Inside Microsoft Office

Session 08

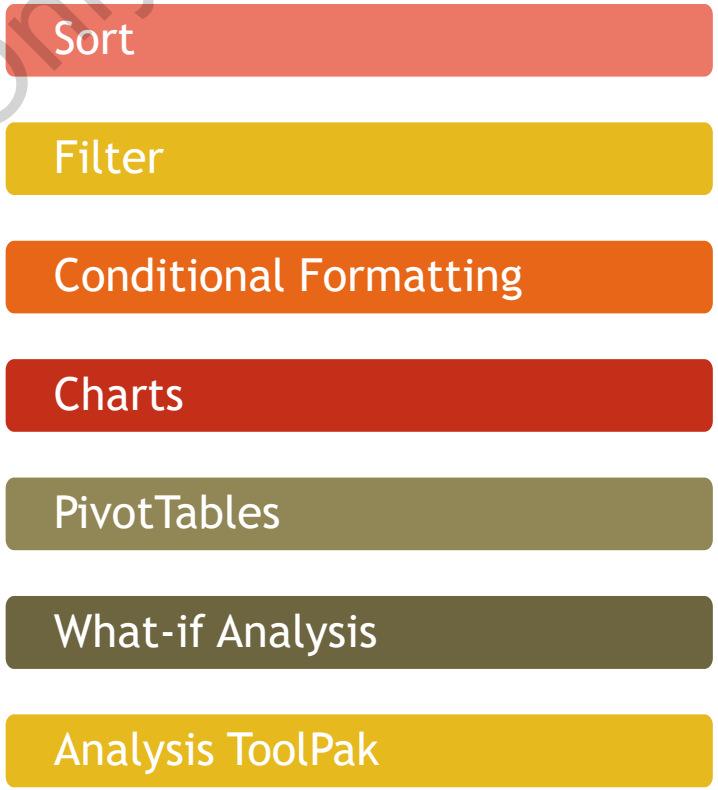
Data Analysis and Security of Data in Microsoft Excel 2019

Objectives

- Explain analyzing data using tools
- Describe protection and security in an Excel file
- Explain levels of protection

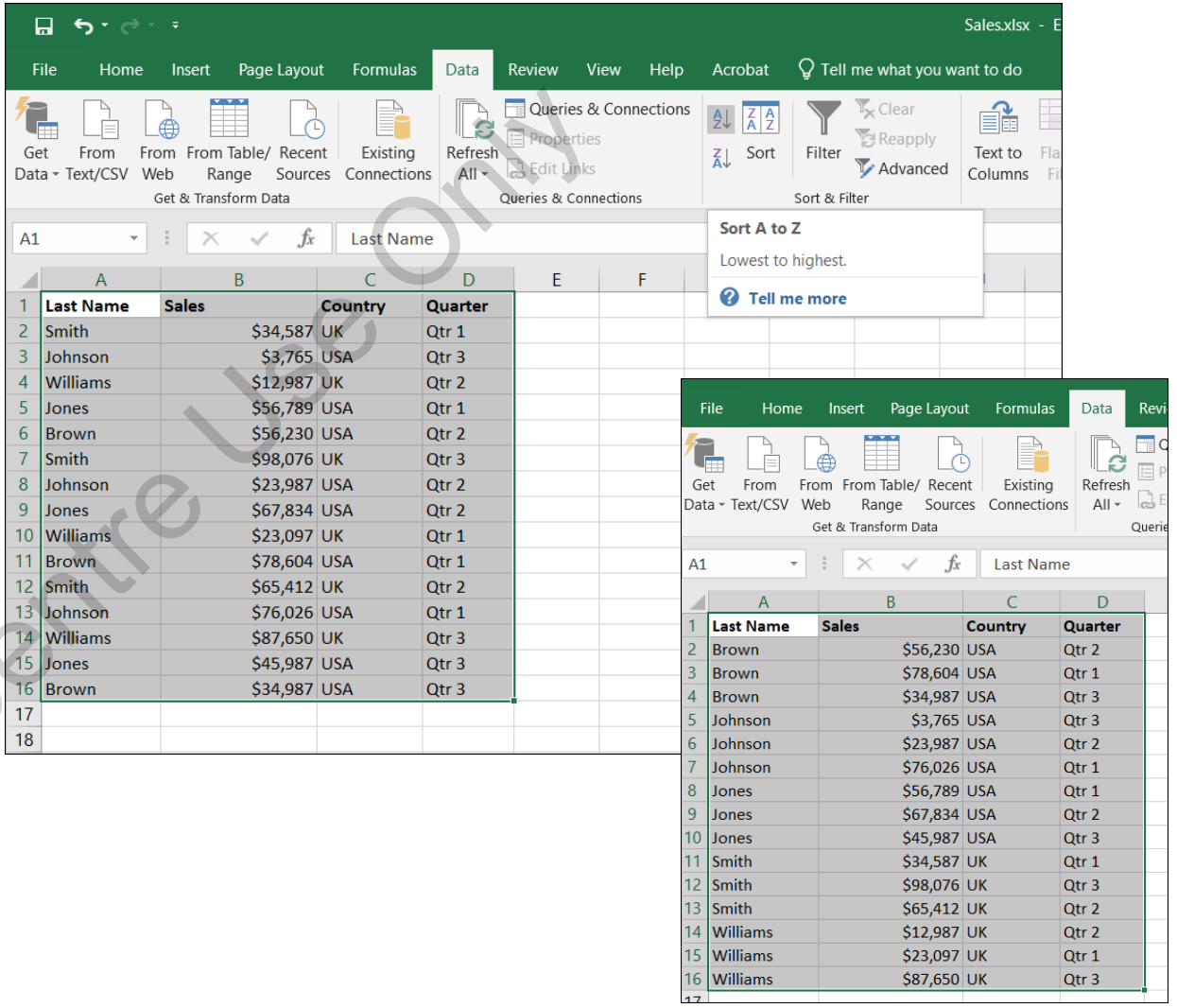
Data Analysis [1-2]

- MS Excel is a powerful tool which performs calculations, applies formulas, stores data, and also helps in analyzing the data
- Data Analysis helps in business planning and taking critical business decisions
- Several methods can be used to analyze data. Few of these methods include:



Data Analysis [2-2]

- Data in an Excel spreadsheet can be sorted to understand it better.
- Data can be sorted in ascending or descending order or in alphabetical order

