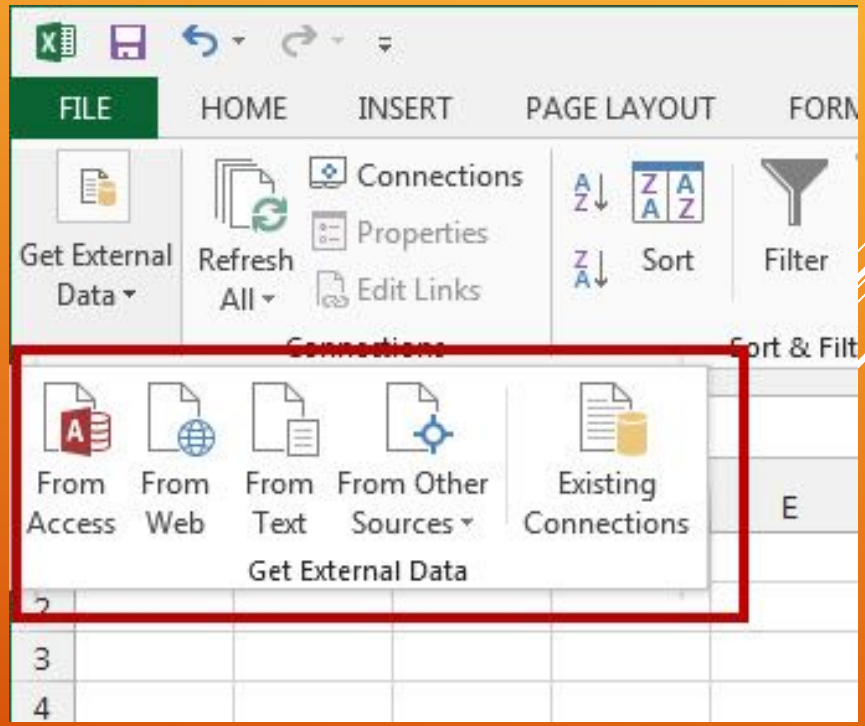
2021-Live Online Training

Excel for Analytics

EXCEL- Reading Data

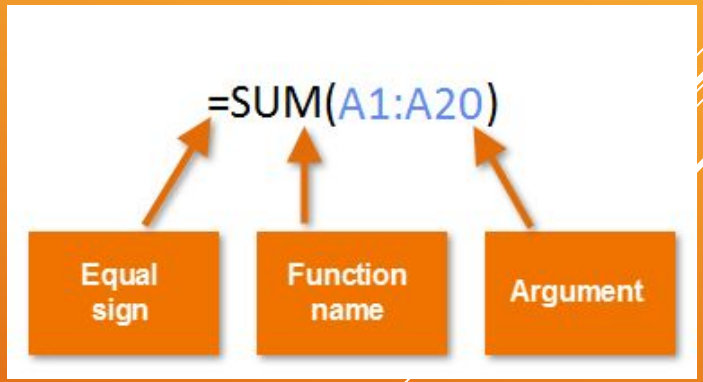
Reading Data into Excel using various format

- Regular Excel Format(.xlsx,.xls)
- Text Format(.txt)



EXCEL- Predefined functions

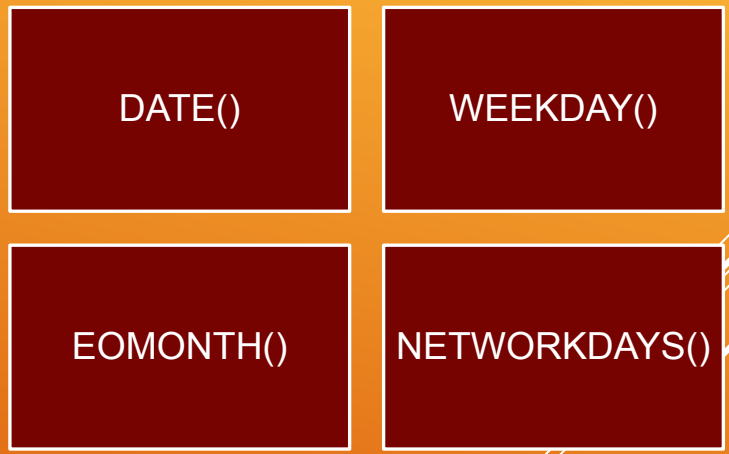
- ROUND(): returns a number rounded to a specified number of digits
- SQRT(): returns square root of a number
- MIN()/MAX(): returns the smallest/largest numeric value in a range of values
- SUM(): returns the sum of a range of values
- AVERAGE(): returns the average or mean value of a range of values
- MEDIAN(): returns the median value of a range of values
- RANK(): used to find the rank of a number in a list of numbers
- LEFT()/RIGHT(): extracts a given number of characters from the left side/right side of a supplied text string
- LEN(): used to find the length of a text string



