel accepts the following parameters and arguments:

Number–The number which has to be rounded.

Num_Digits–The total number of digits to round the number to.

Formula	Result	Description
=ROUND(A2,2)	106.86	The number in A2 is rounded to 2 decimal places.
=ROUND(A2,1)	106.9	The number in A2 is rounded to 1 decimal place.
=ROUND(A2,0)	107	The number in A2 is rounded to the nearest integer.
=ROUND(A2,-1)	110	The number in A2 is rounded to the nearest multiple of 10.
=ROUND(A2,-2)	100	The number in A2 is rounded to the nearest multiple of 100.

RESULT:

The program of getting input from user and performing numerical operations (MAX, MIN, AVG, SUM, SORT, ROUND) is successfully.

EX.NO:02(ii)	PERFORMDATAIMPORT/EXPORTOPERATIONSFOR
DATE:	DIFFERENTFILEFORMATS

AIM:

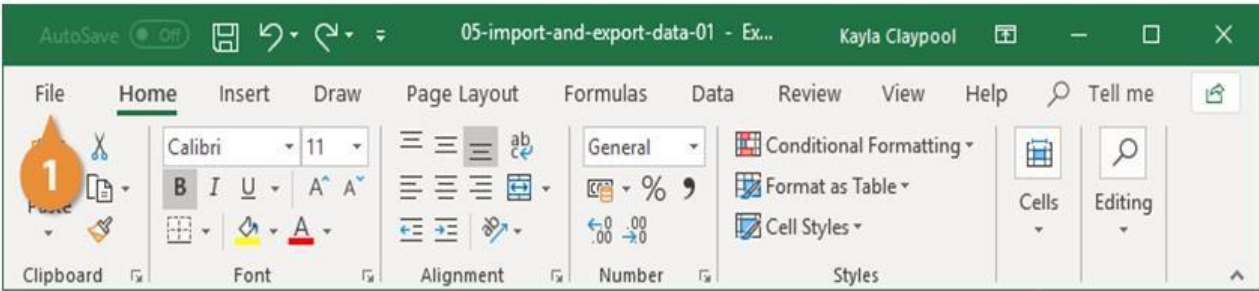
ToPerformdataimport/exportoperationsfordifferentfileformats.

PROCEDURE:

Step1:ExportData

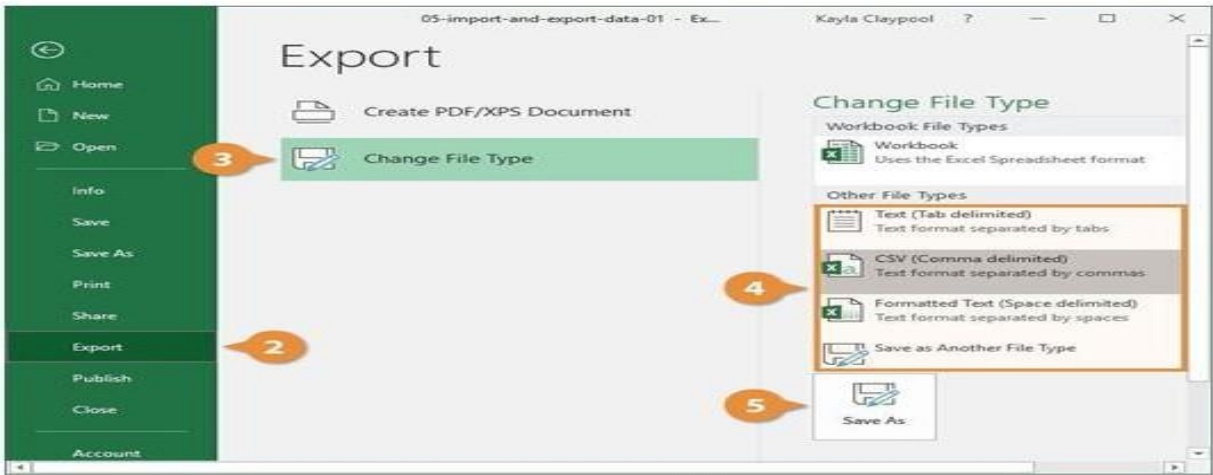
Whenyouhavedatathatneedstobetransferredtoanothersystem,exportitfrom Excel in aformat that can be interpreted by other programs, such as a text or CSV file.

1. Clickthe**File**tab.
2. Attheleft,click**Export**.
3. Clickthe**ChangeFileType**.
4. UnderOtherFileTypes,selectafiletype.
 - **Text(Tabdelimited)**:Thecelldatawillbeseparatedbyatab.
 - **CSV(Commadelimited)**:Thecelldatawillbeseparatedbyacomma.
 - **FormattedText(spacedelimited)**:Thecelldatawillbeseparatedbya space.
 - **SaveasAnotherFileType**:Selectadifferentfiletype when the Save Asdialog box appears.



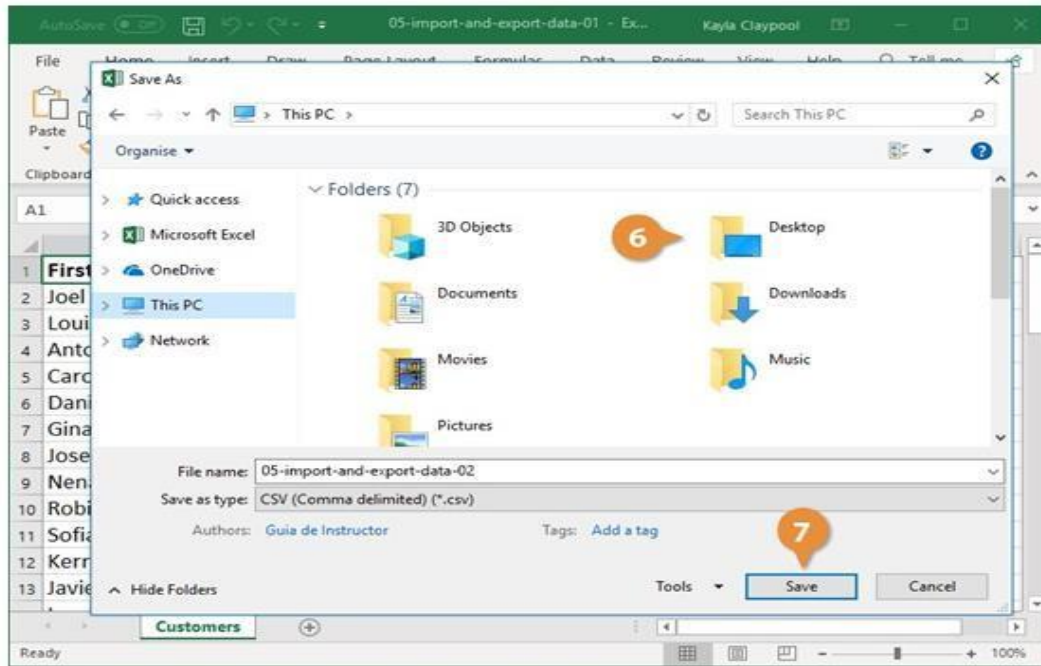
Thefiletypeyou select will dependonwhattypeoffileisrequiredbytheprogram that willconsume the exported data.

Click**SaveAs**.



Specify where you

wanttosavethefile.ClickSave.



Adialogboxappearsstatingthatsomeoftheworkbookfeaturesmaybelost.Click**Yes**.

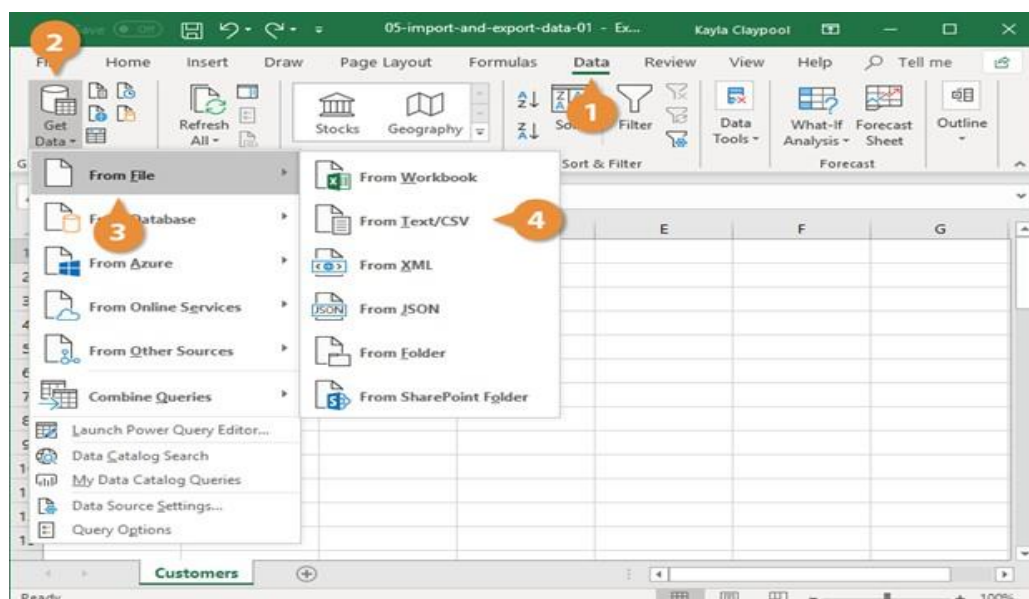
Steap2:ImportData

Excelcanimportdatafromexternaldatasourcesincludingotherfiles, databases, or webpages.

1. Clickthe**Data**tabontheRibbon..
2. Clickthe**GetData**button.

Some data sources may require special security access, and the connection process can often be very complex. Enlist the help of your organization’s technical support staff for assistance.

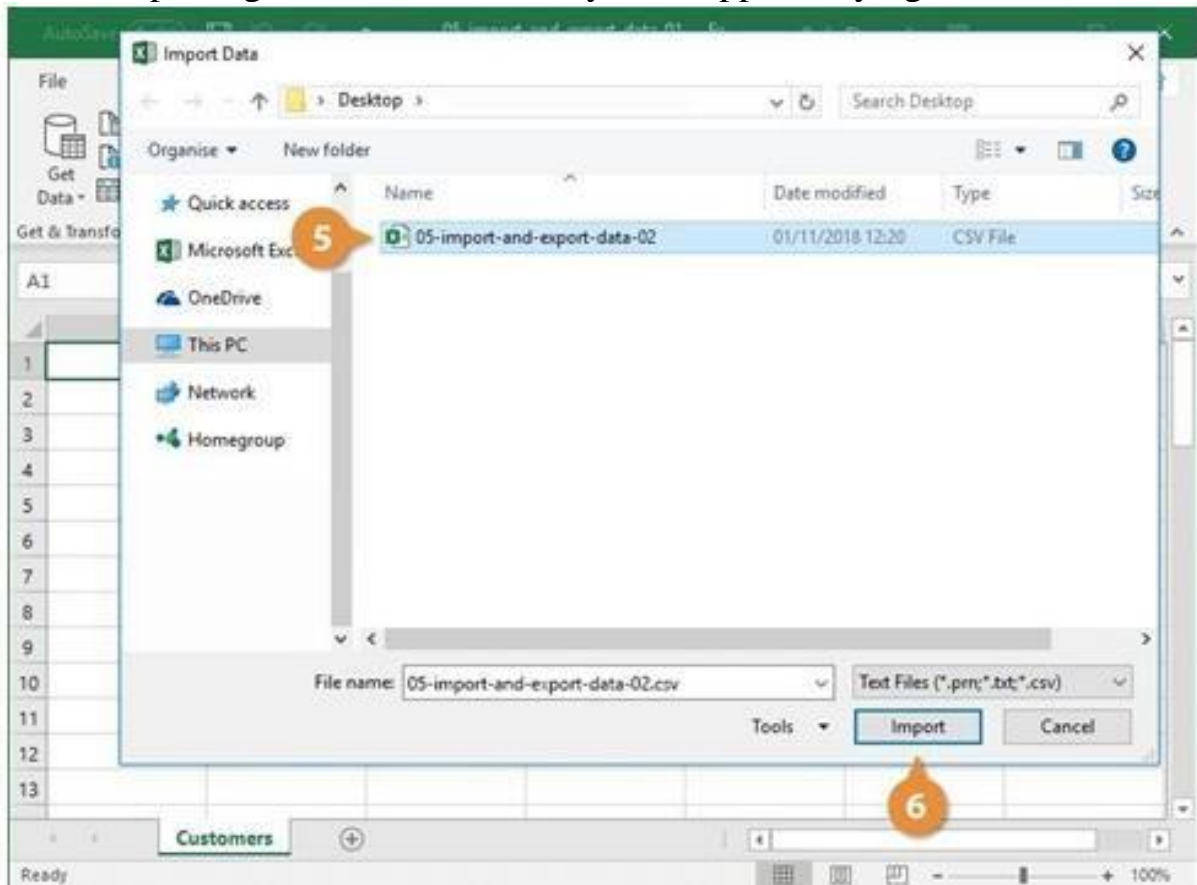
3. Select**FromFile**.
4. Select**FromText/CSV**.



5. Select the file you want to import.

6. Click **Import**.

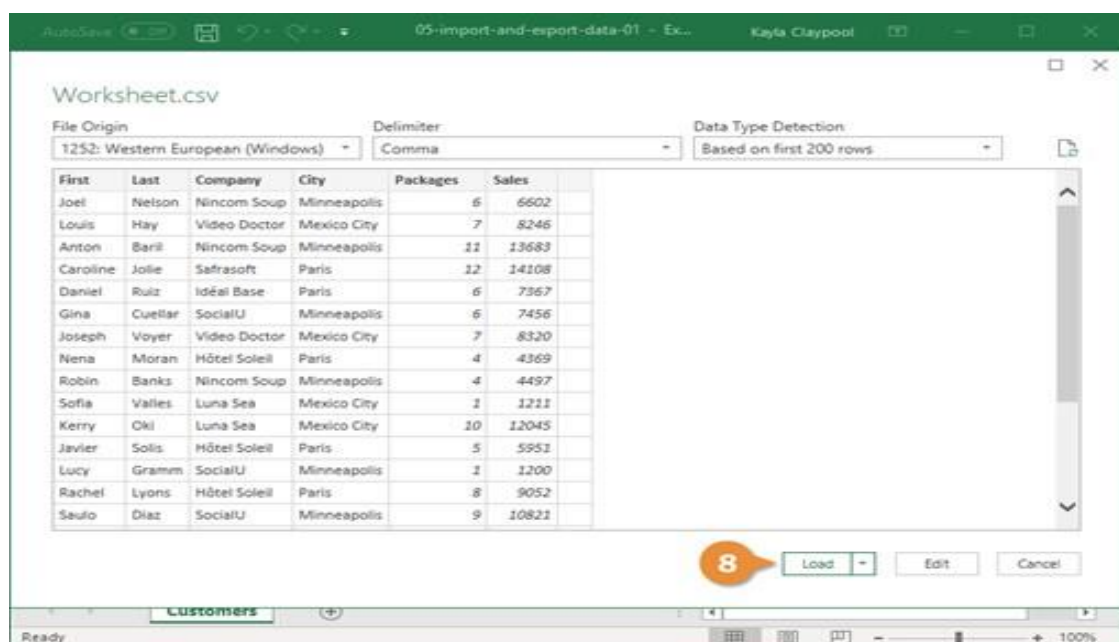
If, while importing external data, a security notice appears saying that it is



connecting to an external source that may not be safe, click **OK**.

7. Verify the preview looks correct.

8. Click **Load**.



RESULT:

The Perform data import/export operations for different file formats is successfully.

EX.NO:03

MEAN,MEDIAN,MODEANDSTANDARDDEVIATION,

DATE:

VARIANCE,SKEWNESS,KURTOSIS

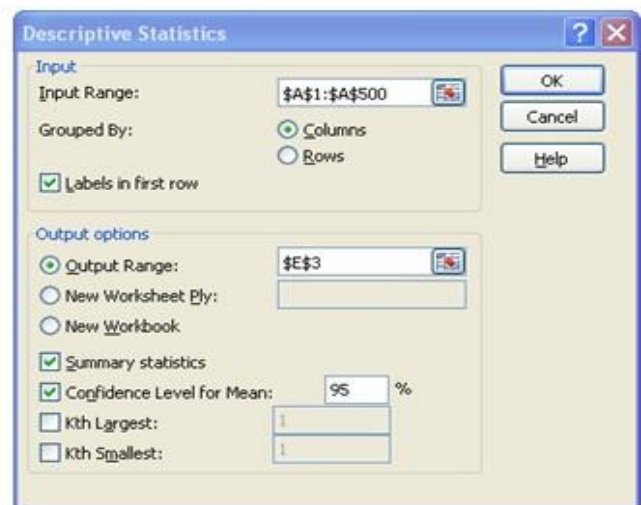
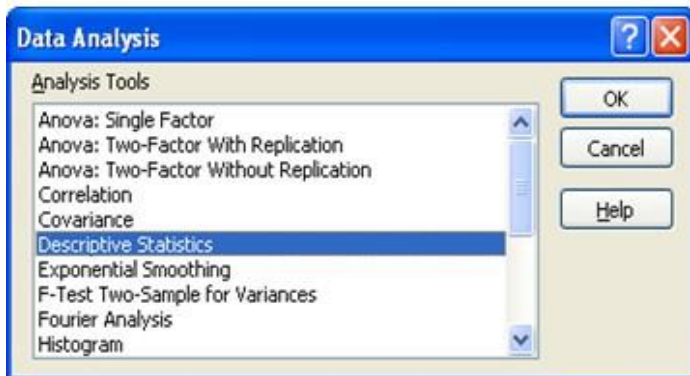
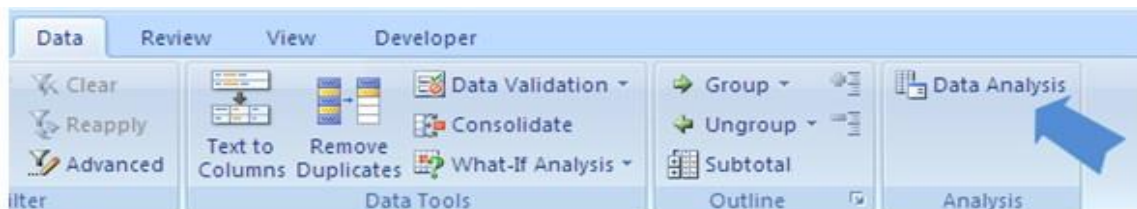
AIM:

To perform statistical operations: Mean, Median, Mode and Standard deviation, Variance, Skewness, Kurtosis

PROCEDURE:

Step 1: If you haven't already installed the Analysis ToolPak, Click the Microsoft Office button, then click on the Excel Options, and then select Add-Ins, Click Go, check the Analysis ToolPak box, and click Ok.

Step 2: Select Data tab, then click on the Data Analysis option, then select Descriptive Statistics from the list and Click Ok. [Data tab >> Data Analysis >> Descriptive Statistics]



Step 3: In the **Input Range** we select the data, and then select **Output Range** where you want the output to be stored. *If you don't specify the output range it will throw output in the new worksheet.*

Step 4: Check **Summary Statistics** and **Confidence Level for Mean** options. By default the confidence level is 95%. You can change the level as per the hypothesis standard of study.

Step 5: When you click **Ok**, you will see the result in the selected output range.

OUTPUT:

Column1	
Mean	5.533066
Standard Error	0.131332
Median	6
Mode	8
Standard Deviation	2.933741
Sample Variance	8.606836
Kurtosis	-1.27785
Skewness	-0.03386
Range	9
Minimum	1
Maximum	10
Sum	2761
Count	499
Confidence Level(95.0%)	0.258034

RESULT:

The perform statistical operations: Mean, Median, Mode and Standard deviation, Variance, Skewness, Kurtosis successfully

EX.NO:04

DATE:

PERFORM Z-TEST,T-TEST&ANOVA

AIM:

To Perform Z-test, T-test & ANOVA

PROCEDURE:

Step to perform ZTEST in Excel:

Let's consider the below data;

	A
1	Scores
2	3
3	5
4	4
5	5
6	9
7	4
8	7
9	9
10	3
11	8
12	

[We will use this data to calculate the one-tailed probability value of Z.TEST. For this, assume the hypothesis population means 6.]