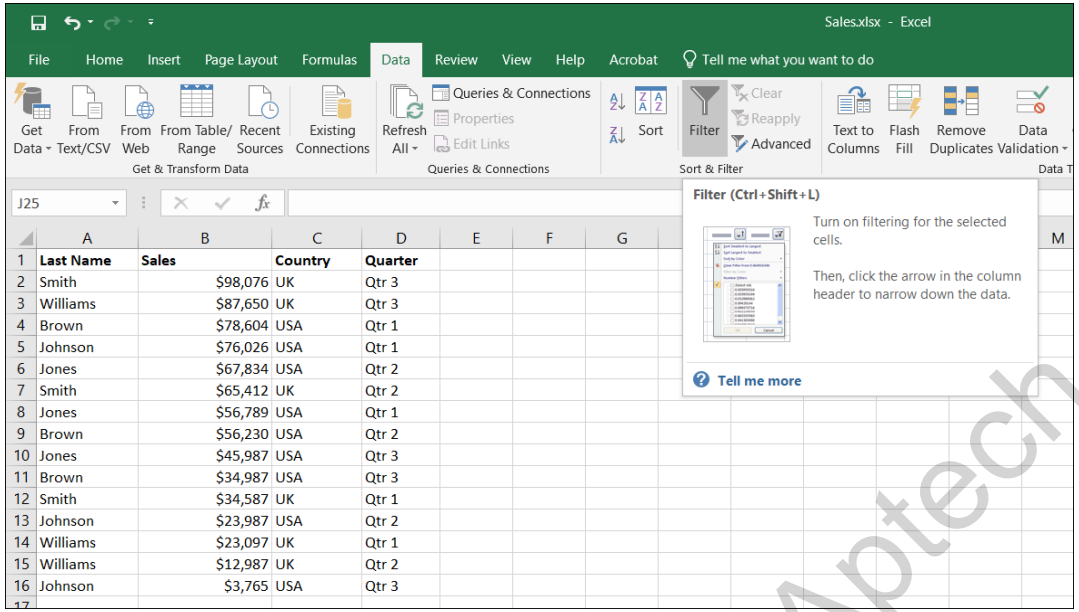


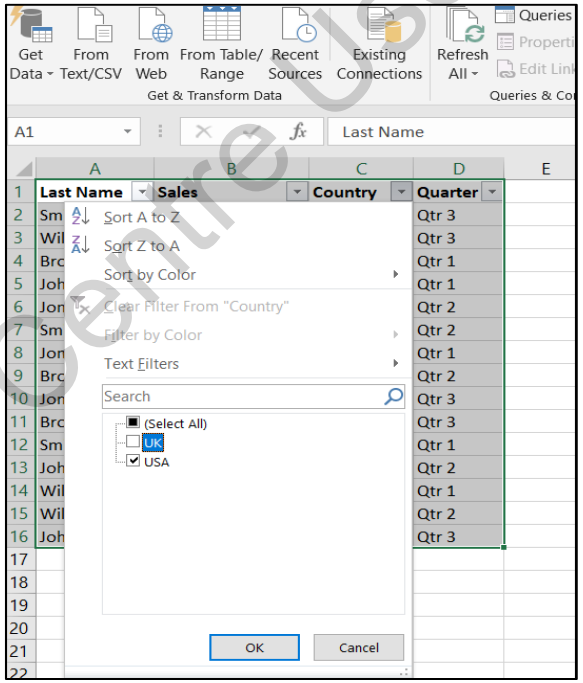
Data before and after sorting

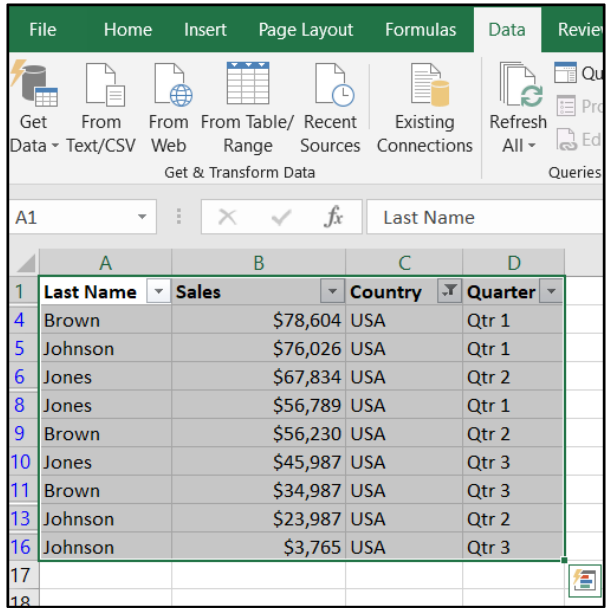
Filtering

- Filter is applied to a data set if one wants to set criteria and then display the result. This is another effective tool to analyze data.