EXCEL- Advanced Functions

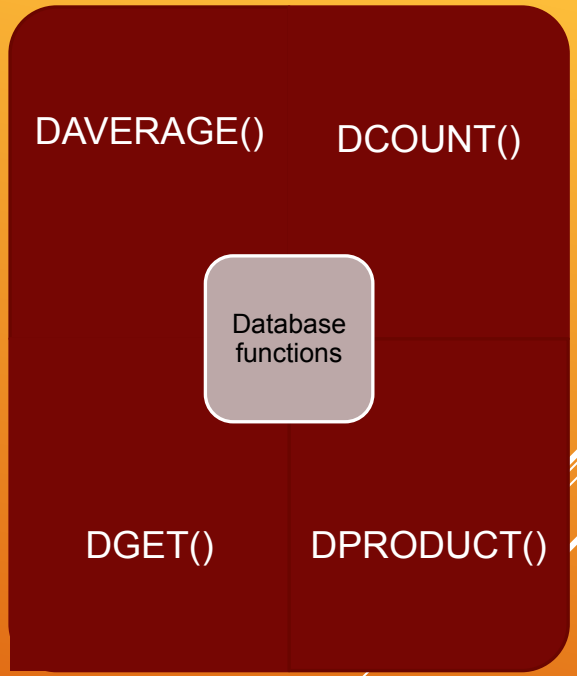
DateTime

- DATE(): creates a valid date from individual year, month, and day components
- EOMONTH(): Returns the serial number for the last day of the month that is the indicated number of months before or after start date
- NETWORKDAYS(): calculates the number of workdays between two dates in Excel
- WEEKDAY(): returns a number between 1-7 representing the day of week.



Database Functions

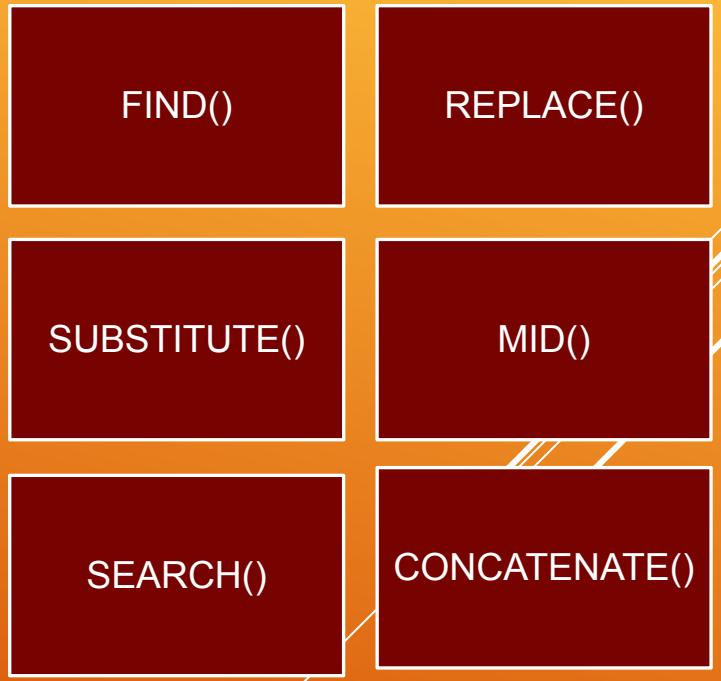
- DAVERAGE(): calculates an average for values in an Excel list
- DCOUNT(): counts matching records in a database using criteria and an optional field
- DGET(): extracts a single value from a column of a list or database that matches specified conditions
- DPRODUCT(): returns the product of values from a set of records that match criteria



EXCEL- Advanced Functions

Text Functions

- FIND(): returns the location of a substring in a string
- REPLACE(): replaces characters specified by location in a given text string with another text string
- SUBSTITUTE(): replaces text in a given string by matching
- MID(): extracts a given number of characters from the middle of a supplied text string
- SEARCH(): used to find the position of a character inside a text string
- CONCAT(): used to join two or more text strings into one string



EXCEL- Advanced Functions

Mathematical Functions

- PRODUCT(): returns the product of numbers provided as arguments
  =PRODUCT (number1, [number2], ...)
- MOD(): returns the remainder of two numbers after division
  =MOD (number, divisor)
- SQRT(): returns the square root of a positive number
  =SQRT (number)
- FACT(): returns the factorial of a given number
- ROUNDUP()/ROUNDDOWN(): round the number upward/downward to th
  specified number of digits
  =ROUNDUP (number, num_digits)
- SUMIFS(): adds all of its arguments that meet multiple criteria
  =SUMIFS (sum_range, range1, criteria1, [range2], [criteria2], ...)