Step 1: Open the Z.TEST formula in an Excel cell

		X	✓	f_x
				=Z.TEST(
	A	B	C	D
1	Scores			
2	3			
3	5			
4	4			
5	5			
6	9			
7	4			
8	7			
9	9			
10	3			
11	8			

Step2:Select the array as scores, A2 to A11

C2				
	A	B	C	D
1	Scores			
2	3			
3	5			
4	4			
5	5			
6	9			
7	4			
8	7			
9	9			
10	3			
11	8			
12				

Step3: The next argument is “x.” Since we have already assumed the hypothesized population mean is 6, apply this value to this argument

	A	B	C	D
1	Scores			
2	3			
3	5			
4	4			
5	5			
6	9			
7	4			
8	7			
9	9			
10	3			
11	8			
12				

Step4: The last argument is optional, so close the formula to get the Z.TEST value.

C2					=Z.TEST(A2:A11,6)
	A	B	C	D	
1	Scores				
2	3		0.6561912		
3	5				
4	4				
5	5				
6	9				
7	4				
8	7				
9	9				
10	3				
11	8				
12					

Step5: It is a one-tailed ZTEST value to get the two-tailed Z.TEST value to multiply this value by 2

C3					=C2*2
	A	B	C	D	
1	Scores				
2	3		0.6561912		
3	5		1.3123825		
4	4				
5	5				
6	9				
7	4				
8	7				
9	9				
10	3				
11	8				
12					

Step to perform TTEST: (to find p-value)

Consider the below data;

	A	B
1	Class B	Class C
2	69	96
3	47	83
4	53	49
5	76	55
6	90	92
7	85	64
8		

{Let us compare the scores of students from Class B and Class C to check if Class C students have higher scores than Class B students. First, we need to assume the null and alternate hypotheses for this test}.

Step 1: Select cell B9 and write the below formula:

=T.TEST(A2:A7,B2:B7,1,2)

	A	B	C	D
1	Class B	Class C		
2	69	96		
3	47	83		
4	53	49		
5	76	55		
6	90	92		
7	85	64		
8				
9	p-value	=T.TEST(A2:A7,B2:B7,1,2)		
10		T.TEST(array1, array2, tails, type)		

Step2: Press “Enter,” and Excel will calculate the p-value as **0.38692** in cell B9.

B9				
	A	B	C	D
1	Class B	Class C		
2	69	96		
3	47	83		
4	53	49		
5	76	55		
6	90	92		
7	85	64		
8				
9	p-value	0.38692		

Step to perform ANOVA; Let's consider the below data:

	A	B	C	D
1	economics	medicine	history	
2	42	69	35	
3	53	54	40	
4	49	58	53	
5	53	64	42	
6	43	64	50	
7	44	55	39	
8	45	56	55	
9	52		39	
10	54		40	
11				

This data provides the salaries of people who have a degree in economics, medicine or history.

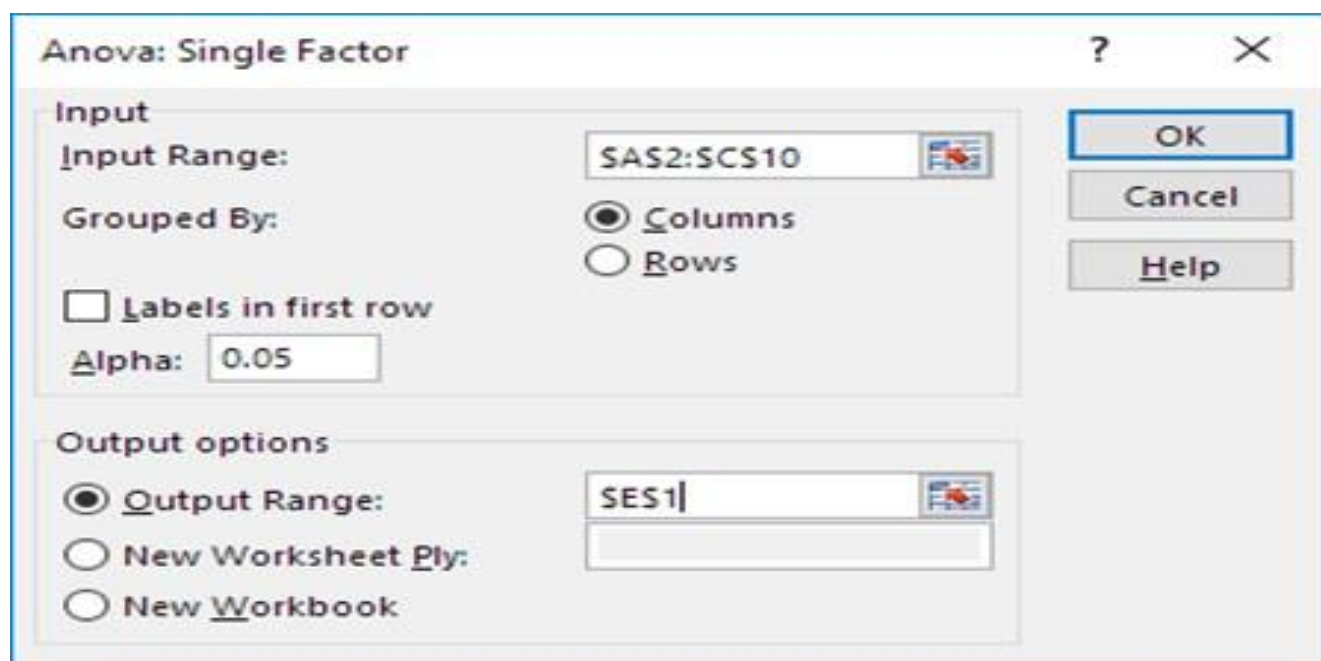
H0: $\mu_1 = \mu_2 = \mu_3$

H1: at least one of the means is

Step1: On the Data tab, in the Analysis group, click Data Analysis.



Step2: Select Anova: Single Factor and click OK.



Step3:ClickintheInputRangeboxandselecttherange **A2:C10**.

Step4:ClickintheOutputRangeboxandselectcelle**E1**. **Step 5:**
Click OK to view the results.

OUTPUT:

E	F	G	H	I	J	K
Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Column 1	9	435	48.33333	23.5		
Column 2	7	420	60	32.33333		
Column 3	9	393	43.66667	50.5		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1085.84	2	542.92	15.19623	7.16E-05	3.443357
Within Groups	786	22	35.72727			
Total	1871.84	24				

RESULT:

The Perform Z-test,T-test&ANOVAissuccessfully.

AIM:

To Perform data preprocessing operations on handling missing data, Normalization

PROCEDURE:**Handling Missing Data**

- Identify the columns with missing data.
- Decide how to handle the missing data. Some common options include:
 - Deleting the rows with missing data.
 - Imputing the missing values with mean, median, or mode of the column.
 - Using a more sophisticated imputation method, such as regression imputation.
- To impute the missing values with the mean of the column, you can use the following formula: `=IF(ISBLANK(A2),AVERAGE(A:A),A2)`
- OR go to XL MINER > Transform > Missing data handling and fill the missing values

Missing Data Handling

Data Source
 Worksheet: Example 6 Workbook: Examples.xlsx
 Data range: \$A\$1:\$D\$13 #Rows: 12 #Cols: 4

How are missing values coded in the data?
☒ Missing values are represented by this value 33
 Note: Empty and invalid cells are automatically considered missing values.

☐ Overwrite existing worksheet
 Note: If checked, data from the selected worksheet will be overwritten with imputed values.

Select variable(s) to specify treatment of missing values
☒ Variable names in the first row

Variable	Treatment	User Specified Value
RowID		
Variable_1	Delete record	
Variable_2	Mode	
Variable_3	User specified value	9999

How do you want to handle missing values for the selected variable(s)?
 User specified value 9999 Apply to selected variable(s)

Normalization

- Identify the columns that need to be normalized. Normalization is typically used for numerical columns, such as height, weight, and age.

Choose a normalization method. Some common methods include:

- Min-max normalization: This method scales the data so that the smallest value is 0 and the largest value is 1.
- Z-score normalization: This method scales the data so that the mean is 0 and the standard deviation is 1.
- Decimalscaling: This method scales the data so that the largest decimal place is 2.
- Implement the chosen method. For example, to perform min-max normalization, you can use the following formula:
$$=(A2-MIN(A:A))/(MAX(A:A)-MIN(A:A))$$

B2					
	A	B	C	D	E
1	Height (in cm)	Standardized Value			
2	152	-1.177319337			
3	155	-0.816915458			
4	168	0.744834683			
5	175	1.585777066			
6	153	-1.057184711			
7	162	0.024026925			
8	173	1.345507814			
9	166	0.50456543			
10	158	-0.45651158			
11	156	-0.696780832			
12					
13					
14	Mean Value (Xmean)	161.8			
15	Standard Deviation (σ_x)	8.323994767			
16					
17					

RESULT:

The Perform data preprocessing operations on handling missing data, Normalization is successfully.

EX.NO:06

DATE:

DIMENSIONALITYREDUCTIONOPERATIONUSINGPCA,KPCA&SVD

AIM:

To perform dimensionality reduction operation using PCA, KPCA & SVD

PROCEDURE:

PCA

1. Open the dataset in Excel.
2. Select the Data tab and then click the Data Analysis button.
3. In the Data Analysis dialog box, select Principal Component Analysis and then click OK.
4. In the PCA dialog box, select the data range and then click OK.
5. The PCA output will be displayed in a new worksheet.

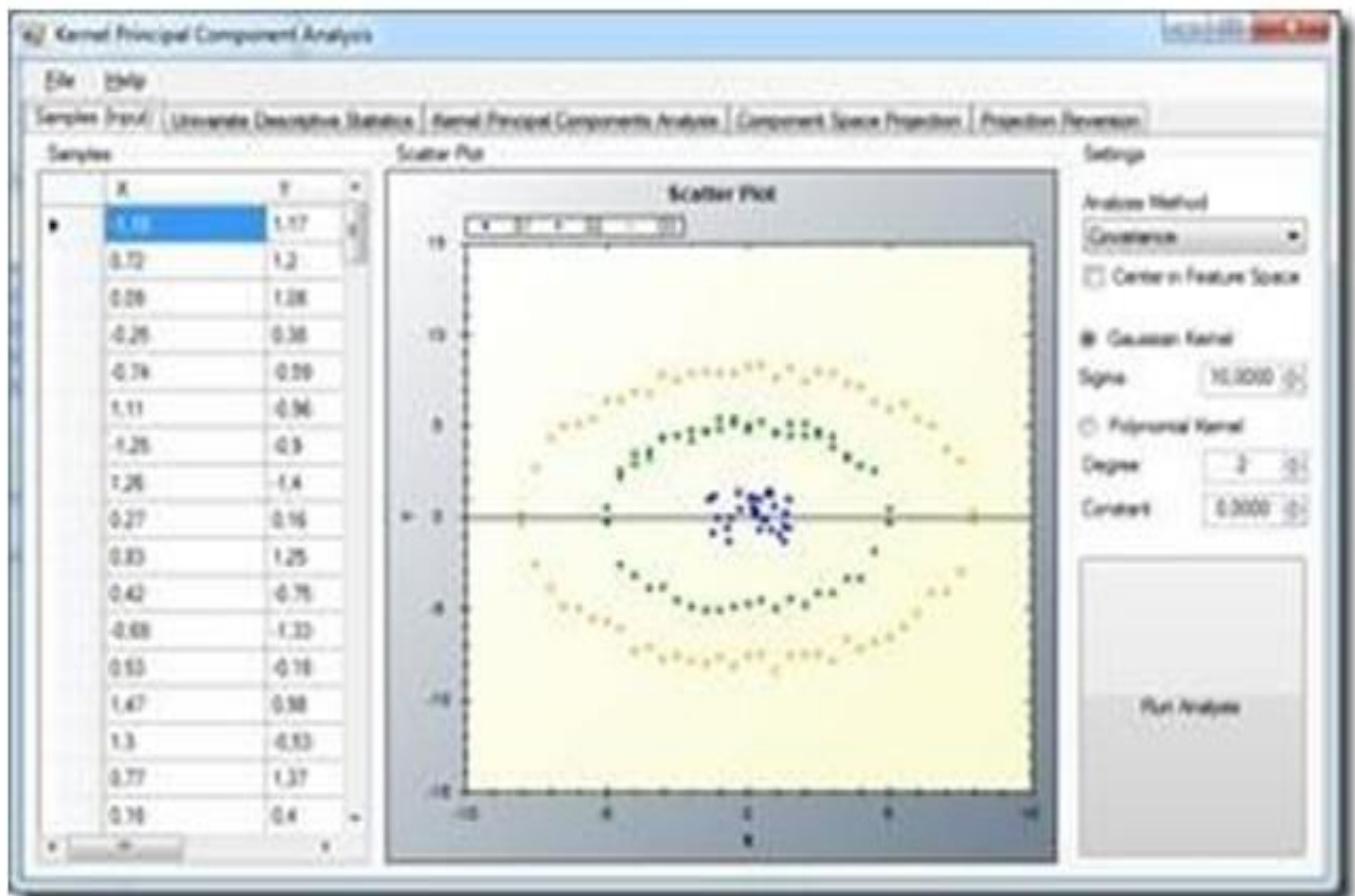
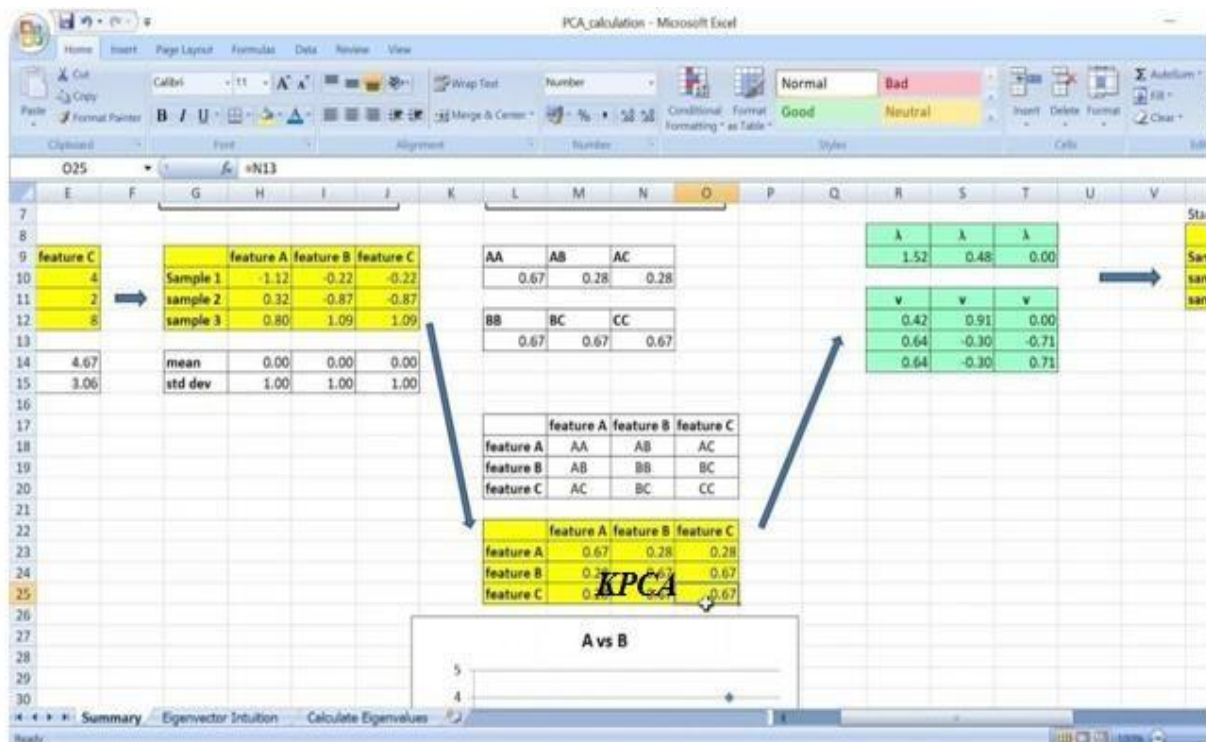
KPCA

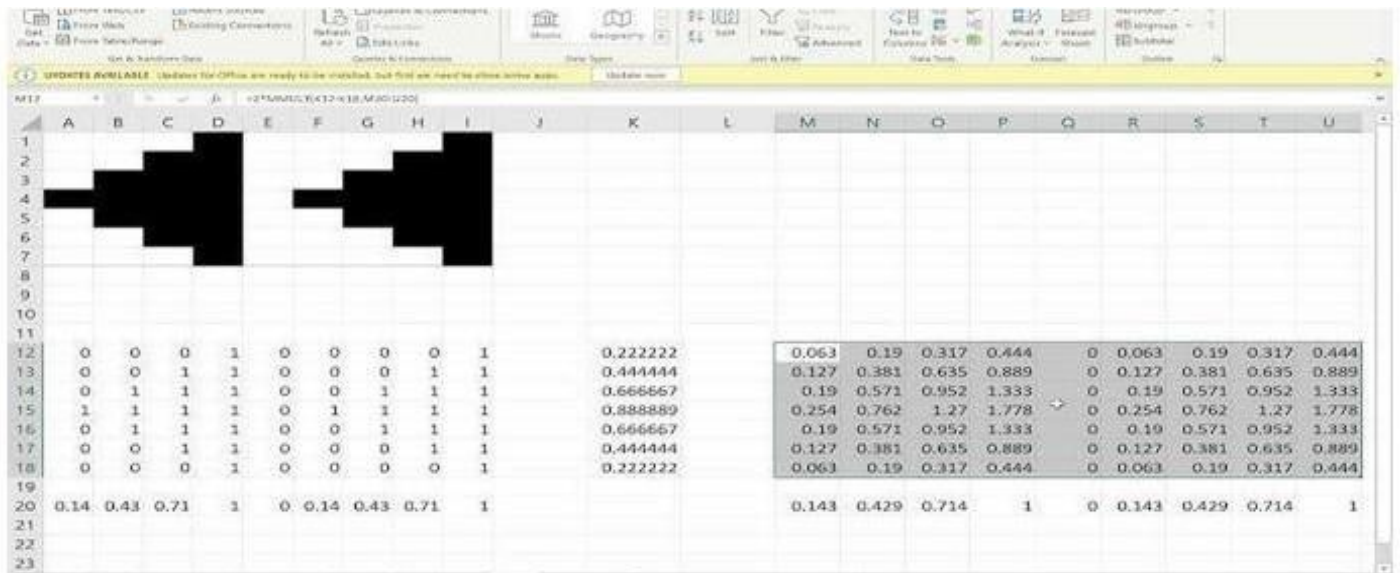
1. Open the dataset in Excel.
2. Install the XLSTAT plugin for Excel.
3. Select the XLSTAT tab and then click the Data Analysis button.
4. In the Data Analysis dialog box, select Kernel Principal Component Analysis and then click OK.
5. In the Kernel PCA dialog box, select the data range and the kernel type.
6. Click OK.
7. The KPCA output will be displayed in a new worksheet.

SVD

1. Open the dataset in Excel.
2. Select the Data tab and then click the Data Analysis button.
3. In the Data Analysis dialog box, select Singular Value Decomposition and then click OK.
4. In the SVD dialog box, select the data range and then click OK.
5. The SVD output will be displayed in a new worksheet

OUTPUT:





RESULT:

The perform dimensionality reduction operation using PCA, KPCA & SVD is successfully.

EX.NO:07

DATE:

PERFORM BIVARIATE AND MULTIVARIATE ANALYSIS ON THE DATASET.

AIM:

To perform bivariate and multivariate analysis on the dataset.

PROCEDURE:

To perform bivariate and multivariate analysis in Excel, follow these steps:

1. Open the dataset in Excel.
2. Identify the variables that you want to analyze.
3. Choose the appropriate bivariate or multivariate analysis technique.
4. Perform the analysis using the corresponding Excel function.
5. Interpret the results of the analysis.

Bivariate Analysis

Bivariate analysis is the study of the relationship between two variables. It can be used to identify patterns, correlations, and trends in the data.