Data before and after filtering

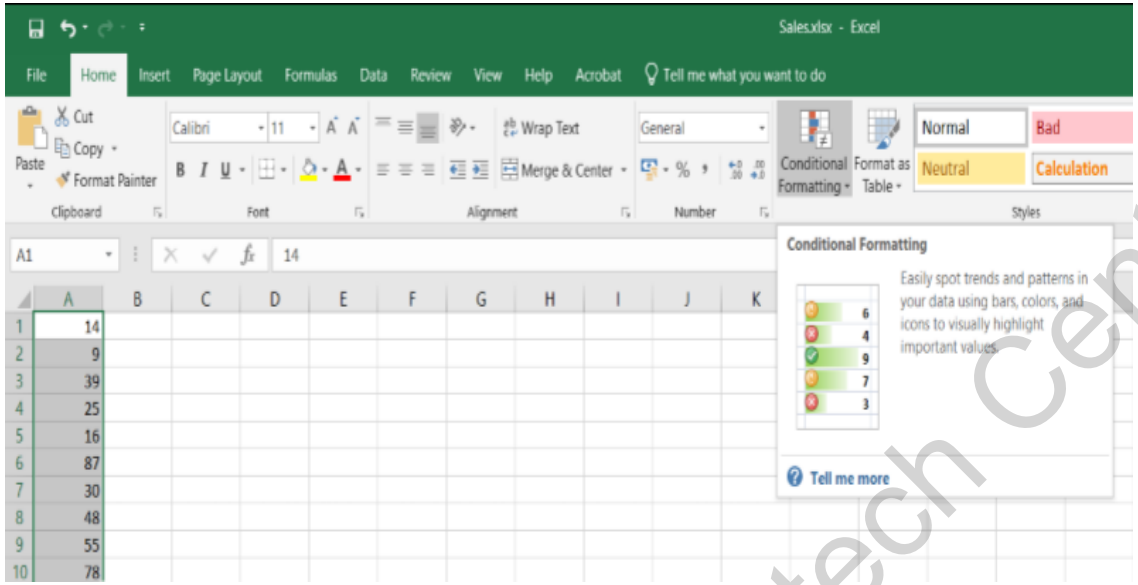


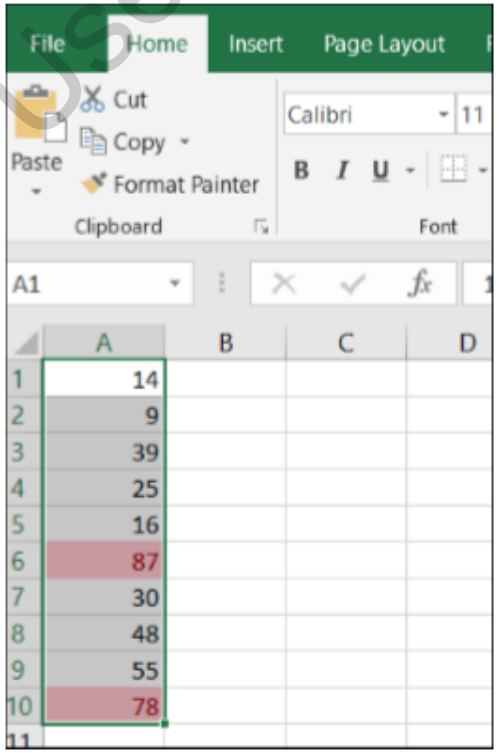




Conditional Formatting

- Conditional formatting is used to format a large data set as per the requirements of multiple users. For example, an organization's data set can be the names and details of its employees.

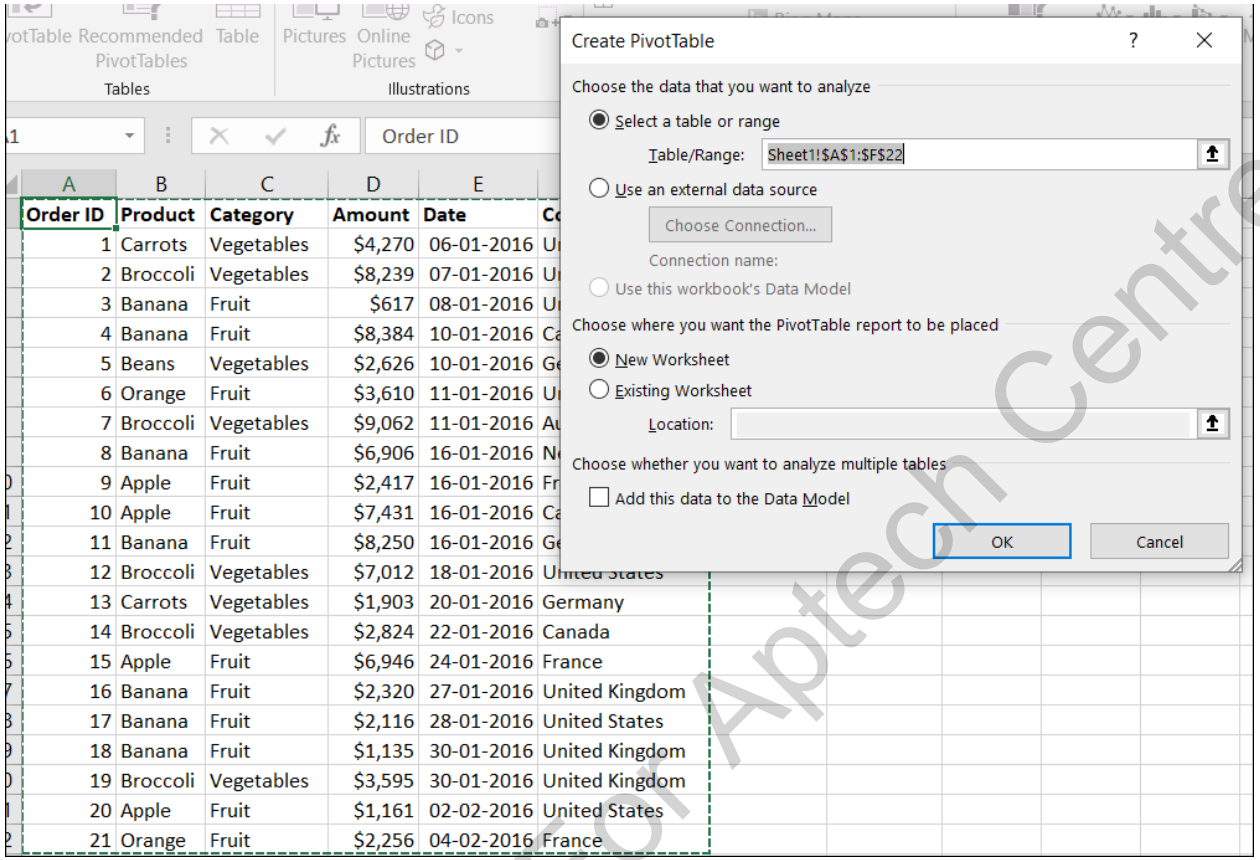




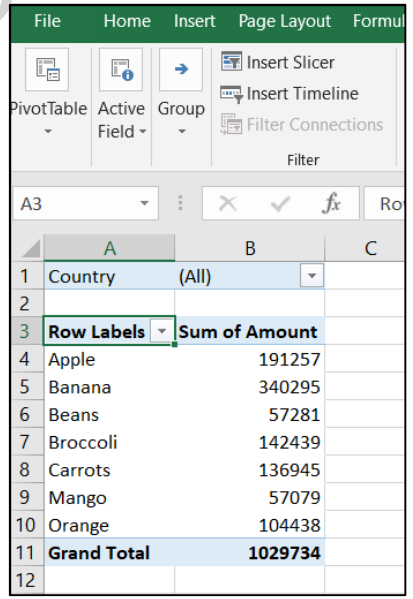
Results of Conditional Formatting

PivotTables

- PivotTables are one of the most powerful tools of MS Excel. It allows the user to interpret data from a large and detailed data set.



Order ID	Product	Category	Amount	Date	
1	Carrots	Vegetables	$4,270	06-01-2016	
2	Broccoli	Vegetables	$8,239	07-01-2016	
3	Banana	Fruit	$617	08-01-2016	
4	Banana	Fruit	$8,384	10-01-2016	
5	Beans	Vegetables	$2,626	10-01-2016	
6	Orange	Fruit	$3,610	11-01-2016	
7	Broccoli	Vegetables	$9,062	11-01-2016	
8	Banana	Fruit	$6,906	16-01-2016	
9	Apple	Fruit	$2,417	16-01-2016	
10	Apple	Fruit	$7,431	16-01-2016	
11	Banana	Fruit	$8,250	16-01-2016	
12	Broccoli	Vegetables	$7,012	18-01-2016	
13	Carrots	Vegetables	$1,903	20-01-2016	Germany
14	Broccoli	Vegetables	$2,824	22-01-2016	Canada
15	Apple	Fruit	$6,946	24-01-2016	France
16	Banana	Fruit	$2,320	27-01-2016	United Kingdom
17	Banana	Fruit	$2,116	28-01-2016	United States
18	Banana	Fruit	$1,135	30-01-2016	United Kingdom
19	Broccoli	Vegetables	$3,595	30-01-2016	United Kingdom
20	Apple	Fruit	$1,161	02-02-2016	United States
21	Orange	Fruit	$2,256	04-02-2016	France