EXCEL- Advanced Functions

Lookup Functions

HLOOKUP and **VLOOKUP** are functions in Microsoft Excel that allow you to use a section of your spreadsheet as a lookup table.

When the VLOOKUP function is called, Excel searches for a lookup value in the leftmost column of a section of your spreadsheet called the table array. The function returns another value in the same row, defined by the column index number.

HLOOKUP is similar to VLOOKUP, but searches a row instead of a column, and the result is offset by a row index number. The V in VLOOKUP stands for vertical search (in a single column), while the H in HLOOKUP stands for horizontal search (within a single row).

EXCEL- Advanced Functions

Lookup Functions

- HLOOKUP(): makes Excel search for a certain value in a row (the so called 'table array')

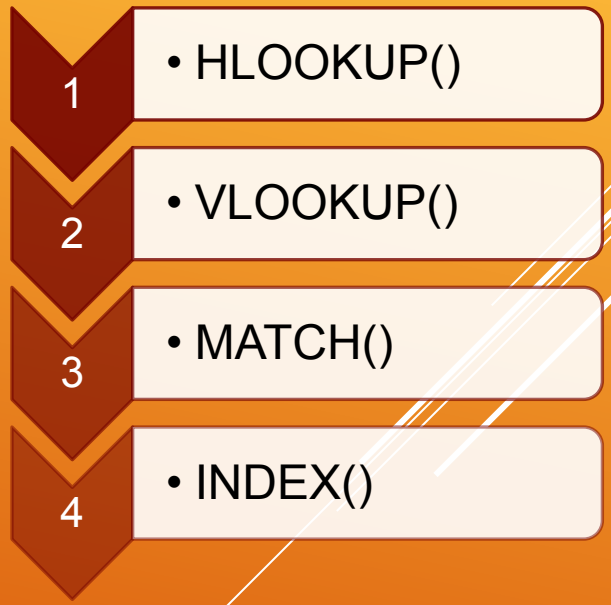
  =HLOOKUP("Axles", A1:C4, 2, TRUE)

  Looks up "Axles" in row 1, and returns the value from row 2 that's in the same column (column A)

  Result: 4
- VLOOKUP(): =VLOOKUP(What you want to look up, where you want to look for it, the column number in the range containing the value to return, Approximate or Exact match – indicated as 1/TRUE, or 0/FALSE)
- MATCH(): used to locate the position of a lookup value in a row, column, or table

  =MATCH (lookup_value, lookup_array, [match_type])
- INDEX(): returns the value at a given location in a range or array

  =INDEX (array, row_num, [col_num], [area_num])



EXCEL- Advanced Functions

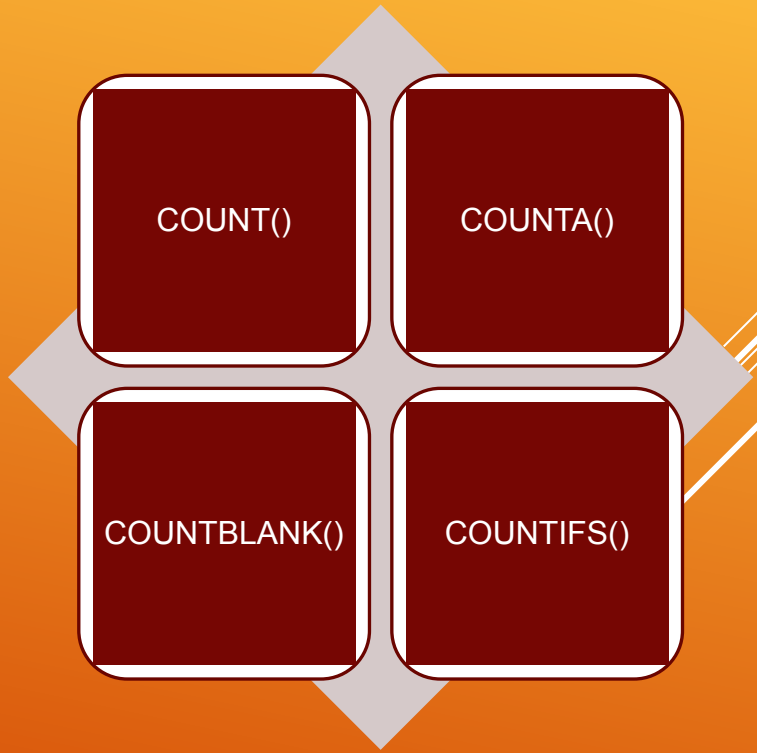
Logical and Error Functions

- AND: used to require more than one condition at the same time
- OR: a logical function to test multiple conditions at the same time
- NOT: The function helps check if one value is not equal to another
- ISERROR: returns TRUE for any error type excel generates, including #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME?, or #NULL
- ISNUMBER: The function checks if a cell in Excel contains a number or not. It will return TRUE if the value is a number and if not, a FALSE value
- ISBLANK: returns TRUE when a cell contains is empty, and FALSE when a cell is not empty
- IF: Test for a specific condition. =IF (logical_test, [value_if_true], [value_if_false])
- IFERROR: returns a custom result when a formula generates an error, and a standard result when no error is detected