There are a variety of bivariate analysis techniques that can be used in Excel, including:

- Scatter plots
- Correlation coefficients
- Linear regression

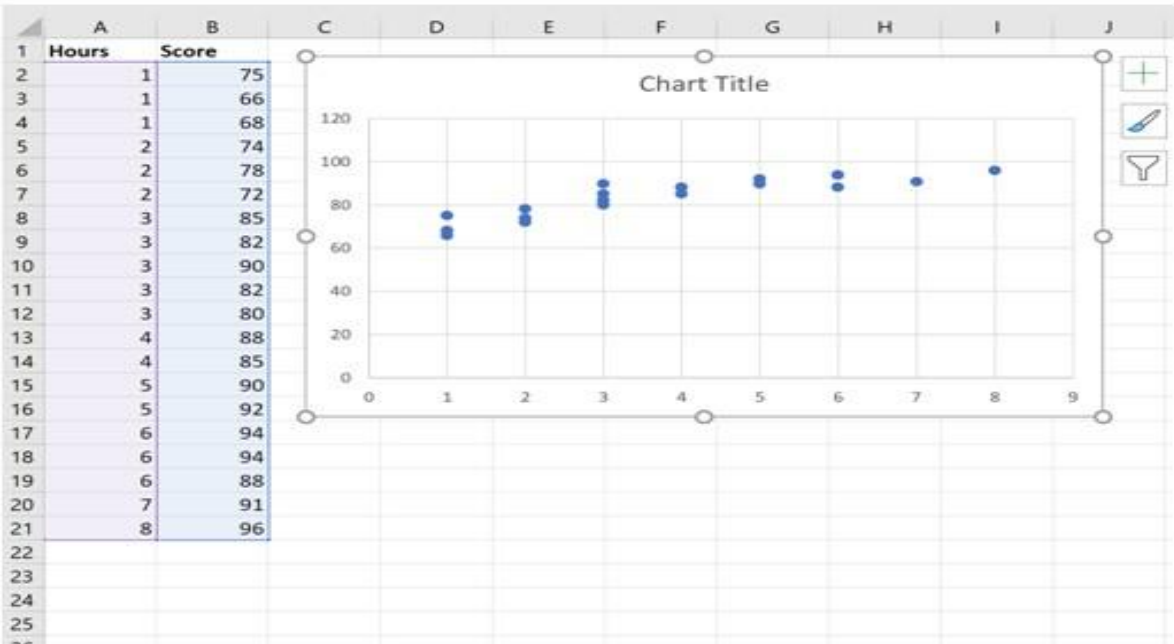
Multivariate Analysis

Multivariate analysis is the study of the relationship between three or more variables. It can be used to identify patterns, correlations, and trends in the data that are not visible when examining the variables individually. There are a variety of multivariate analysis techniques that can be used in Excel, including:

- Principal component analysis (PCA)
- Factor analysis
- Cluster analysis

OUTPUT:

BivariateAnalysis



MultivariateAnalysis

	A	B	C	D	E	F	G	H	I	J	K
1	Multiple Regression										
2											
3	Color	Quality	Price		SUMMARY OUTPUT						
4	7	5	65								
5	3	7	38								
6	5	8	51		Regression Statistics						
7	8	1	38		Multiple R	0.922330727					
8	9	3	55		R Square	0.850693971					
9	5	4	43		Adjusted R Square	0.813367463					
10	4	0	25		Standard Error	5.888084465					
11	2	6	33		Observations	11					
12	8	7	71		ANOVA						
13	6	4	51			df	SS	MS	F	Significance F	
14	9	2	49		Regression	2	1580.280054	790.1400271	22.79061267	0.000496946	
15					Residual	8	277.3563093	34.66953867			
16					Total	10	1857.636364				
17											
18						Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
19					Intercept	1.751403659	6.960202671	0.251631129	0.807669624	-14.29885248	17.8016598
20					Color	4.895288365	0.820229778	5.968191467	0.000335084	3.003835104	6.786741625
21					Quality	3.758415483	0.756510987	4.968091073	0.00109572	2.013898018	5.502932948

RESULT:

To perform bivariate and multivariate analysis on the dataset is successfully.

EX.NO:08

DATE:

APPLYANDEXPLOREVARIOUSPLOTTFUNCTIONSONTHEDATASET.

AIM:

To apply and explore various plotting functions on the data set.

PROCEDURE:

Step1: Open the Excel workbook that contains the data set that you want to plot.

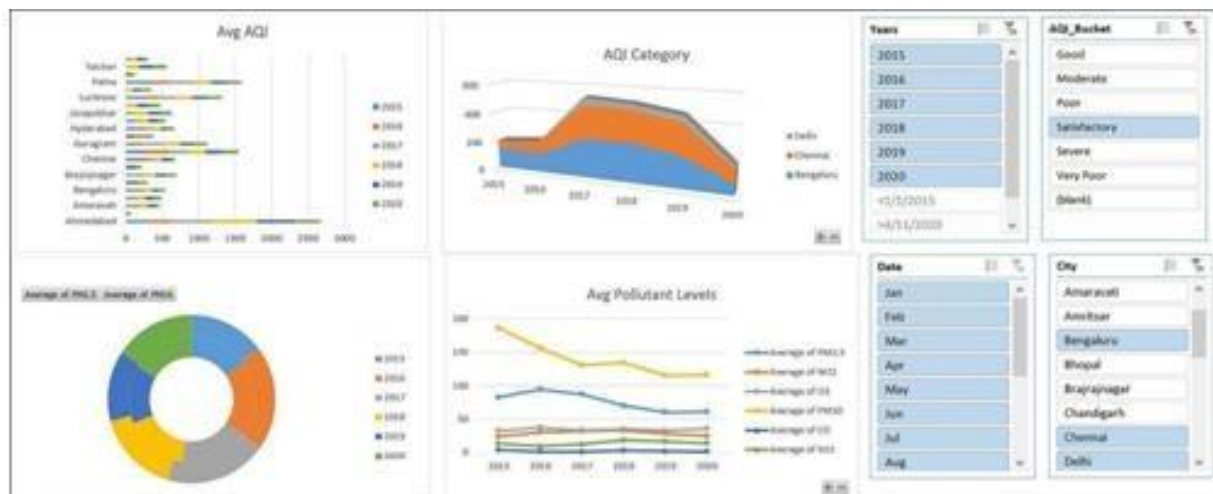
Step2: Select the data that you want to plot.

Step 3: Click on the Insert tab and then select the type of chart or graph that you want to create.

Step 4: In the Chart Wizard dialog box, select the options that you want for your chart or graph.

Step5: Click on the Finish button to create the chart or graph.

OUTPUT:



RESULT:

The apply and explore various plotting functions on the data set is successfully.

EX.NO:09

DATE:

EXPLORE THE FEATURES OF POWER BI DESKTOP

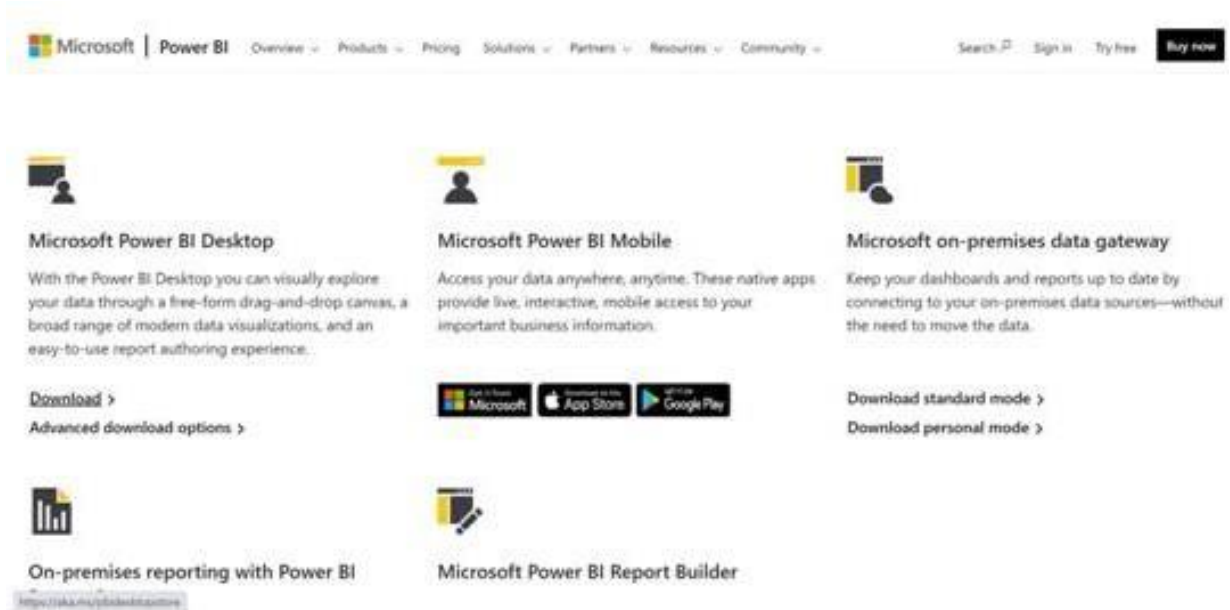
AIM:

To explore the features of Power BI Desktop.

PROCEDURE:

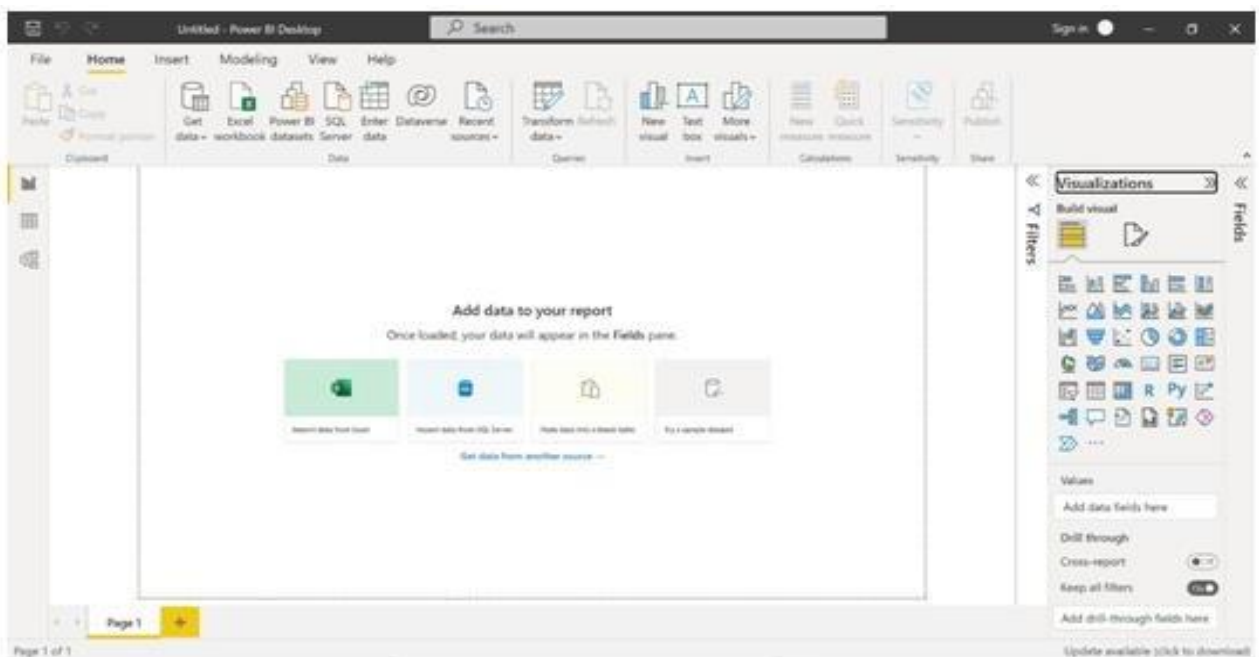
Step 1: Install Power BI Desktop.

Visit <https://powerbi.microsoft.com/en-us/downloads/>



Step 2: Select Download from Microsoft Power BI Desktop

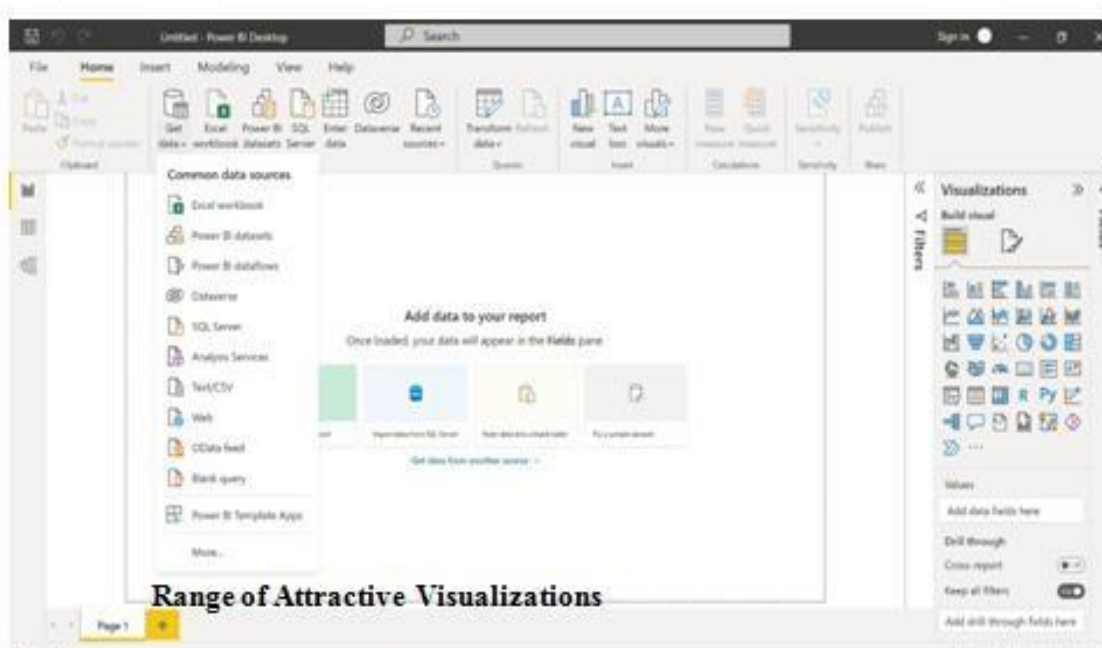
We can see the below screen after opening the Power BI Desktop.



Step3:Explorethefeatures.

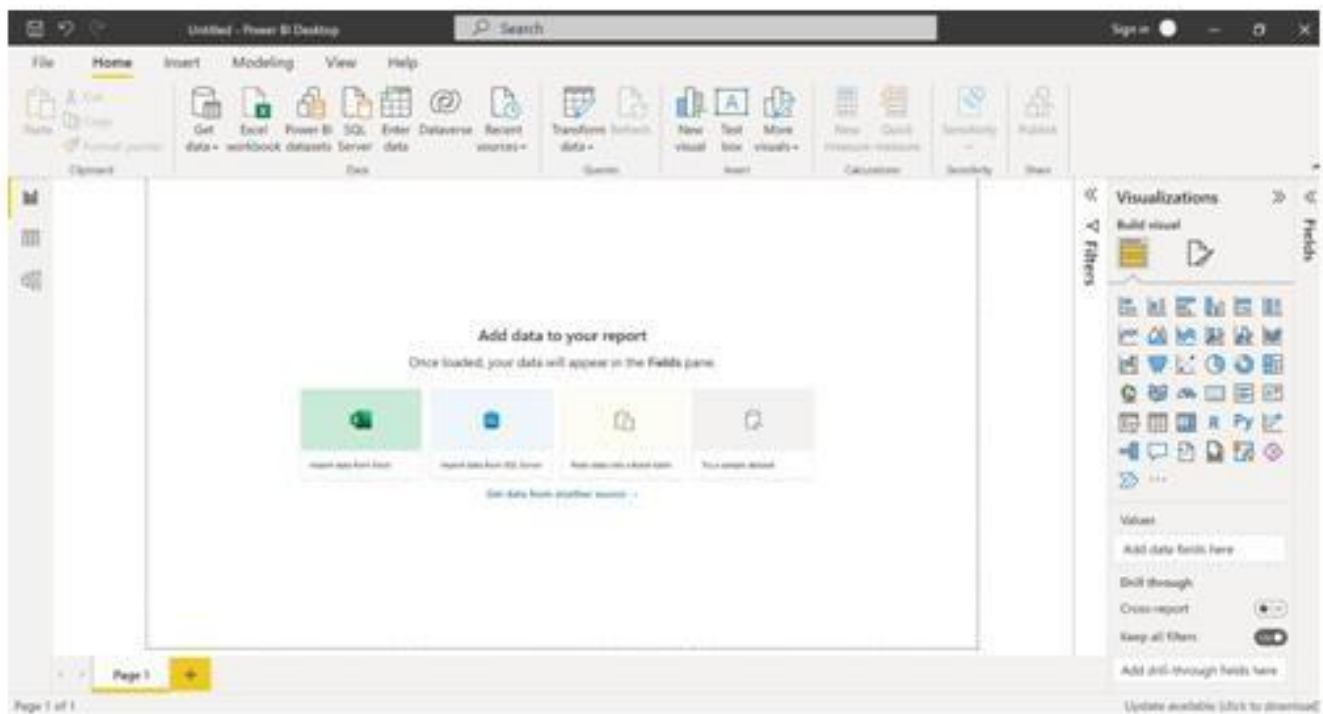
GetData(Data Source)

In the Home tab, from the Get data option, we can get data from various data sources such as Excel workbook, Text/CSV, SQL Server, Power BI datasets, Power BI dataflows, Web, OData feed, Analysis Services, Parquet, SharePoint folder, Azure Blob Storage, Azure Databricks, MariaDB, etc.



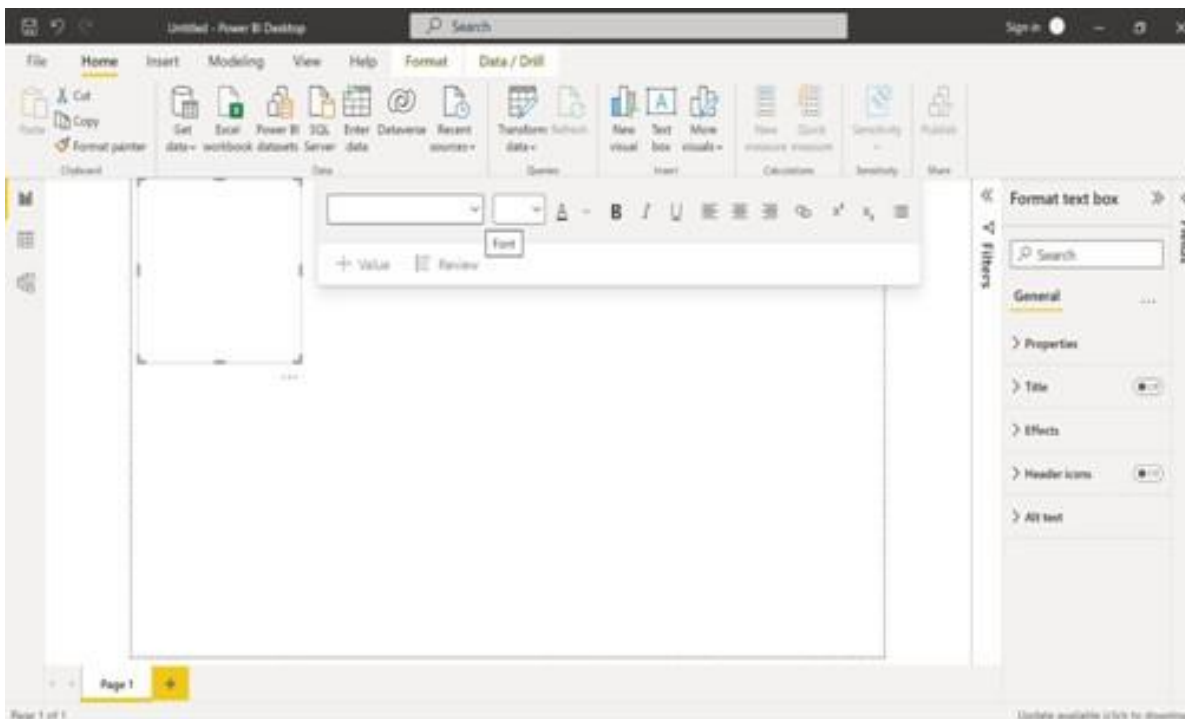
- WecanaddvisualstothereportpagebyclickingtheNewvisualoption.
- youcancreatereportsanddashboardsusingassimpleorascomplexvisualizationsas you want to represent your data set with.
- Thereisalsoalibraryavailableforcustomvisualizations.
- InPowerBIwecancreatevisualssuchas;Ribbonchart,Waterfallchart,Scatterchart, Pie chart, Map, Filled map, Funnel chart, Clustered bar chart, Gauge chart, et cetera...