	A	B
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		

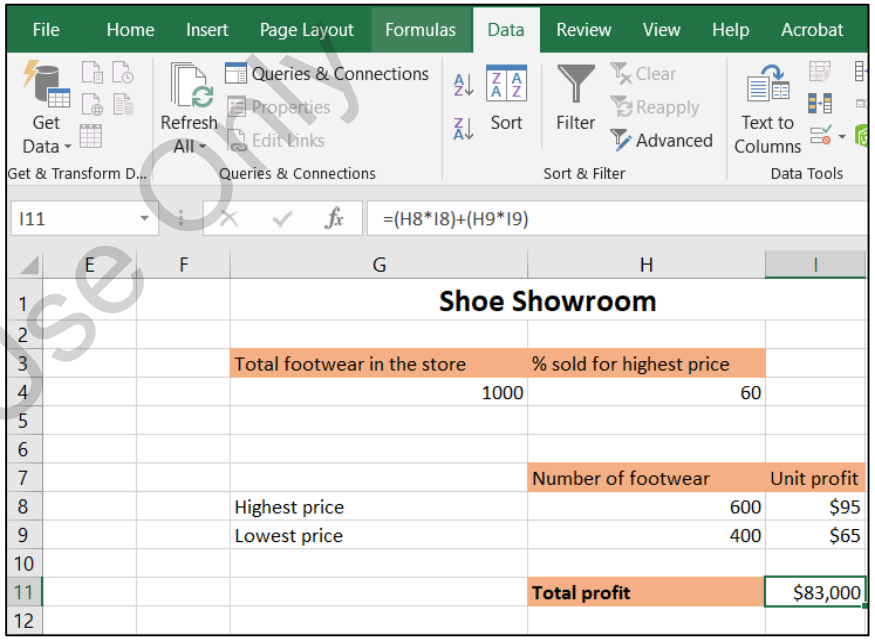
Tables

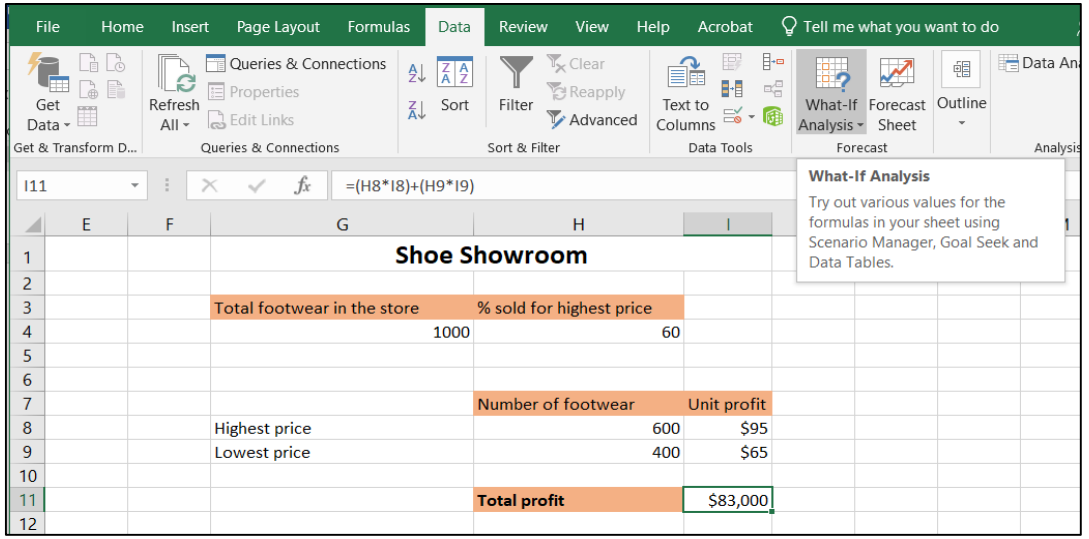
- Tables allow user to analyze data in Excel quickly and easily as compared to manual methods or using a calculator.
- Tables also enable better organization of data, which improves readability and understanding of data.

	A	B	C	D	E
1	Last Name	Sales	Country	Quarter	
2	Smith	$98,076	UK	Qtr 3	
3	Williams	$87,650	UK	Qtr 3	
4	Brown	$78,604	USA	Qtr 1	
5	Johnson	$76,026	USA	Qtr 1	
6	Jones	$67,834	USA	Qtr 2	
7	Smith	$65,412	UK	Qtr 2	
8	Jones	$56,789	USA	Qtr 1	
9	Brown	$56,230	USA	Qtr 2	
10	Jones	$45,987	USA	Qtr 3	
11	Brown	$34,987	USA	Qtr 3	
12	Smith	$34,587	UK	Qtr 1	
13	Johnson	$23,987	USA	Qtr 2	
14	Johnson	$23,765	USA	Qtr 3	
15	Williams	$23,097	UK	Qtr 1	
16	Williams	$12,987	UK	Qtr 2	
17					
18					

What-if Analysis [1-3]

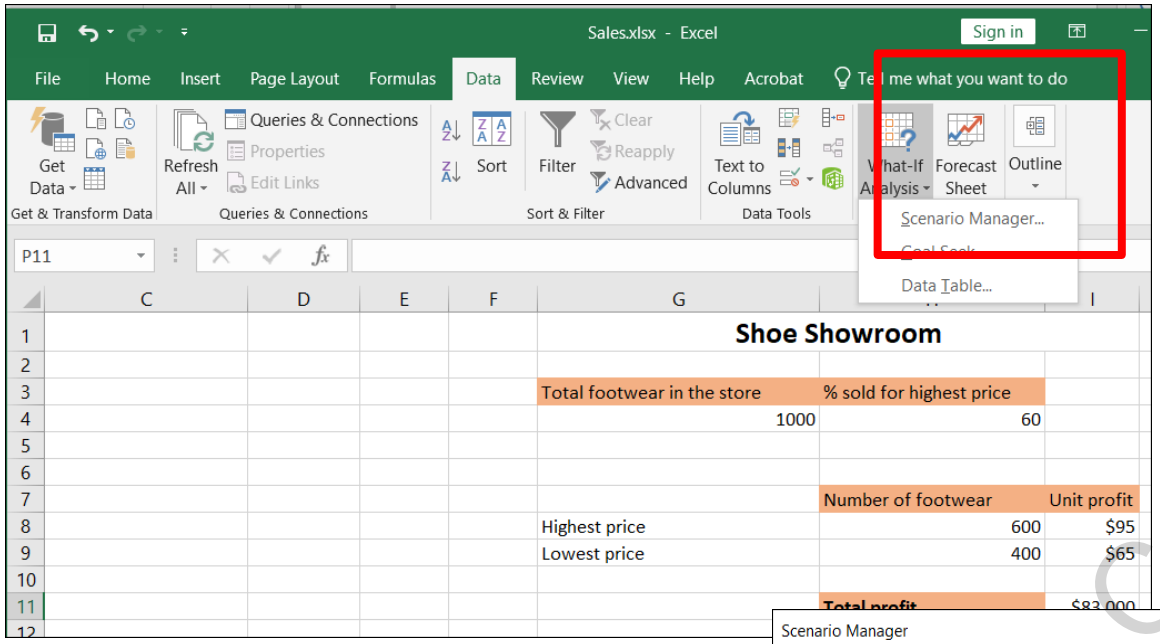
- What-if Analysis in MS Excel allows the user to try out different values for formulas
- What-if method is used to analyze the results or outcomes in varying scenarios with the same set of data
- Let us understand this with the help of an example. Consider a footwear showroom. It has 1,000 footwear in storage.
- A certain percentage is sold at the highest price of $95 and a certain percentage is sold at the lowest price of $65.
- A worksheet is created to represent this data in Excel as shown in Figure 8.32. The formula in cell H8 is G4*H4/100 and in cell H9 is G4-H8. The calculation for total profit will use the formula (H8*I8)+(H9*I9) in cell I11.