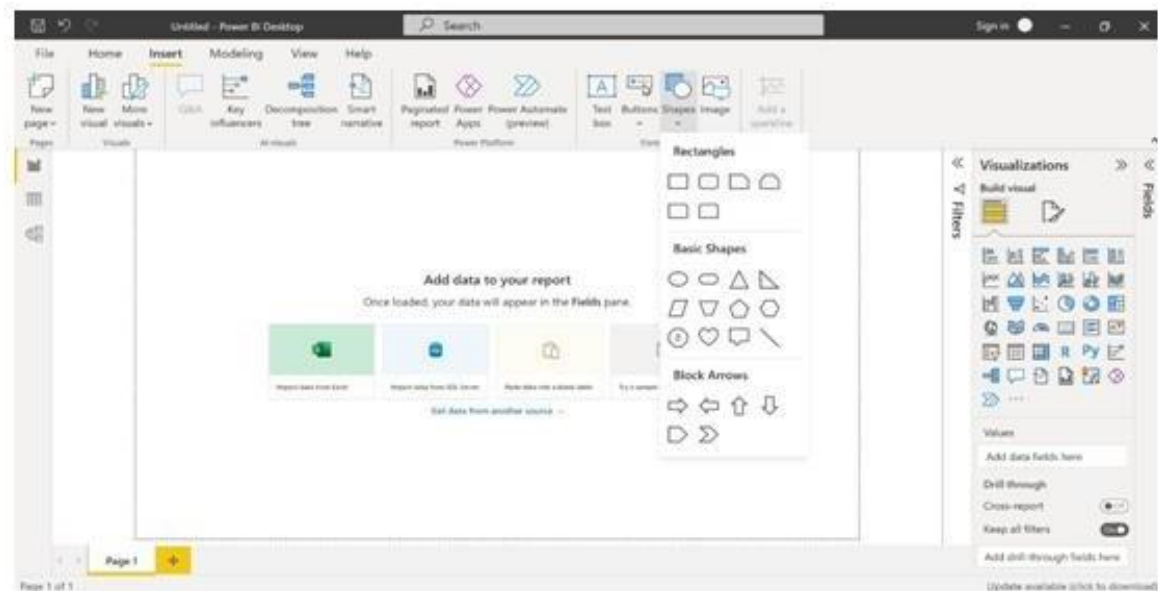
TextBox

With the Textbox option, we can insert a textbox in the report page and set the font type and font size for the text visual.



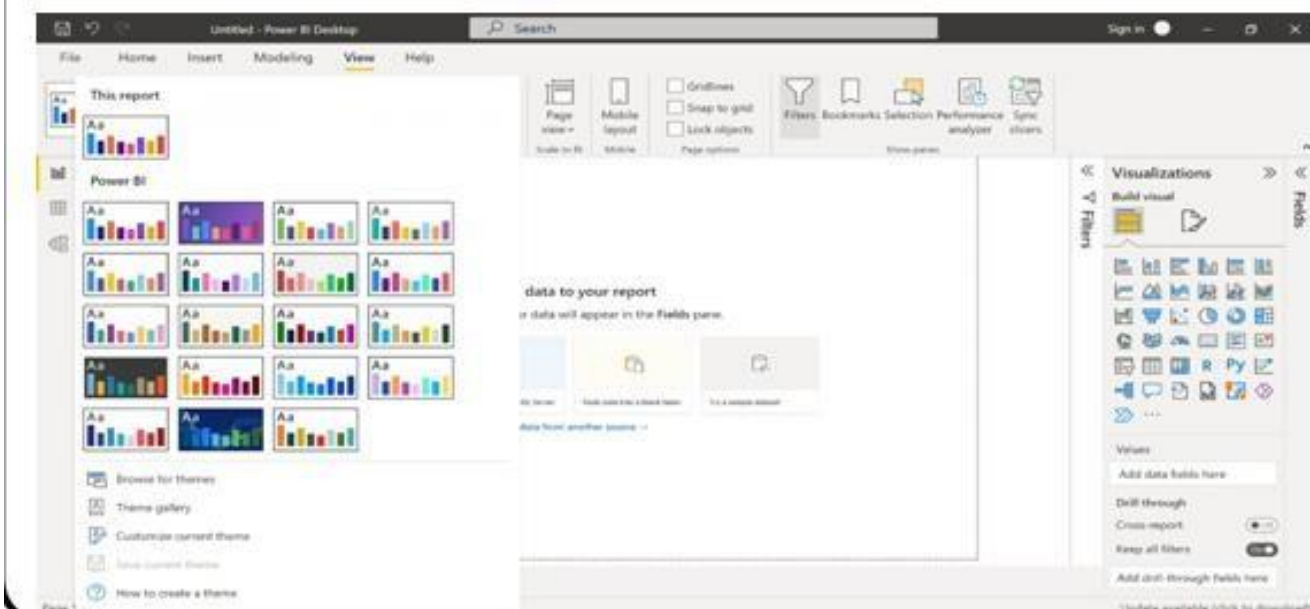
In the Insert tab, from the Textbox option, we can insert a textbox in the report page and set the font type and font size for the text visual.

Using the Shapes option, we can insert shapes like block arrows pointing to different directions and basic shapes such as circles, ovals, lines, pentagons, hexagons, etcetera...



Filters and bookmark options

Using Filters and bookmark options, the user can apply filters and bookmarks to the Power BI Report.



RESULT:

The explore the features of power BI Desktop is successfully.

EX.NO:10

DATE:

PREPAREANDLOADDATA

AIM:

ToPrepareandloaddata

PROCEDURE:

Step1:OpenPowerBIDesktop:

LaunchthePowerBIDesktopapplication.

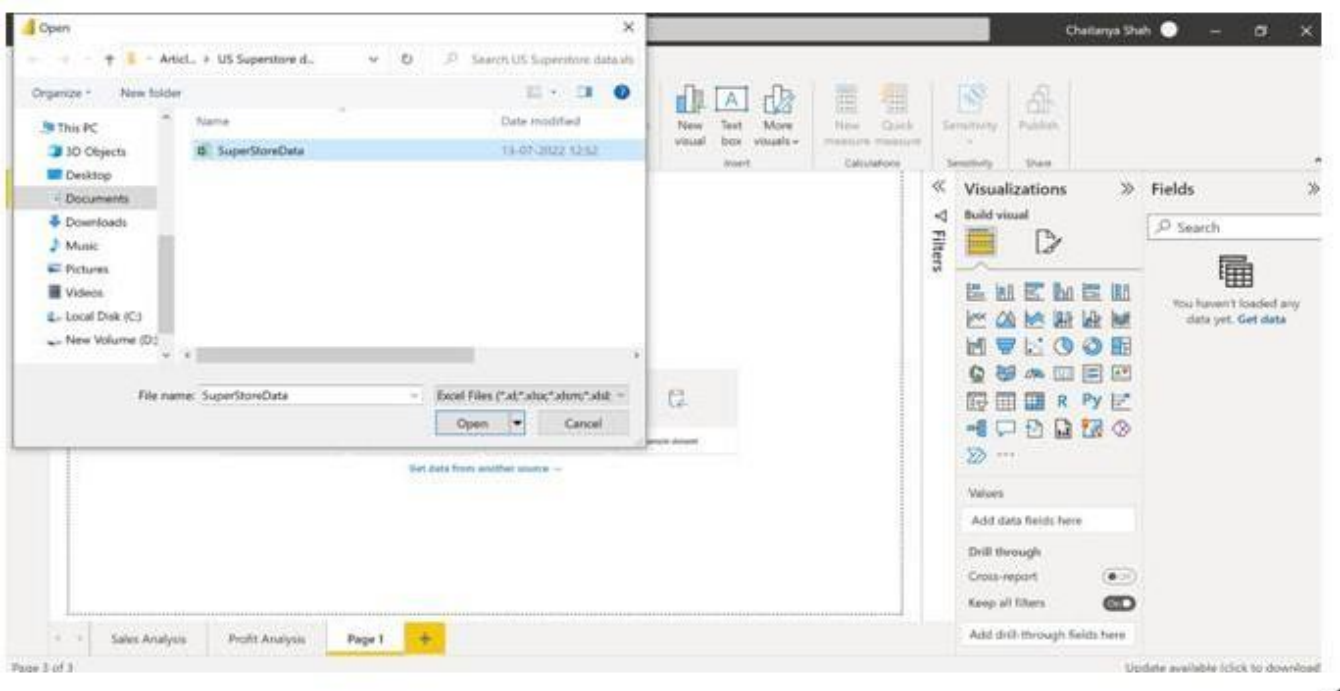
Step2:ConnecttoData Source

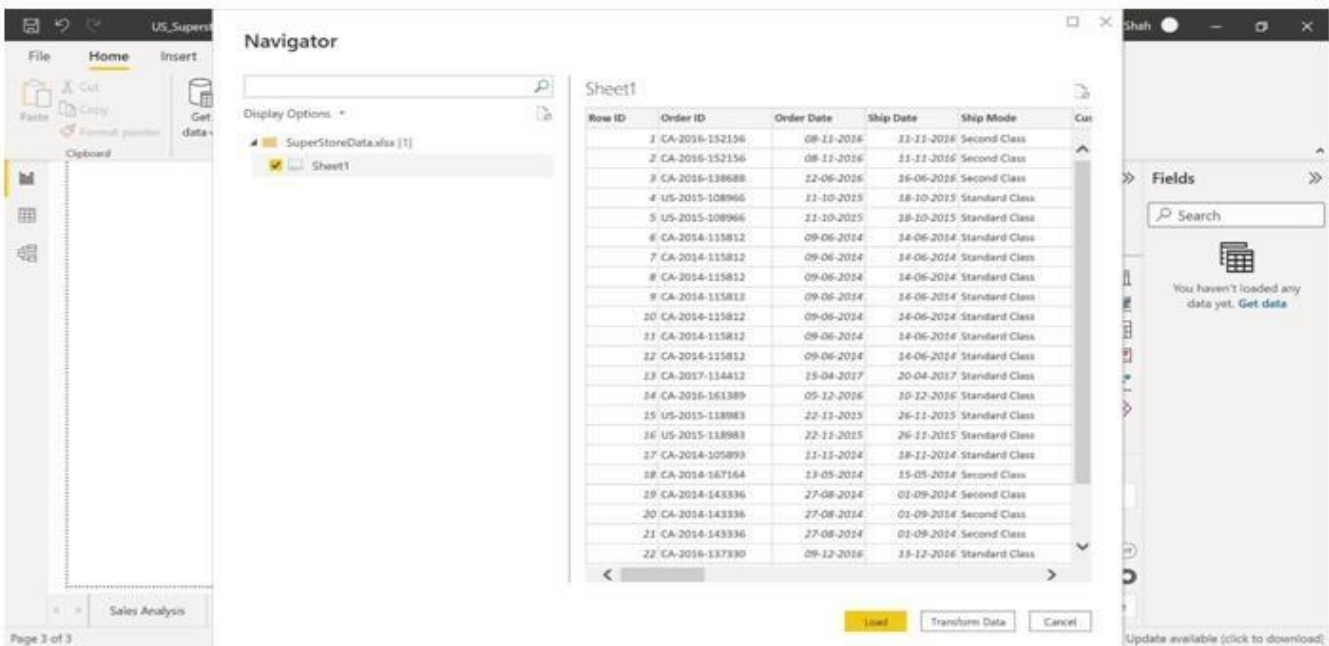
ClickonGetdataintheHometab,thenselectExcelworkbook,now choose the downloadedexcel file and open it.

Step3:Select Data

IntheDataSourceNavigator,choosethetablesordataobjectsyouwantto import.

(Users can import data from Azure Synapse Analytics SQL, Excel, Text/CSV, Web, AmazonRedShift, Oracle, MySQL, Snowflake, SAP databases,GoogleBigQuery,MariaDB,SharePointList,etc.,inPower BI Desktop based on their requirements.)



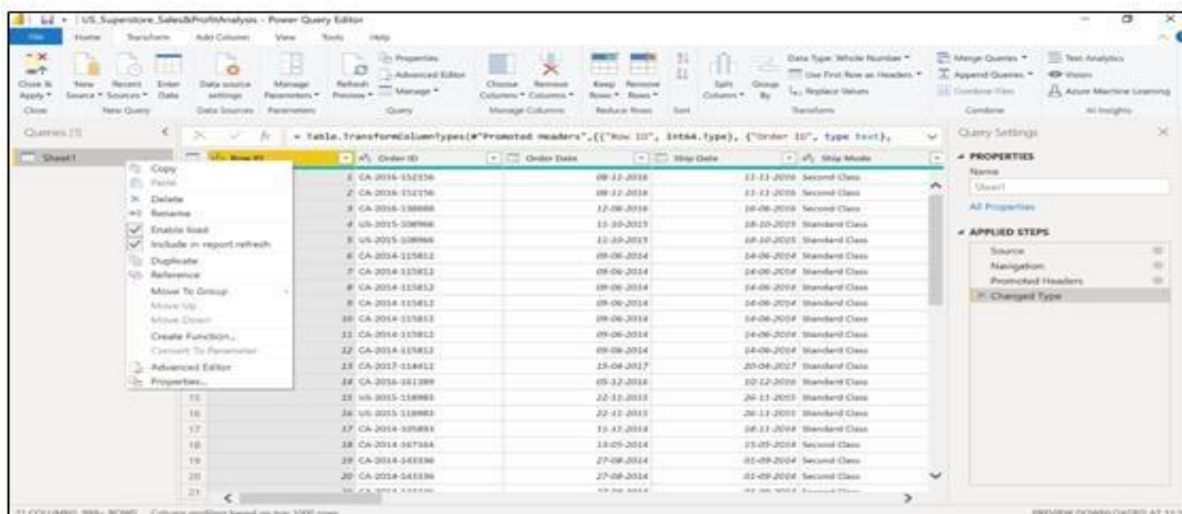


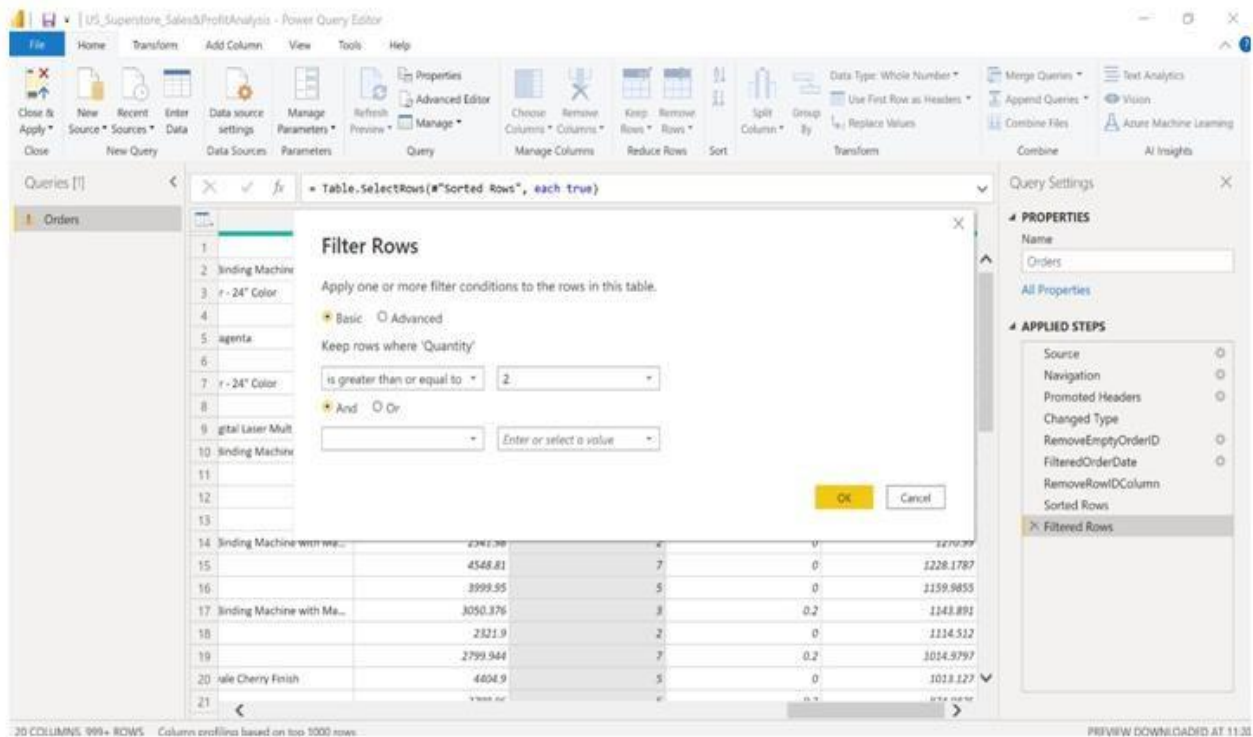
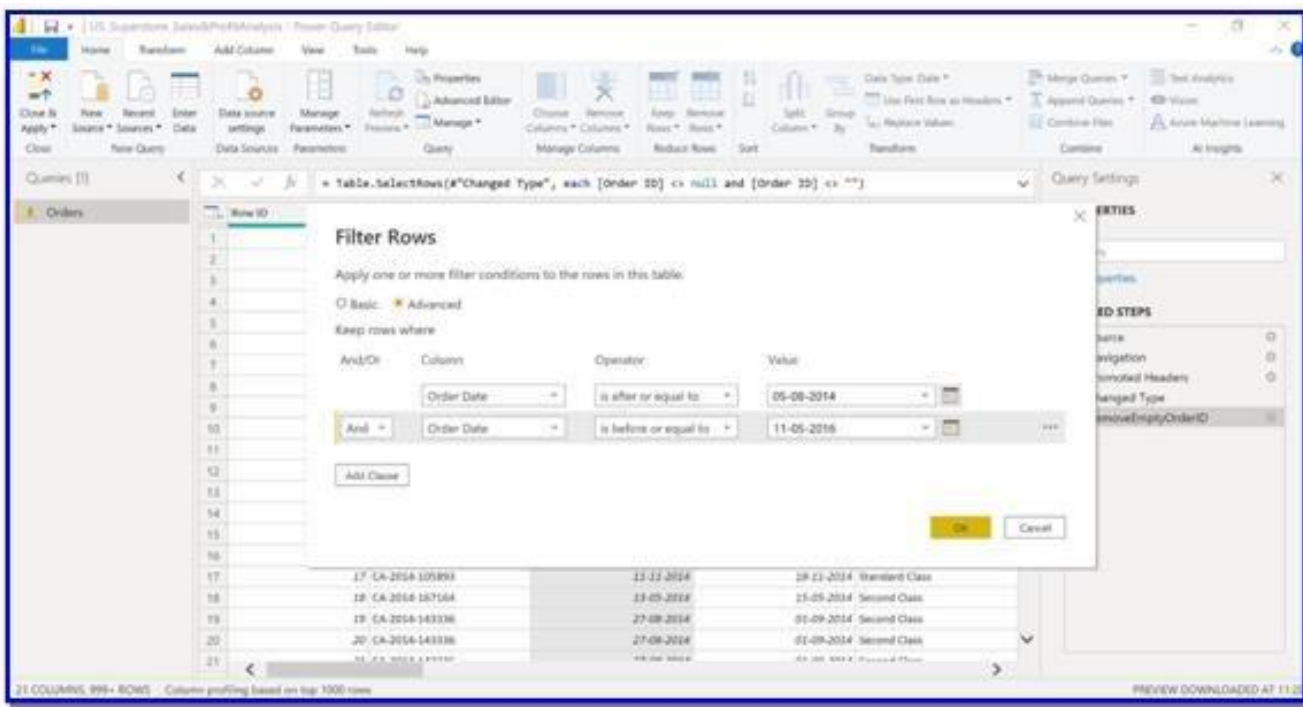
Step5:DataTransformation(Optional):

If needed, use the Power Query Editor to clean and transform the data. Ex; (Shaping and Cleaning data)

1. Right Click Sheet1 -> Rename. Rename it to Orders.
2. Right Click OrderID -> Remove Empty.
3. Right Click Order Date -> Date filters -> Between -> Filter Rows tab select Advanced radio button -> Select 05-08-2014 in date picker parallel to is after or equal to -> Select 11-05-2016 in date picker parallel to is before or equal to.
4. Right Click Quantity -> Number filters -> Greater than or equal to -> Filter Rows tab select Basic radio button -> Select 2 in drop-down parallel to is greater than or equal to -> OK

OUTPUT:





RESULT:

The program is prepared and load data successfully.