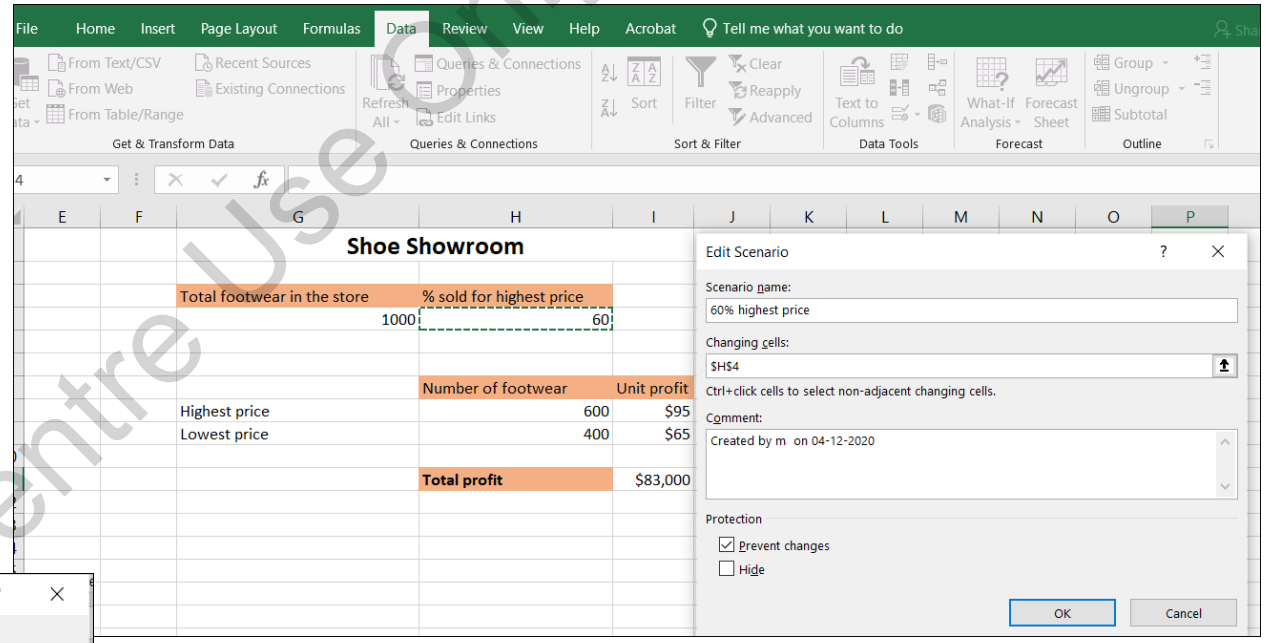


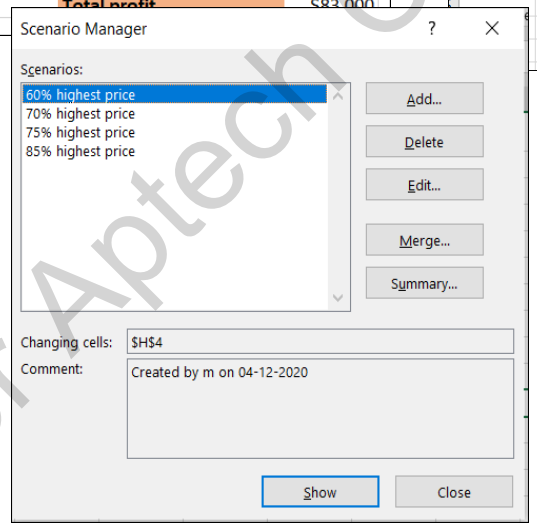


What-if Analysis [2-3]