EX.NO:11

DATE:

DEVELOP THE DATA MODEL

AIM:

To develop the data model

PROCEDURE:

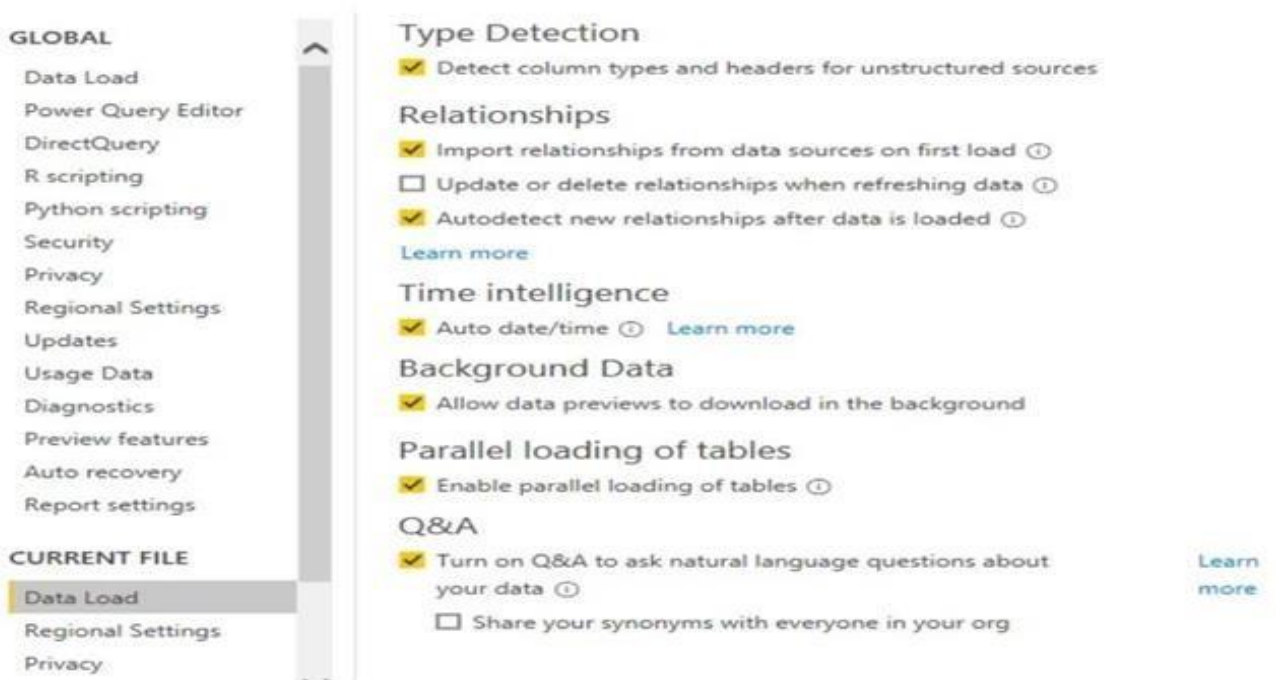
Step1: Launch Power BI Desktop

Step2: On the Dashboard window click *File*

Step3: Then, click *Options and settings -> Options -> Current File*

Step4: Next up, load the data by selecting **Data Load** option

Options

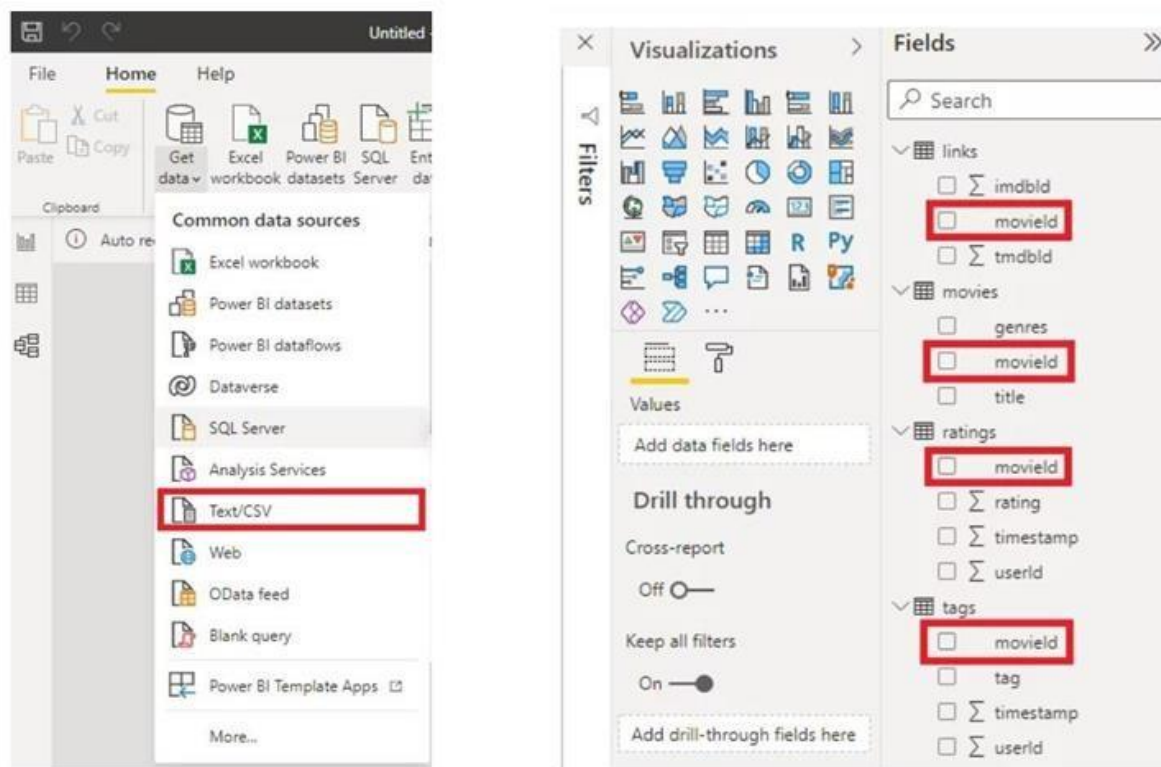


Step5: Upload the CSV files to your Power BI dashboard by clicking the **“Get data”** option from the top menu and then selecting **“Text/CSV”** option from the dropdown list.

Ex; for this experiment we've imported the below CSV file;

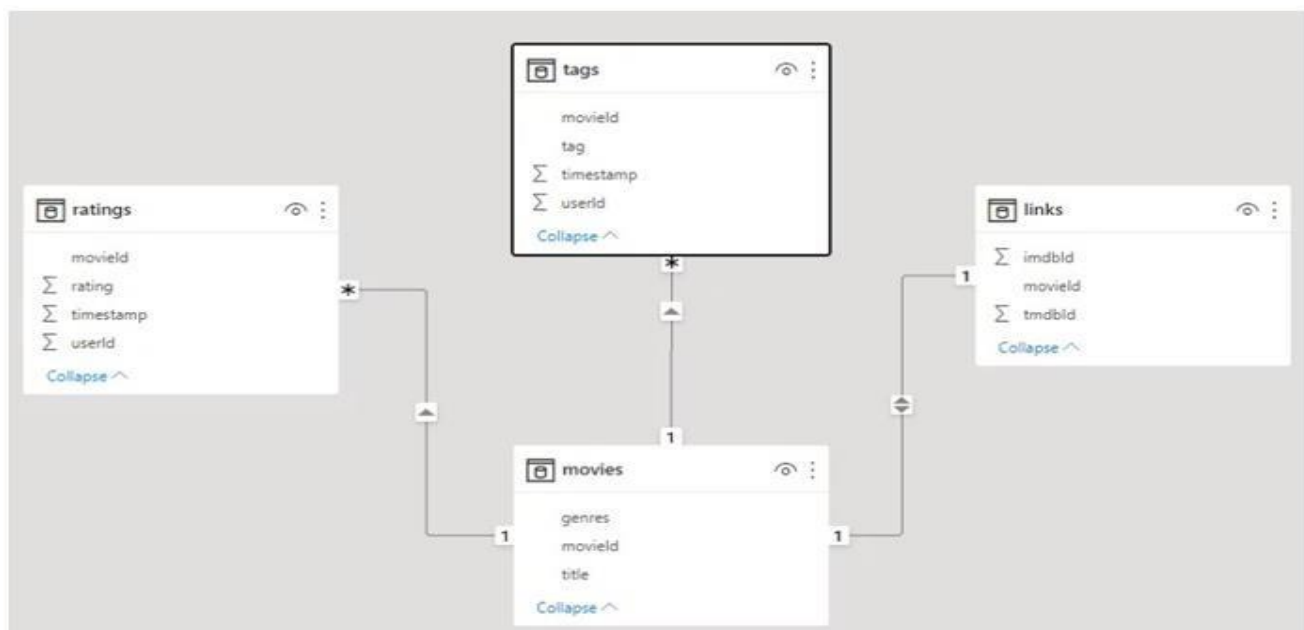
<https://files.grouplens.org/datasets/movielens/ml-latest-small.zip>

(You will see the four CSV files in the form of tables and their corresponding columns in the Reports View as shown)



Step6: Finally, to display the Power BI Model, click the **“Model”** icon from the left menu bar on the Reports view.

OUTPUT:



RESULT:

The program on Prepare and load data is successfully.

EX.NO:12

DATE:

PERFORMDA CALCULATIONS

AIM:

To perform DA calculations

PROCEDURE:

In Power BI, DAX can be used to construct two distinct kinds of expressions and calculations:

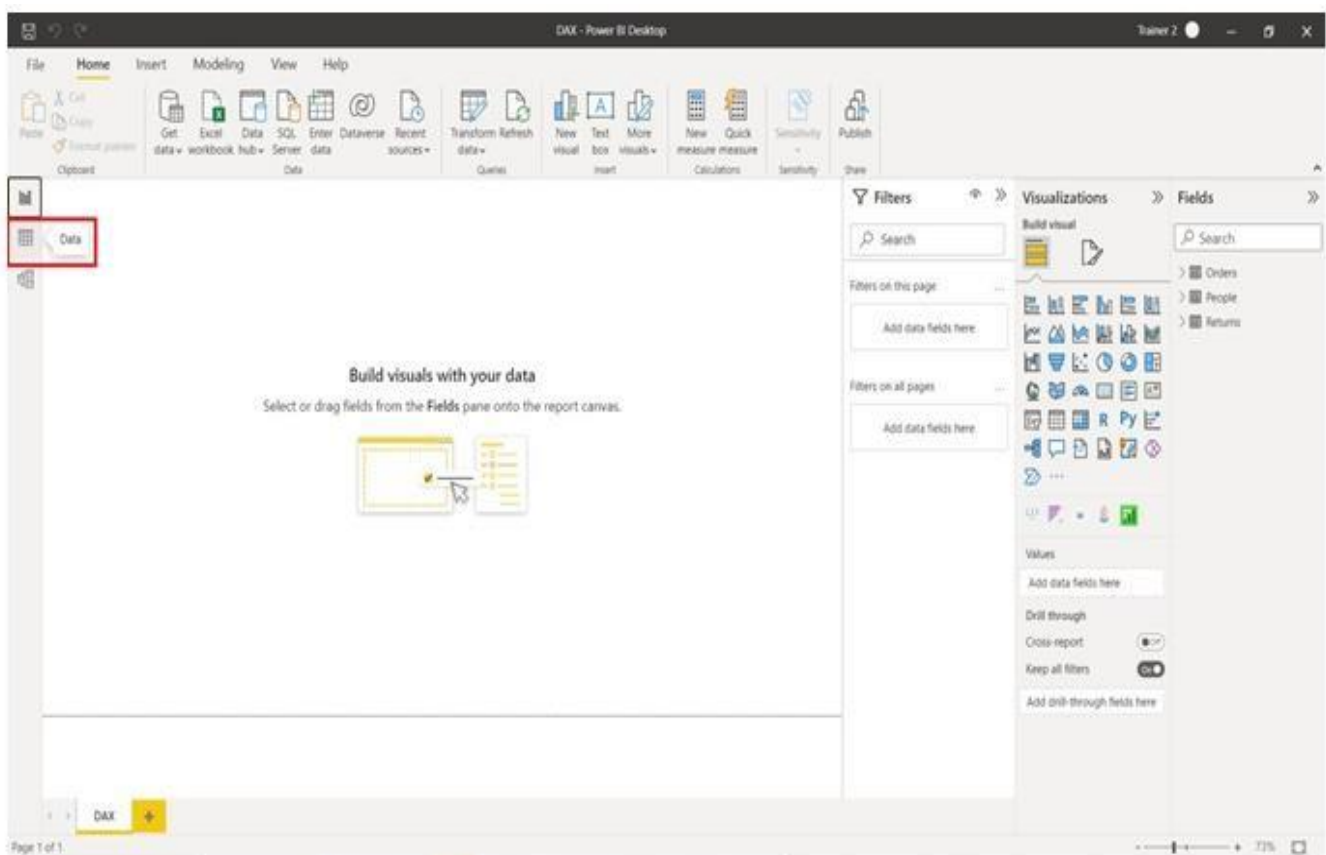
- i. Calculated columns
- ii. Calculated measures

Steps to create Calculated Columns:

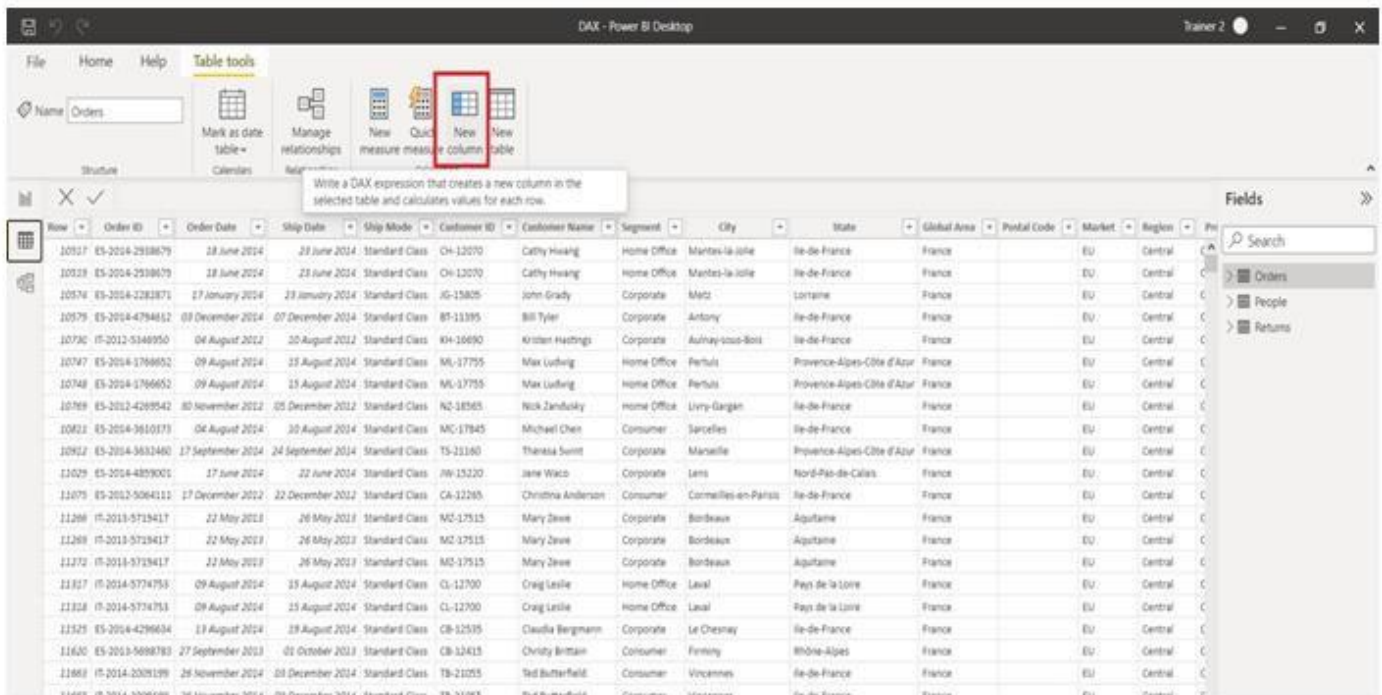
Step1: Launch Power BI desktop

Step2: Prepare and import the data (csv file)

Step3: In the Power BI Desktop left pane, select the *Data* tab



Step4:Next,clickthe**NewColumn**button



Step5:IntheFormulabar,enter“**Column=**”andhitenter.

Stepstocreate**CalculatedMeasure**:

Step1:LaunchPowerBIdesktop

Step2:GotoPowerBIModelingsection

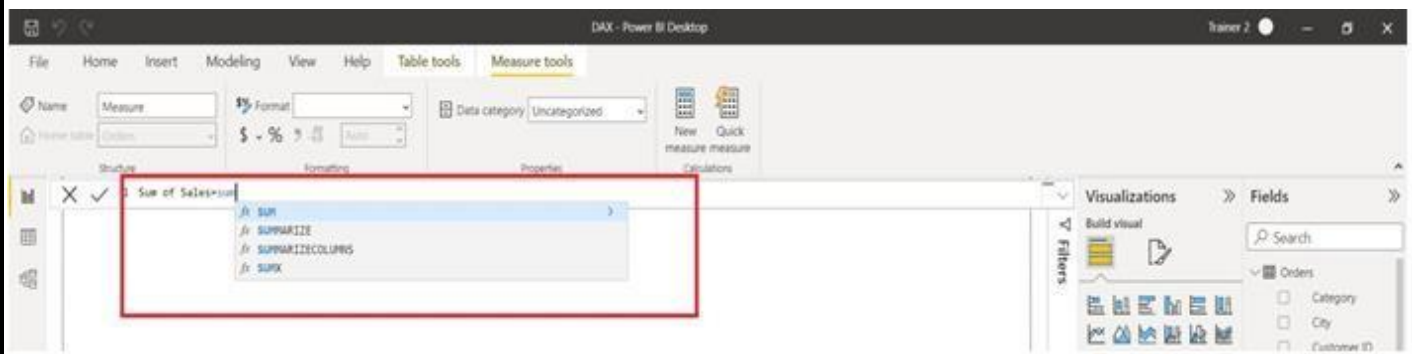
Step3:Nextup,choosethe“**NewMeasure**”menuitem



Step4:Thewords“**Measure=**”willappearinaFormulaswindow



Step5: You can change “Measure” to any other name for a unit of measurement



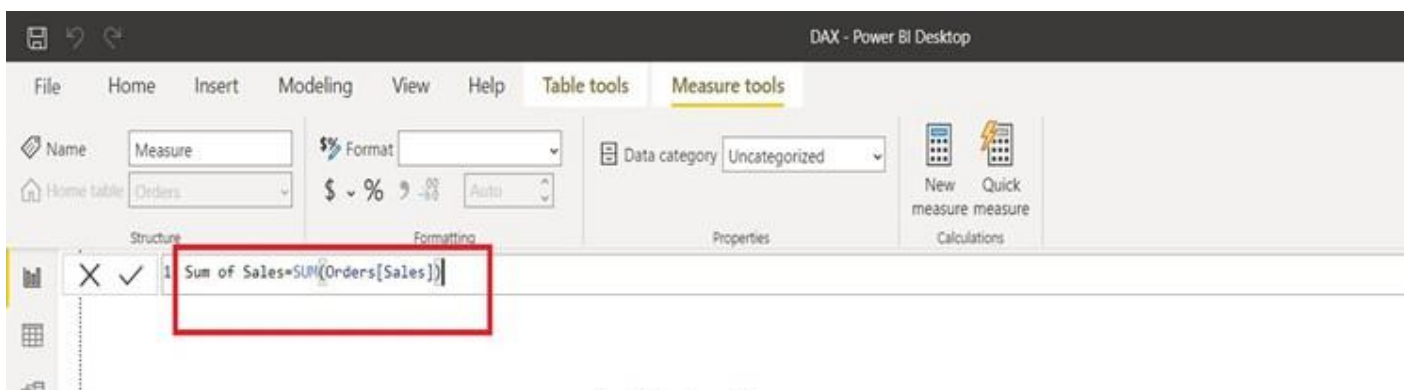
Step6: Next, type the expression for the resultant size to the right of the equals sign.

OUTPUT:

The screenshot shows the Power BI Desktop interface with the 'Column tools' ribbon active. The 'Name' field is set to 'Column'. The 'Data type' is set to 'Whole number'. The 'Sum of Sales' measure is selected, and the 'Column' function is highlighted in the list of functions.