Scenario Manager Option

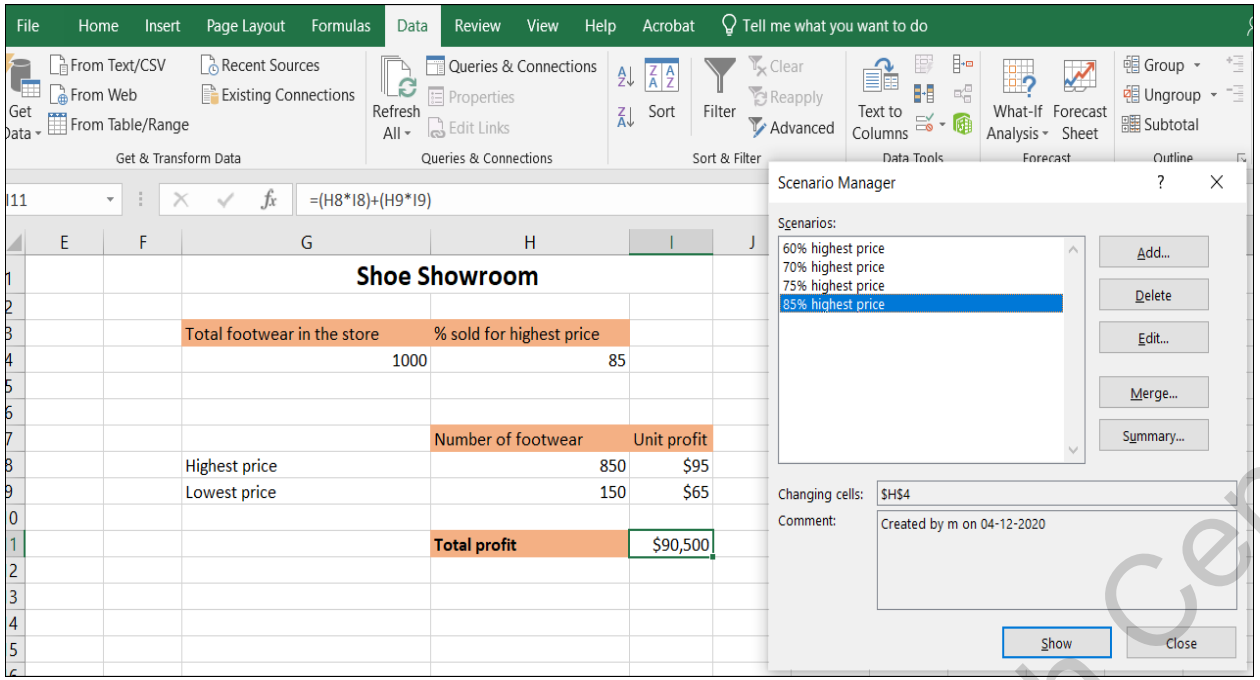




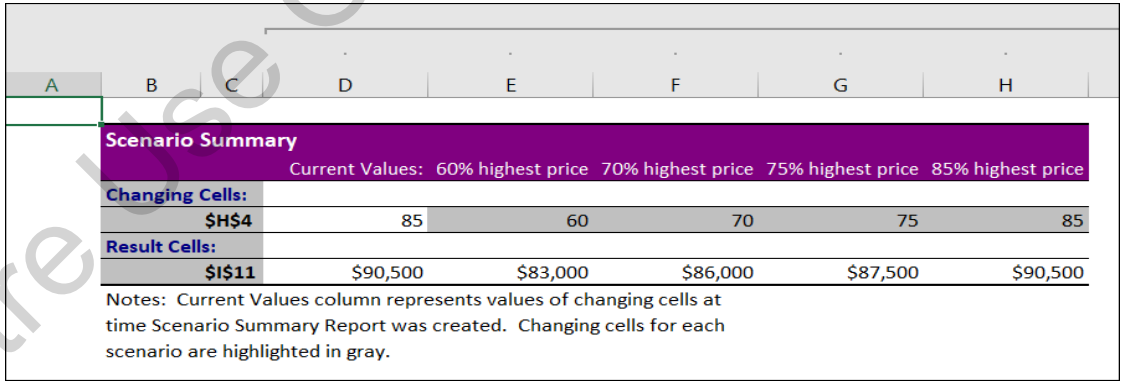


Several Scenarios Created Using Scenario Manager

What-if Analysis [3-3]



Checking the Result of Each Scenario



Scenario Summary

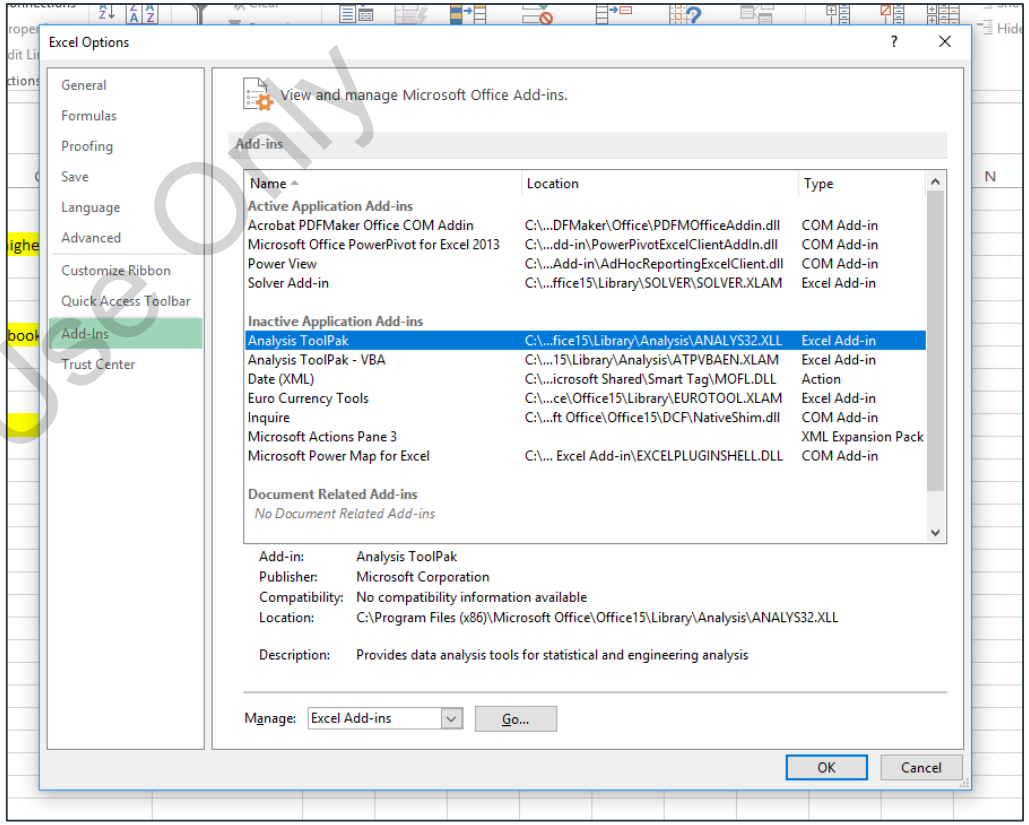
Scenario Summary	Current Values:	60% highest price	70% highest price	75% highest price	85% highest price
Changing Cells:					
H4	85	60	70	75	85
Result Cells:					
I11	$90,500	$83,000	$86,000	$87,500	$90,500

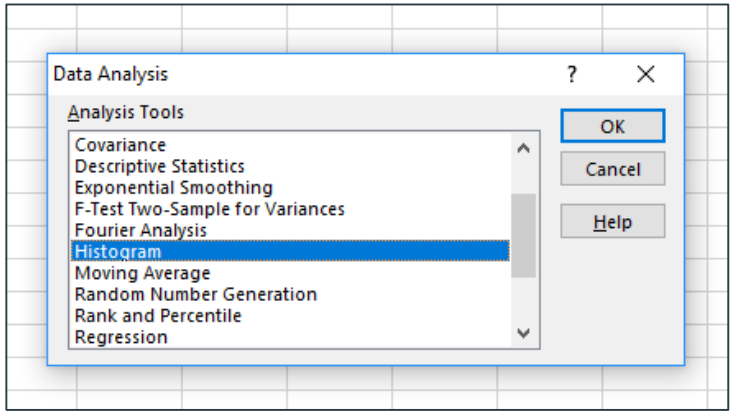
Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

Analysis ToolPak

- The Analysis ToolPak is an MS Excel add-in program that provides data analysis tools for financial, statistical, and engineering data analysis.