Global Area	Postal Code	Market	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Discount	Profit	Shipping Cost	Order Priority
India		EU	Central	OFF-BI-10000289	Office Supplies	Binders	Wilson Jones Binder Covers, Recycled	23.1	2	0	5.52	0.16	Medium
India		EU	Central	OFF-BI-10000348	Office Supplies	Binders	Ibico 3-Hole Punch, Clear	85.73	3	0	35.82	4.99	Medium
India		EU	Central	OFF-BI-10000563	Office Supplies	Binders	Acco Hole Reinforcements, Durable	24.48	3	0	11.43	3.28	Medium
India		EU	Central	OFF-BI-100004722	Office Supplies	Binders	Alery Index Tab, Clear	17.37	3	0	4.68	1.14	Medium
India		EU	Central	OFF-BI-10000281	Office Supplies	Binders	Ibico Binder, Recycled	79.2	5	0	6.3	5.78	Medium
India		EU	Central	OFF-BI-10000622	Office Supplies	Binders	Acco 3-Hole Punch, Durable	126.48	4	0	51.84	10.52	Medium
India		EU	Central	OFF-BI-10000341	Office Supplies	Binders	Ibico Binding Machine, Recycled	258.9	5	0	46.5	5.22	Medium
India		EU	Central	OFF-BI-100002047	Office Supplies	Binders	Acco Index Tab, Durable	58.64	6	0	11.7	2.09	Medium
India		EU	Central	OFF-BI-10000085	Office Supplies	Binders	Ibico Index Tab, Clear	75.33	9	0	27.81	5.44	Medium
India		EU	Central	OFF-BI-10000253	Office Supplies	Binders	Acco Binder Covers, Recycled	54.72	4	0	16.32	3.55	Medium

i. Calculated Columns



ii. Calculated Measure

RESULT:

To perform DAX calculations is successfully.

EX.NO:13

DATE:

DESIGNAREPORTAANALYST

AIM:

To design a report for an analyst

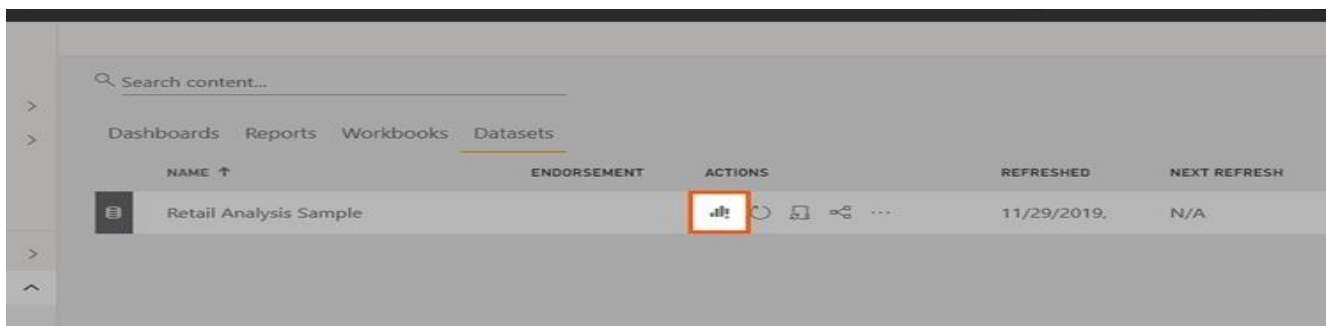
PROCEDURE:

Step 1: Launch Power BI desktop

Step 2: Next, import and transform the dataset

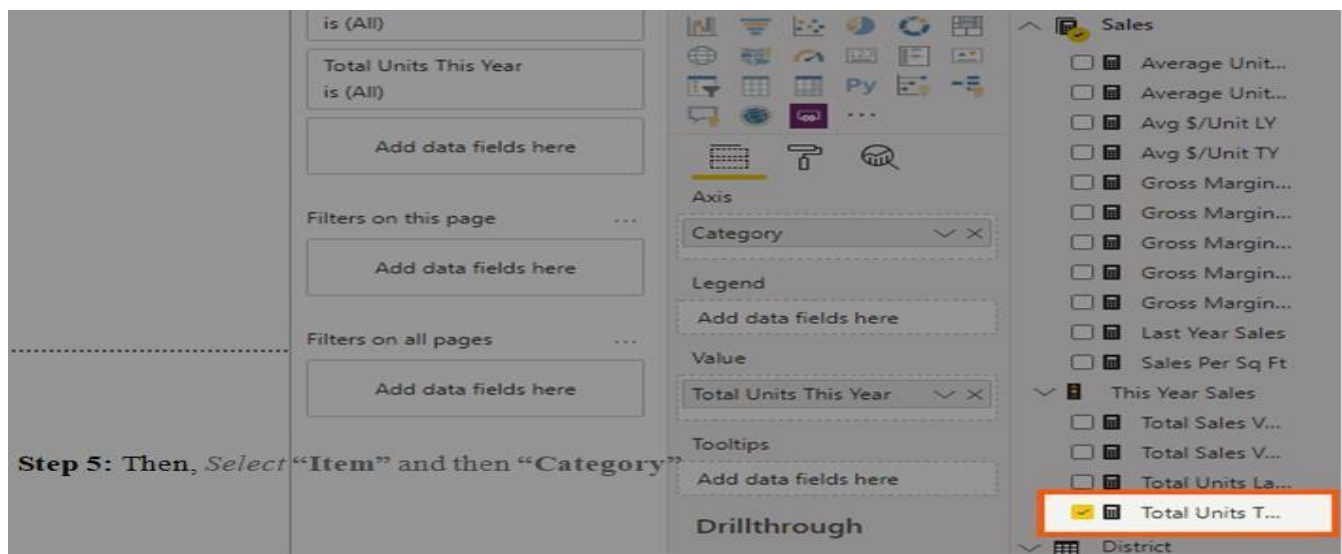
(Ex; here, we'll be using the "Retail Analysis Sample" prepared by Microsoft and Obvience)

Step 3: go to the "Datasets" section in your workspace and click the 'Create report' icon.

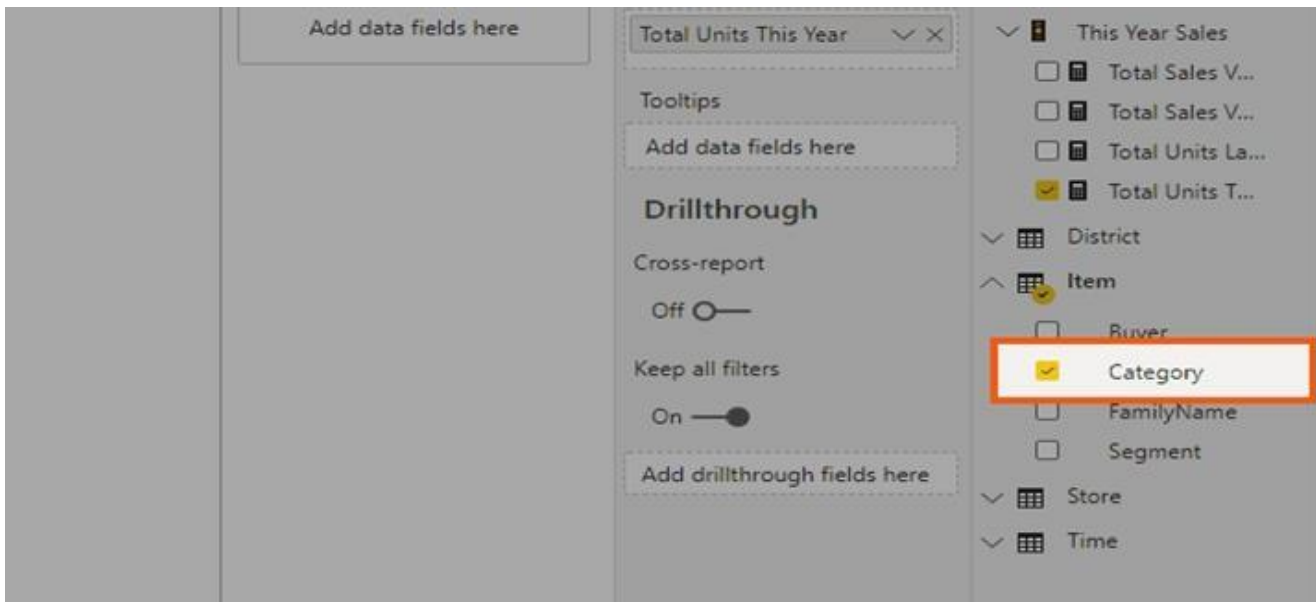


Step 4: Select the *fields* first then visualizations after

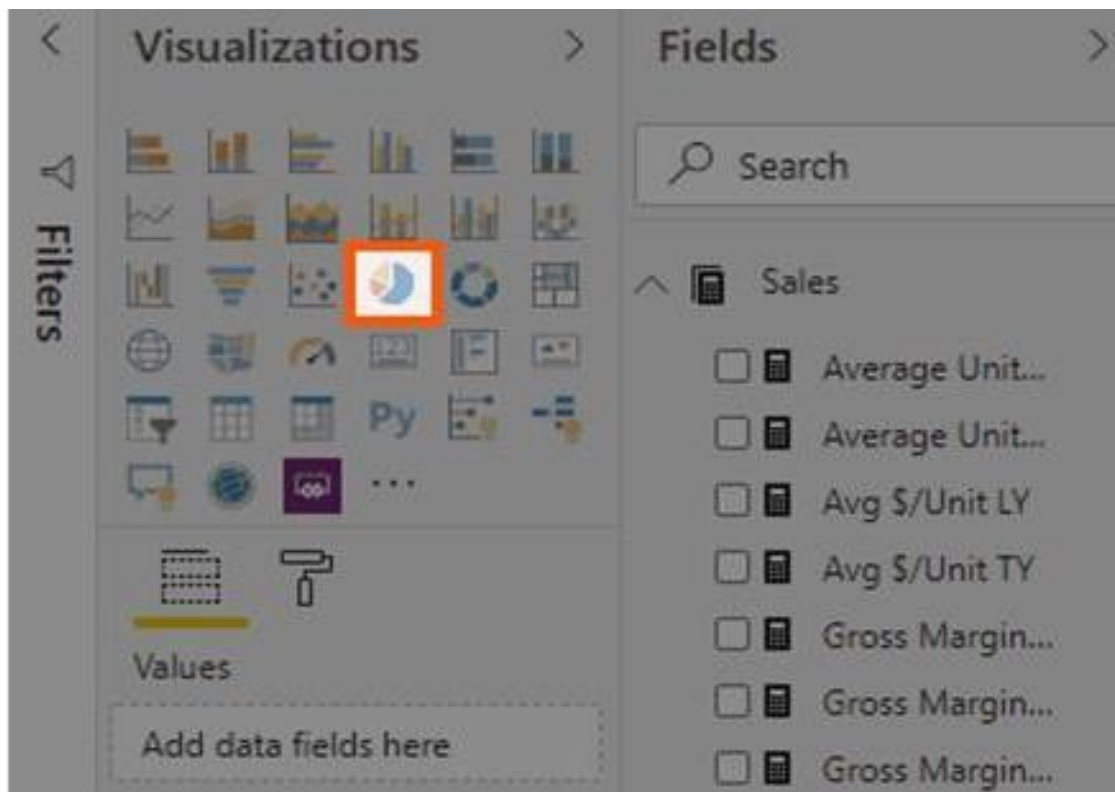
[Select "Sales" and then "Total Units This Year"]



Step 5: Then, Select "Item" and then "Category"

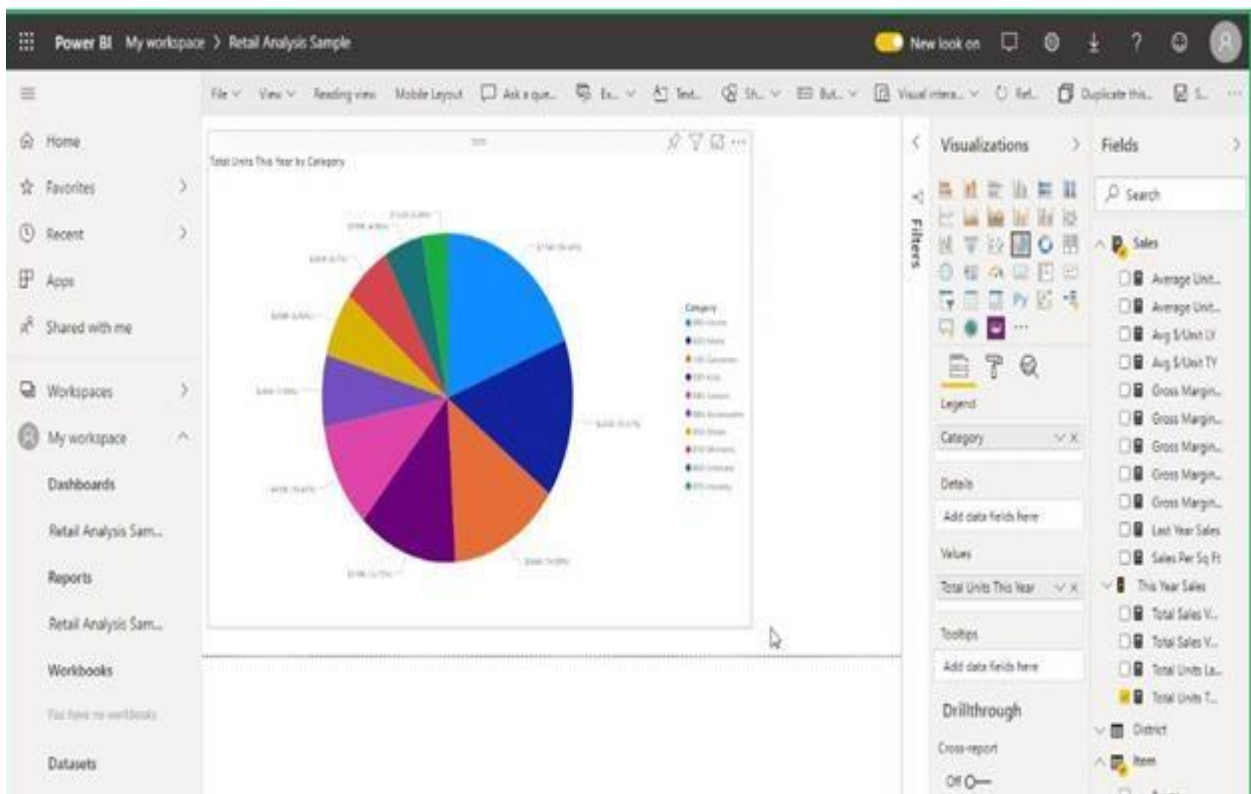


Step5: For Visuals, head over to the visualization pane and *click* the pie chart icon

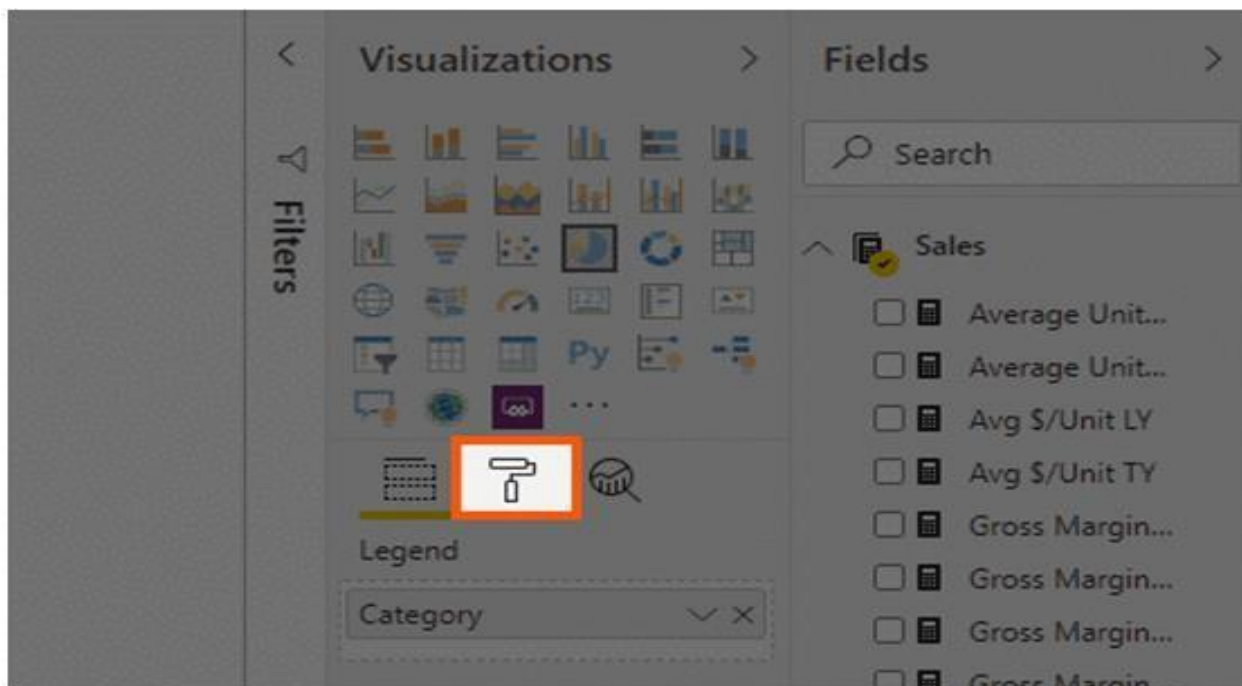


Step6: Modifying;

- ✓ **Enlarge** your visual to the size you want (Simply *click* on the visual and *drag* its corners)
- ✓ The next part is enlarging *the texts*—*legend, detail labels, and title*—of your report.



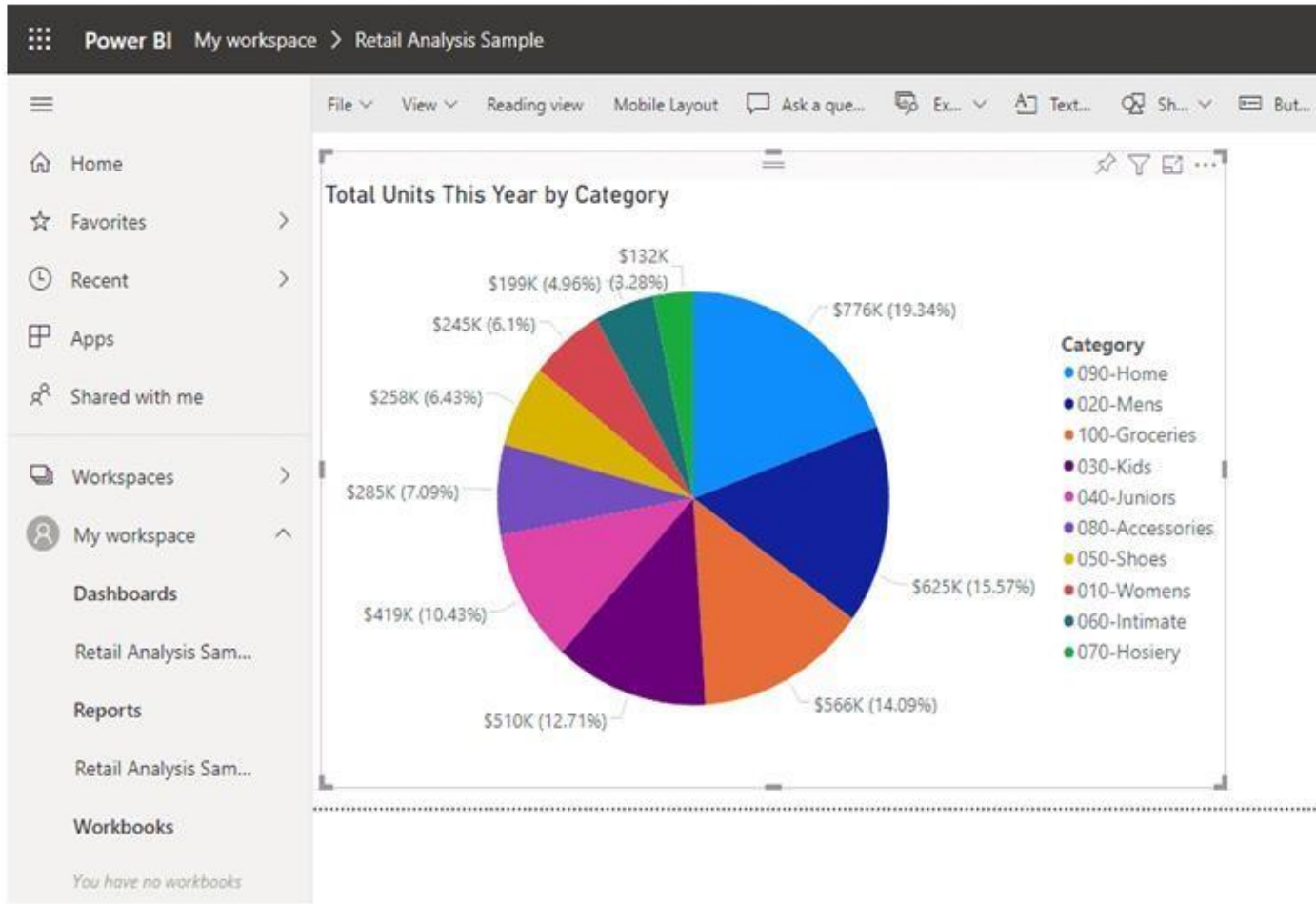
Step7: On the visualizations pane, go to the **'Format'** section



Step8: Change the format of your visuals;
[To enlarge the text, simply go through the 'Legend', 'Detail labels', and 'Title' and then *adjust* the text size]

Step9: Save your report by clicking **'File'** from the tab list and select **'Save'**

OUTPUT:



RESULT:

The design report analyst successfully.