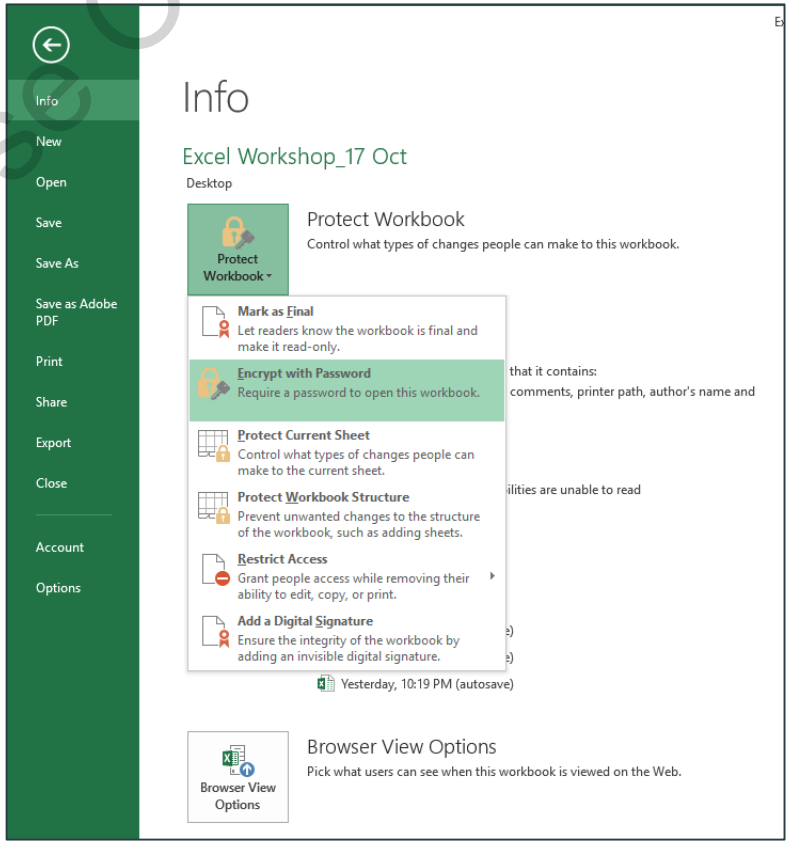
- MS Excel displays several options for data analysis in the **Data Analysis** dialog box. The **Analysis Tools** section displays a list of analysis tools, such as **Histogram** and **Moving Average**. Select any of the analysis tool as per your requirements.





Protection and Security in Excel [1-4]

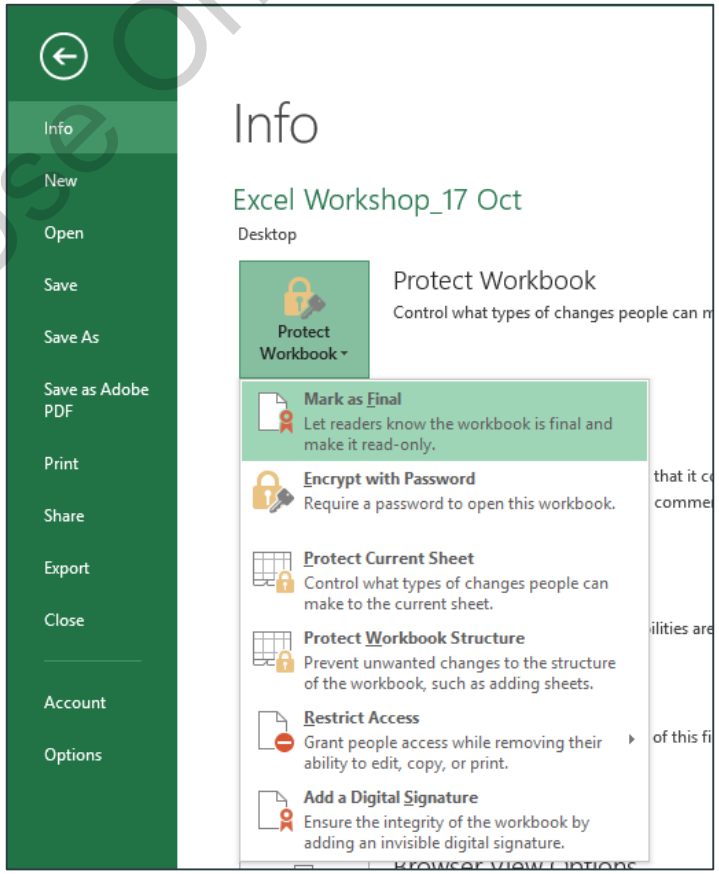
- MS Excel file may have data which is confidential or which can be made available to people to view the details but they would not have any rights to edit the worksheets
- Protection of Excel data involves different methods and varying level of protection:
  - File level protection
  - Workbook level protection
  - Worksheet level protection



Encrypt with Password Option

Protection and Security in Excel [2-4]

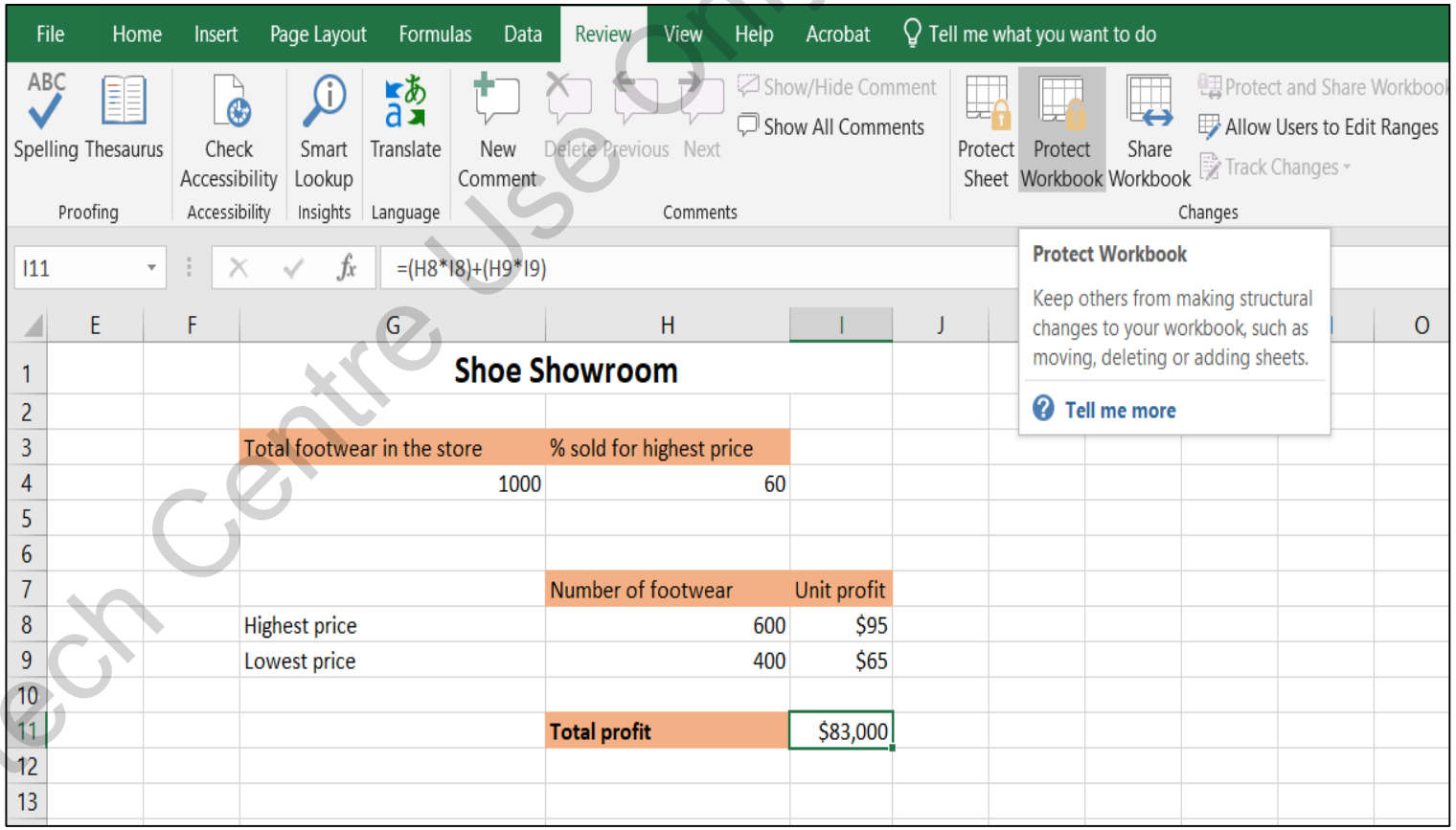
- Two passwords can be set on a file – one to open and view as read-only file and the other to open and modify
- 'Mark as Final' option is used if the Excel file needs to be marked as final version and any further changes by other users can be prevented
- If an organization has permissions to set up using Information Rights Management (IRM), the user may apply any of the available IRM permissions to the document



Mark as Final Option

Protection and Security in Excel [3-4]

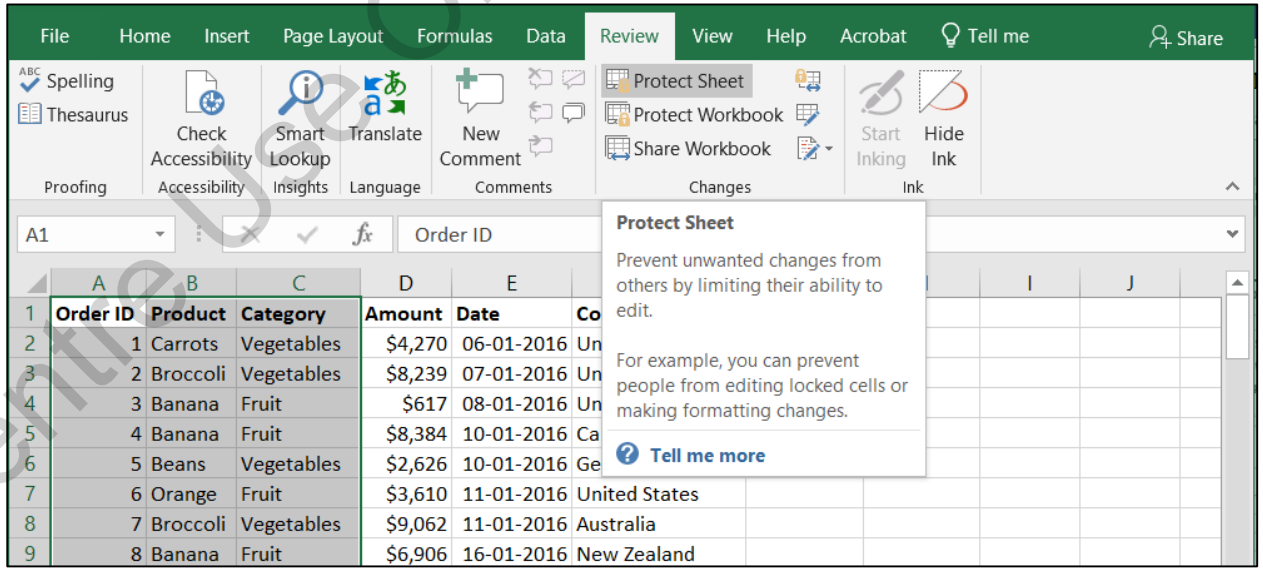
- The structure of a workbook can be locked by specifying a password
- Locking the workbook structure prevents other users from adding, moving, deleting, hiding, and renaming worksheets



Protect Workbook

Protection and Security in Excel [4-4]

- With worksheet protection, the user can control how someone else can work within worksheets
- What exactly a user can do within a sheet can be specified, thereby making sure that none of the important data in the worksheet gets affected by changes made by someone else



Applying Worksheet Level Protection

Levels of Protection

- To control the level of access for users on an MS Excel file, file-level protection is used

If others should not be able to open the file	The Excel file can be encrypted, which is the most common technique used. This means it is locked with a password and nobody except the team can open it.
If others can Read-only or editing access to different users have to be restricted	If the managers in the team should have the access to edit the weekly status report, but team members should only have Read-only access, then the Excel file can be protected by specifying two passwords: one to open and the other to modify. This can later be shared appropriately with the team depending on the access they should be given.

Summary

- Data Analysis is a process of inspecting, cleaning, transforming and modeling (preparing charts, graphs or using the data in other tools such as Power BI and Tableau) data with the goal of discovering useful information, suggesting conclusions and supporting decision-making.
- Data in an Excel spreadsheet can be sorted to understand it better. Data can be sorted in ascending or descending order or in alphabetical order.
- Conditional formatting helps in highlighting the cells with a specific color depending on the value of the cell.
- Pivot tables are one of the most powerful tools of MS Excel. It allows the user to interpret data from a large and detailed data set.
- The Analysis ToolPak is an MS Excel add-in program that provides data analysis tools for financial, Statistical and Engineering data analysis.
- When an MS Excel file is encrypted, nobody has access to the file. The encryption is done with the help of a password. This is the most recommended and common technique to secure an Excel file.
- Digital signatures authenticate digital information such as documents, email messages, and macros (a single instruction that expands into a set of instructions to perform a particular task) by using computer cryptology (practice or study of techniques to secure communication).
- The structure of a workbook can be locked by specifying a password. Locking the workbook structure prevents other users from adding, moving, deleting, hiding, and renaming worksheets. Let us see how we can apply a workbook level protection.
- Worksheet level protection, one can control how a user can work within worksheets. One can specify what exactly a user can do within a sheet, thereby making sure that none of the important data in the worksheet gets affected.