EX.NO:14

DATE:

DASHBOARD AND PERFORMANCE DATA ANALYSIS.

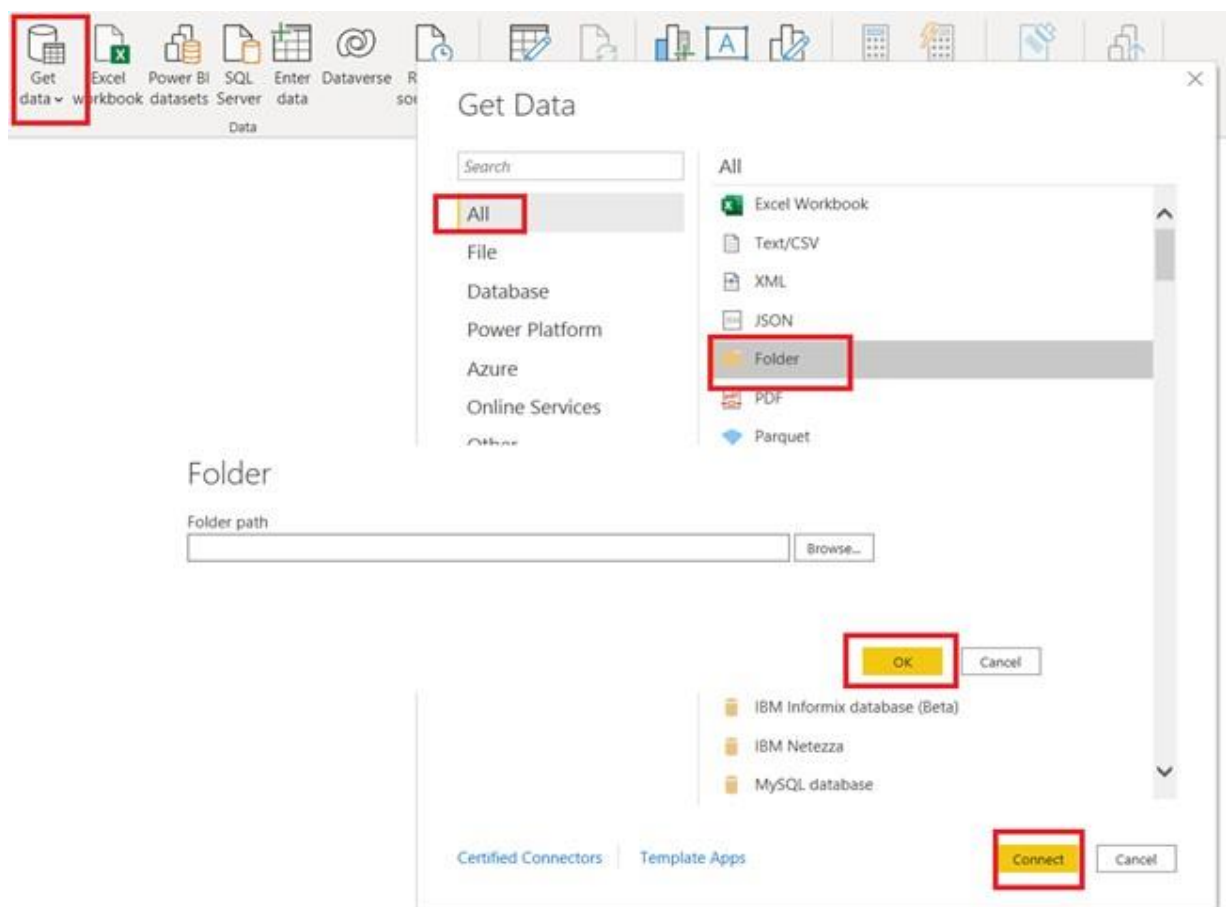
AIM:

To create a dashboard and perform data analysis.

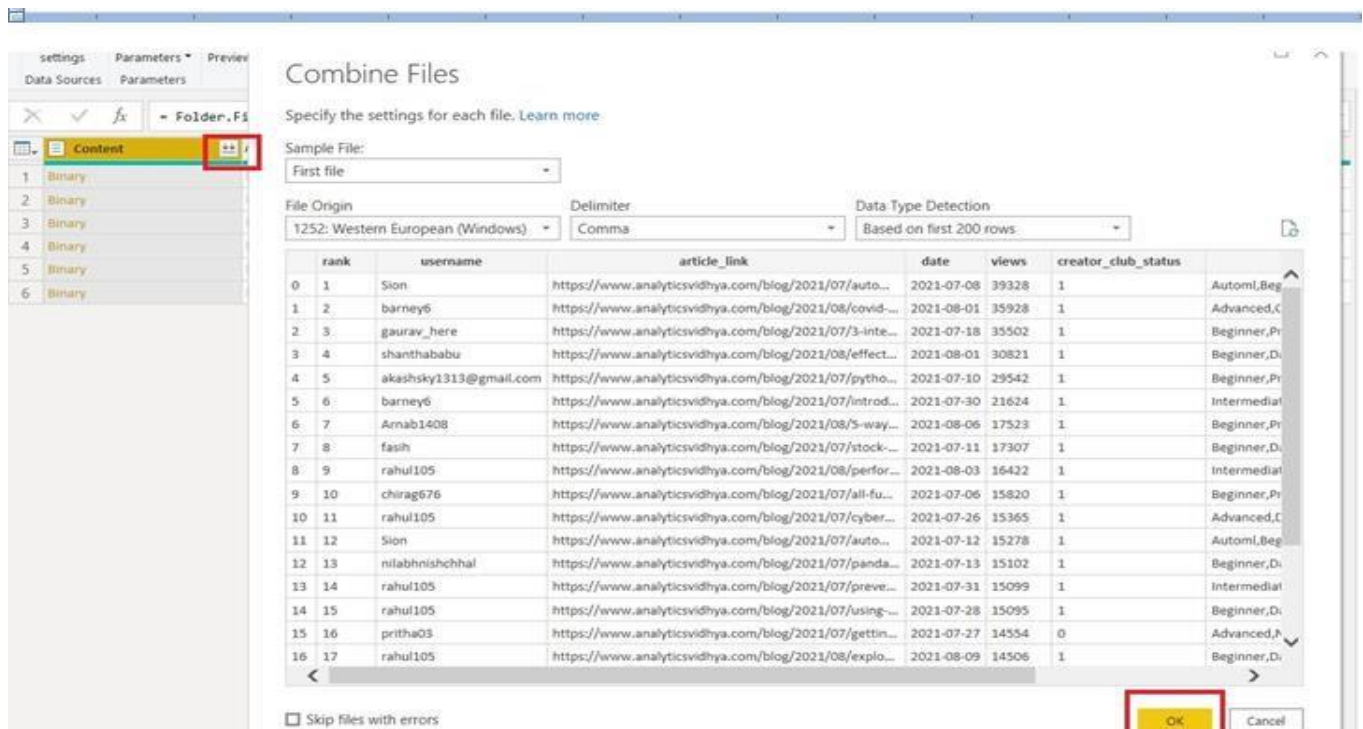
PROCEDURE:

Step 1: Launch Power BI desktop

Step 2: Import the folder containing all CSVs into Power BI by selecting “*Get Data*” option from the top ribbon, “*More*” from the bottom, then, select add folder and input the path of the folder.

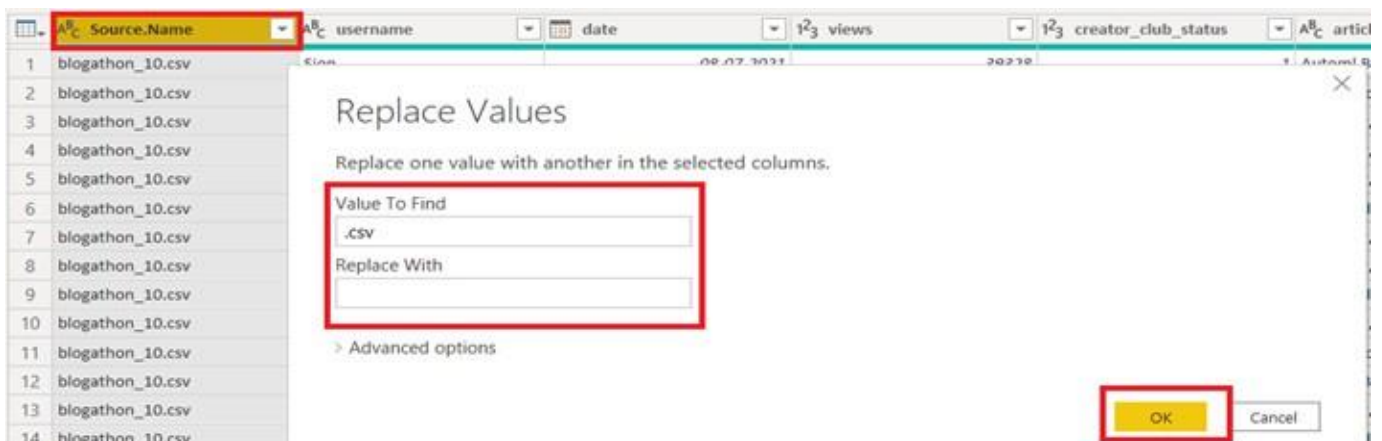


Step 3: Select “combine and transform” option, Click OK



Step4:Select “rank”, “article_link”, and an extra “123” columns and right-click to get display the option to remove the columns.

Step5:Right-click on the column name, select “Replace values” and input “.csv” in value to find and leave replacement value.

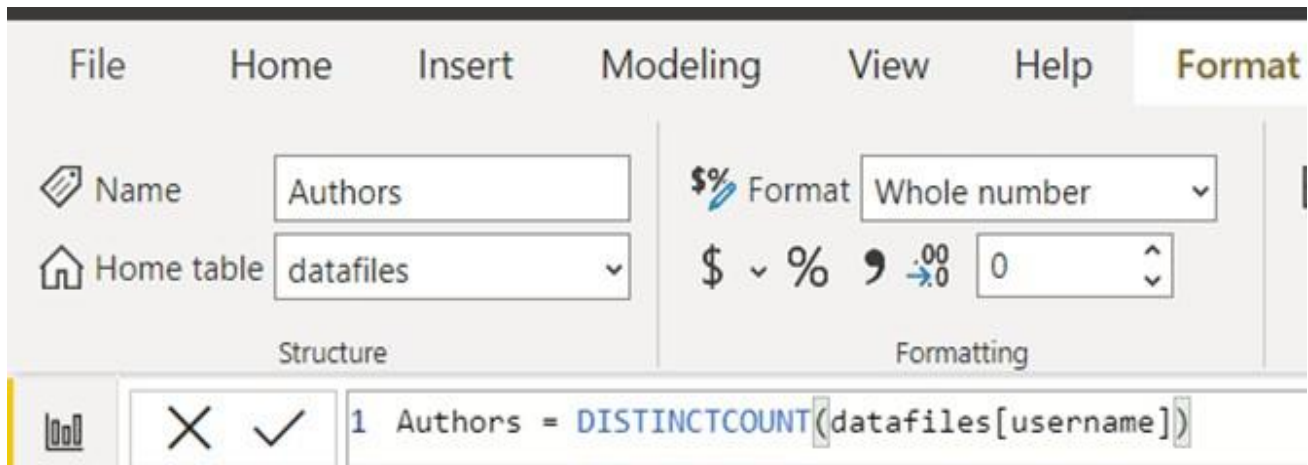


Step6:Click close and apply to get the transformed data into the report.

Step7:Creating visualizations for Data Analysis;

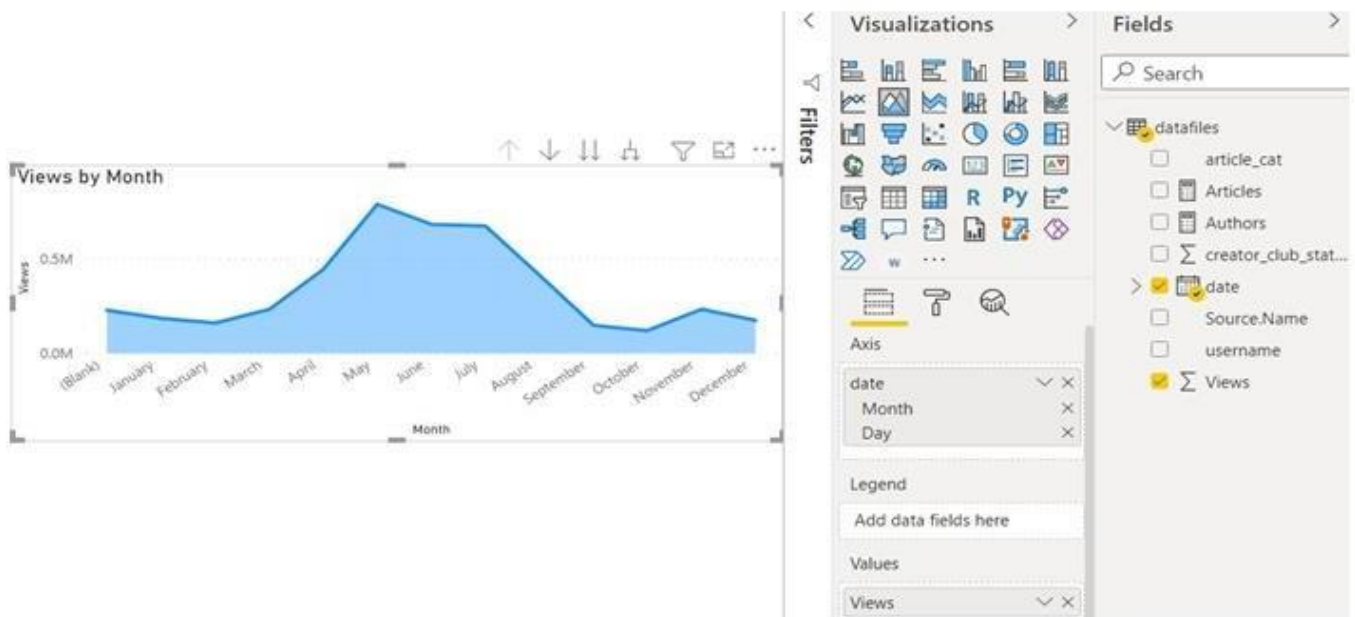
Adding Numeric Cards: For our case, we will add **Total views**, **Authors**, and **Article count cards**. To add a card, simply drag it from the visualization pane on the

right. Then, right-click on the data source, select the new measure option, and input the format/formula for the same.



Step8: Pick any non-null column from the data. and drag the measures into individual cards.

Step9: Plot the view of the article by the date of publishing.

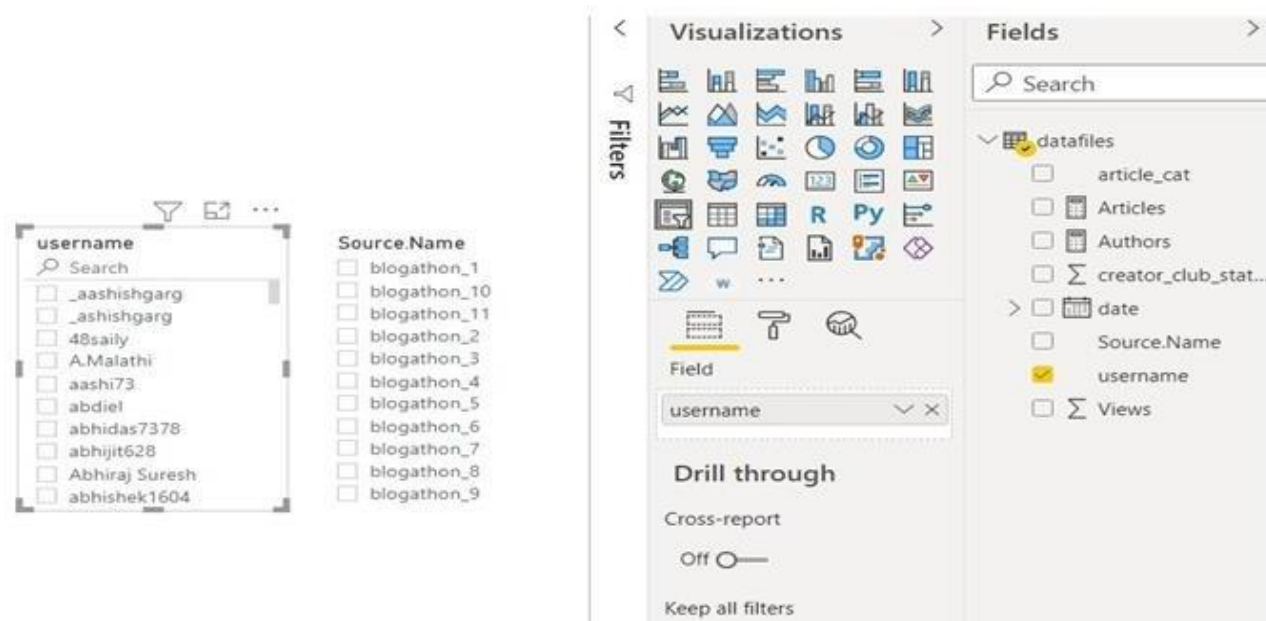


Step9: Adding WordCloud;

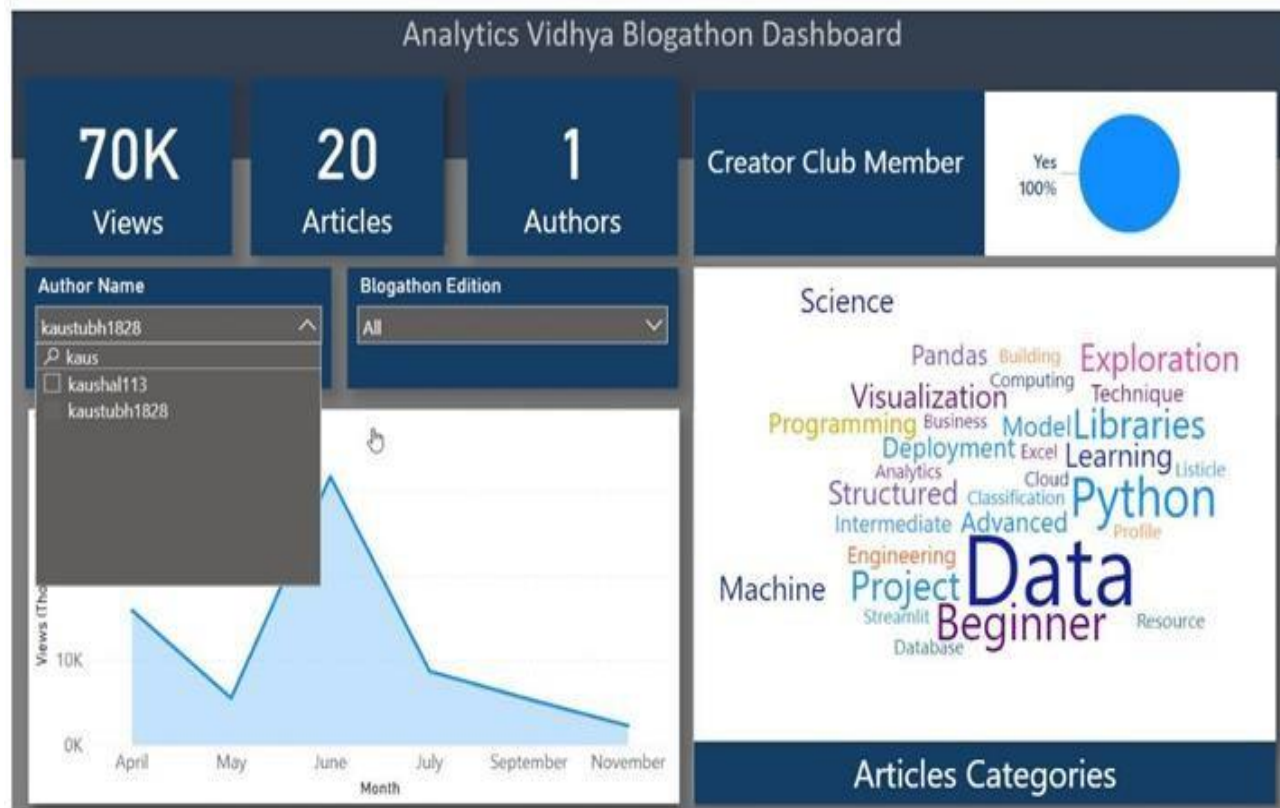
click on three dots, select **“Get more visuals”** and in the marketplace, search for the word cloud. You will see an official Microsoft visual. Click get it now to install.

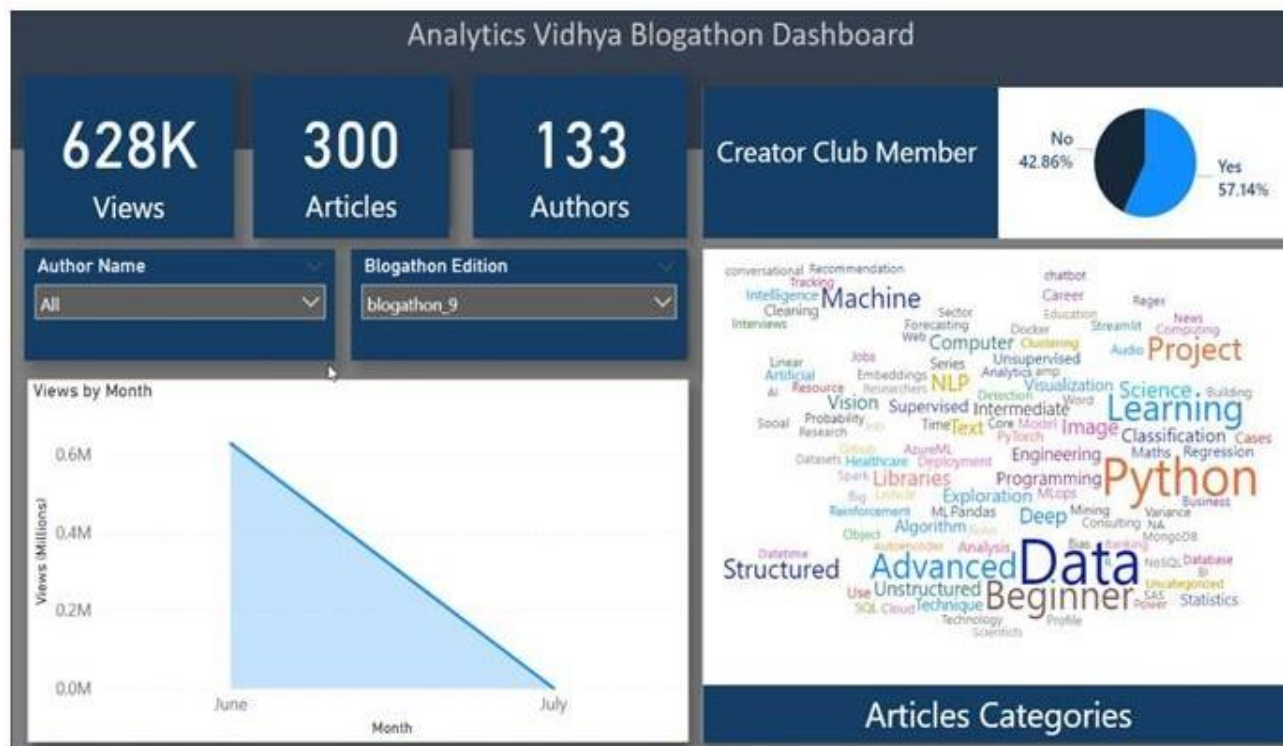
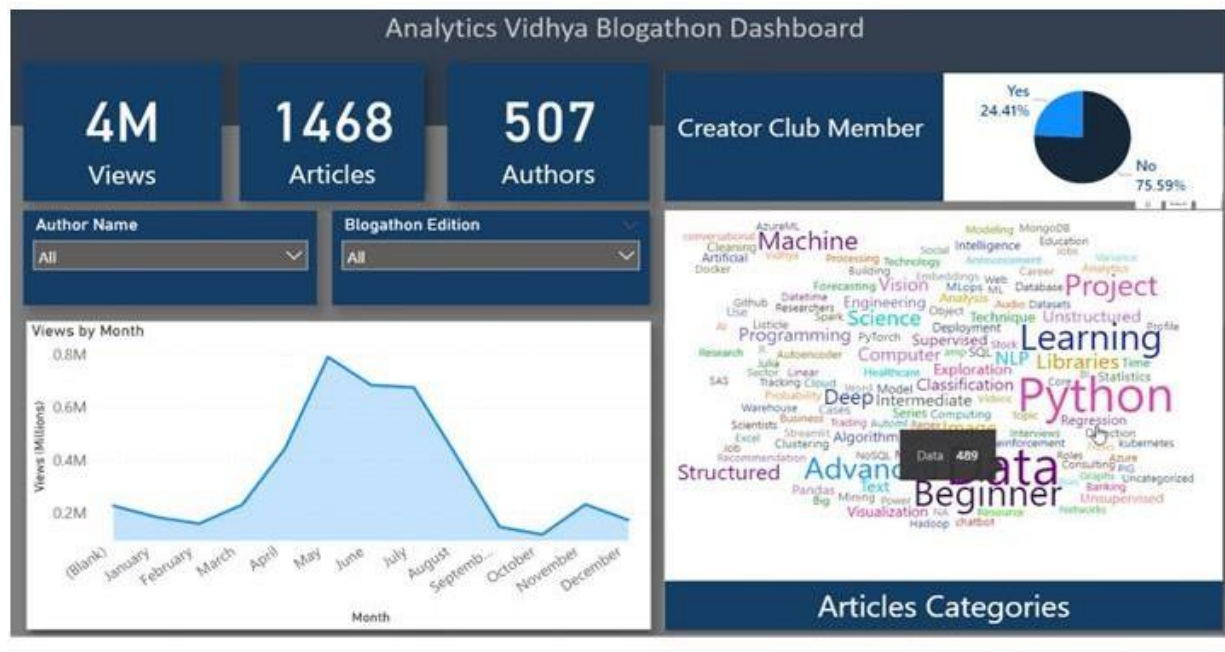
Step11:AddingSlicerstosortthe data;

For our dataset, we will add **two slicers**: One for the blogathon editions or the data source and the second one for the usernames column or the authors.



OUTPUT:





RESULT:

The create a dashboard and perform data analysis is successfully.

EX.NO:15

DATE:

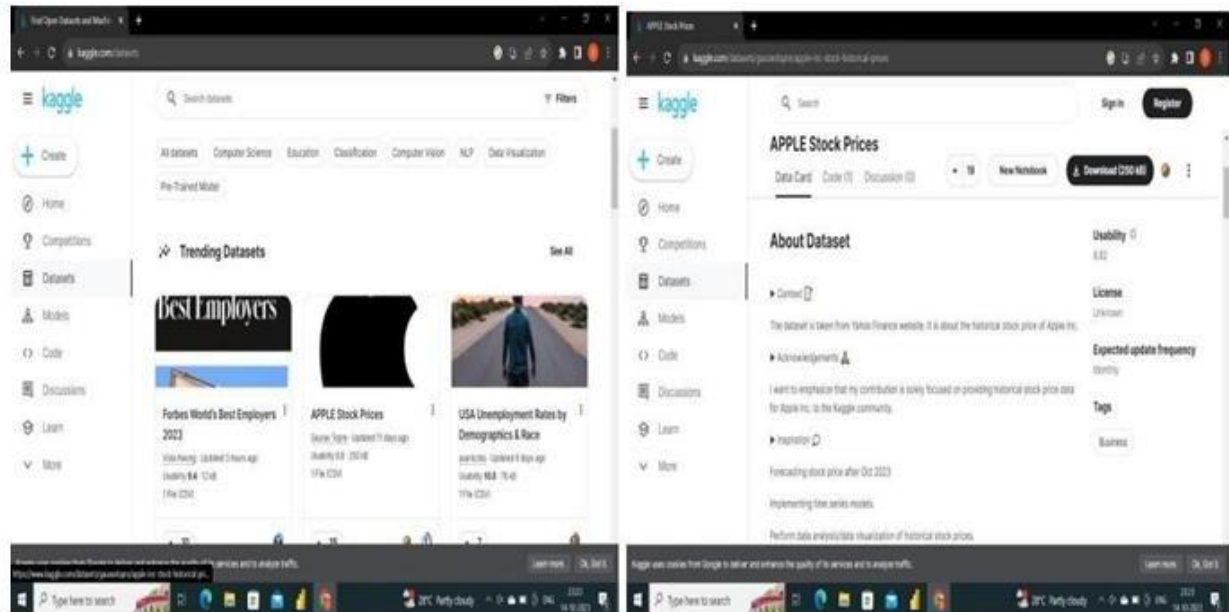
PRESENTATION OF A CASE STUDY

AIM:

Top presentation of a case study PROCEDURE:

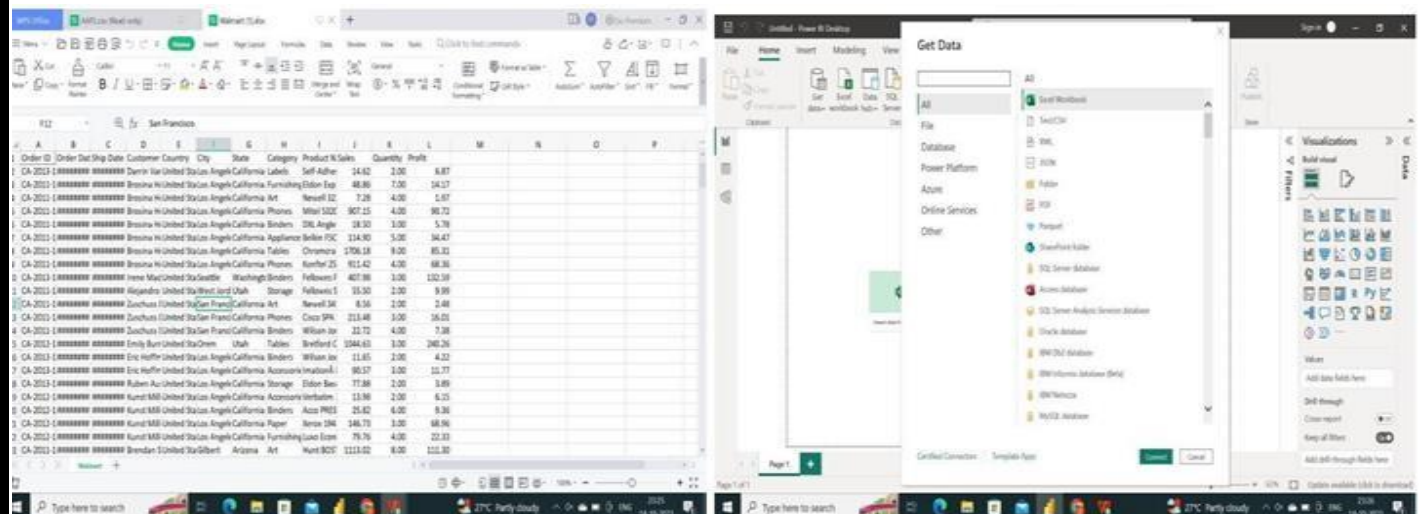
Step 1: Data Collection

Begin by collecting the Apple stock price dataset from Kaggle or any other reliable source. Ensure that the dataset includes relevant information such as date, open price, close price, high price, low price, and volume.



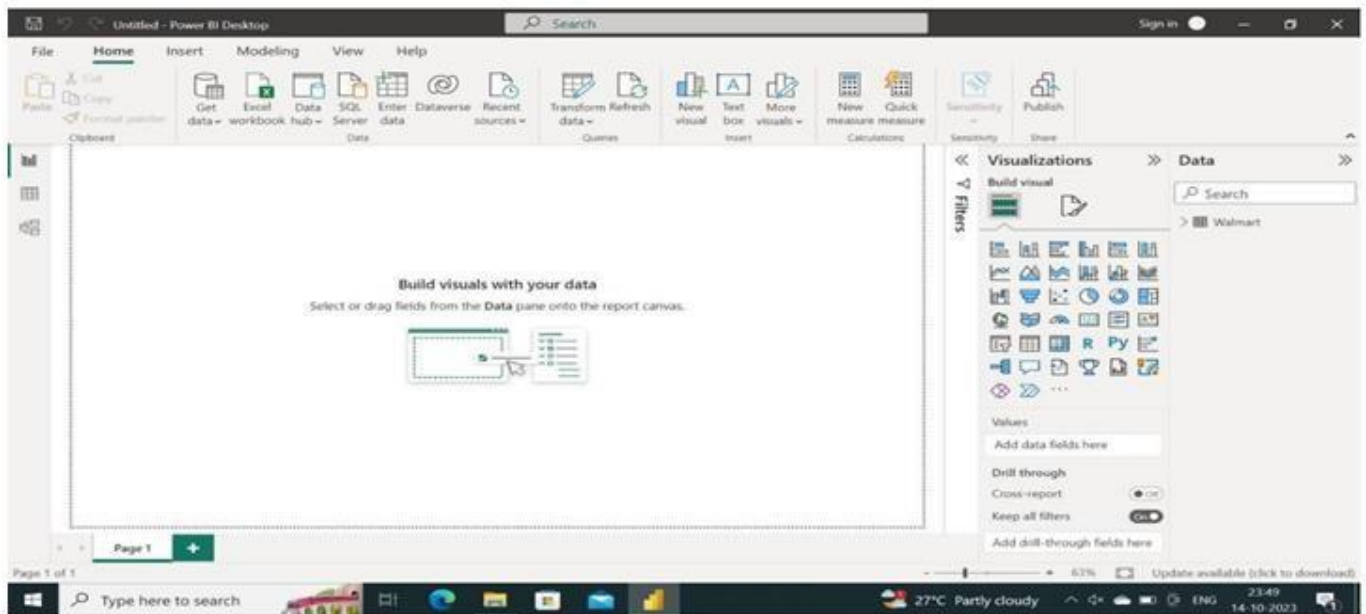
Step 2: Data Cleaning and Transformation

Import the dataset into Power BI and perform data cleaning and transformation. This may include handling missing data, removing duplicates, and converting data types.



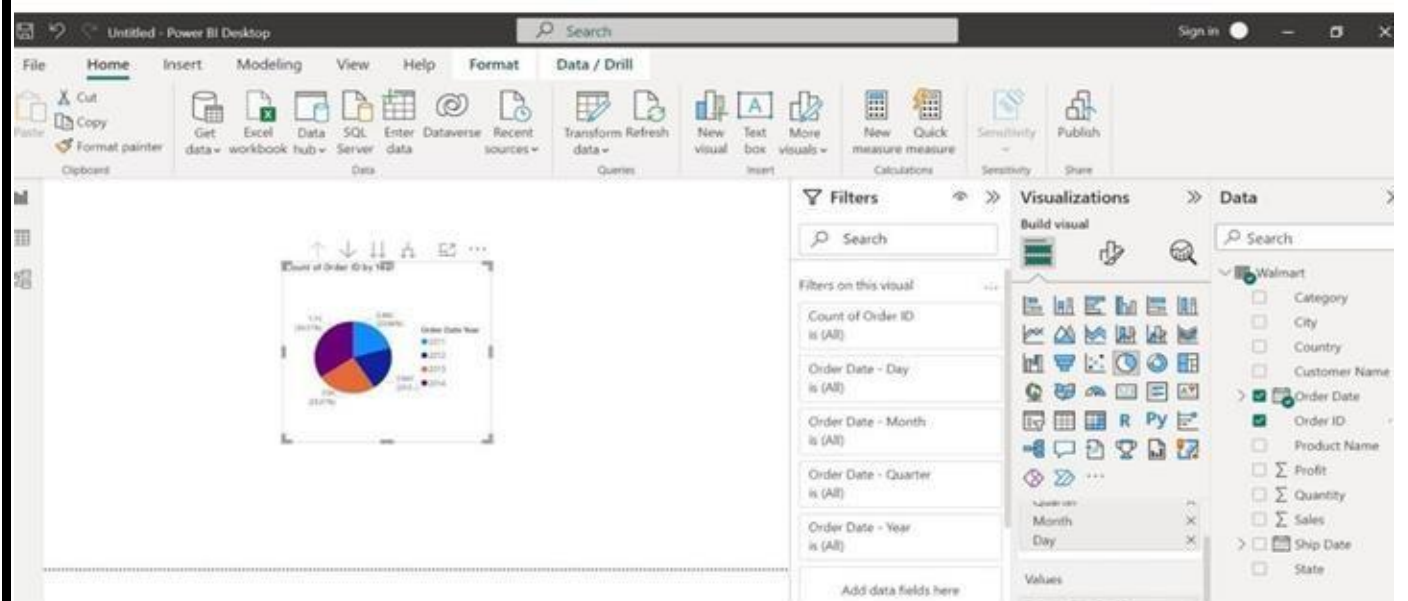
Step3:DataExploration

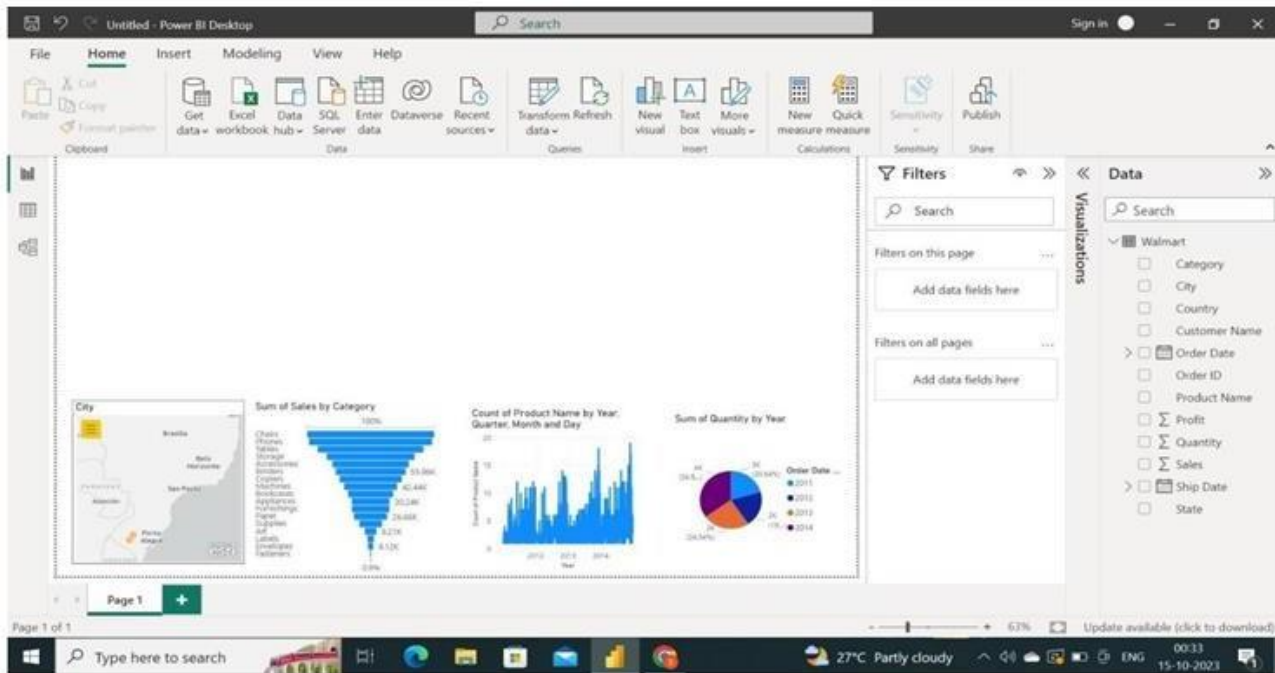
Create visualizations to explore the dataset. Common visualizations for stock data analysis include line charts to visualize stock price trends over time, bar charts for trading volume, and candlestick charts to show open, close, high, and low prices.



Step4:StockPriceTrends

Use Power BI to analyze and present trends in Apple's stock prices. You can create line charts to illustrate daily, weekly, or monthly price trends. Identify key events or periods that affected the stock price and add annotations to your visualizations to explain them.





Step5:DashboardCreation

Create a user-friendly dashboard in Power BI that includes all your visualizations, key insights, and explanations. Design the dashboard to tell a compelling story about Apple's stock price performance.



RESULT:

The presentation of a case study is successfully.