EXCEL- Advanced Functions

Statistical Functions

- COUNT(): to get the number of entries in a number field that is in a range or array of numbers
- COUNTA(): returns the count of cells that contain numbers, text, logical values, error values, and empty text (""). COUNTA does not count empty cells
- COUNTBLANK(): returns a count of empty cells in a range
- COUNTIFS(): counts the number of cells in a range that match one supplied criteria



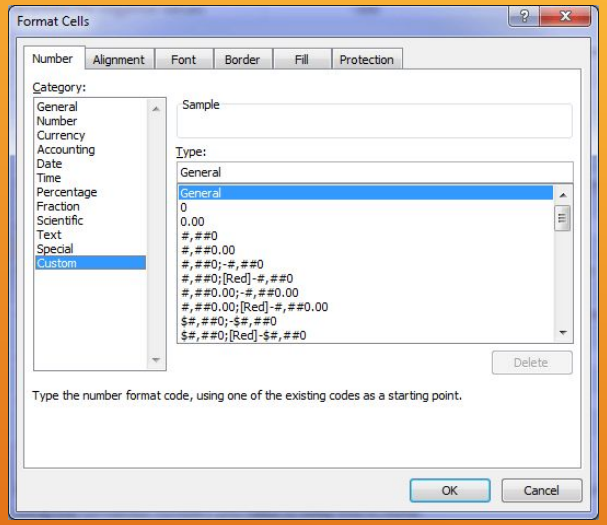
Statistical Functions

- MEAN: Get the average of a group of numbers. Syntax = AVERAGE (number1, [number2], ...)
- MEDIAN(): Get the median of a group of numbers. Syntax = AVERAGE (number1, [number2], ...)
- MODE(): returns the most frequently occurring number in a numeric data set.
- CORREL: used to find out the correlation coefficient between two variables. CORREL(array1, array2)
- STDEV: returns the statistical rank of a given value within a supplied array of values

Formatting

Excel formatting is an optional step following data preparation, or all of the data cleansing, enriching, structuring, and standardizing that is required in order to prepare data for analysis.

For example, adding $ to cells that contain values pertaining to prices or configuring cells that represent dates to a standard display of xx/xx/xxxx

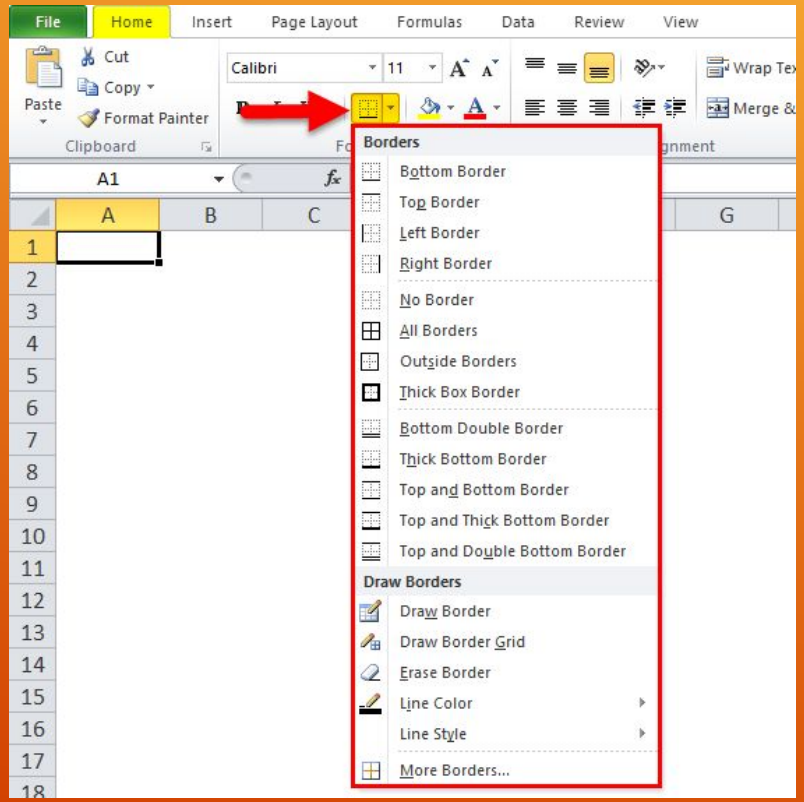


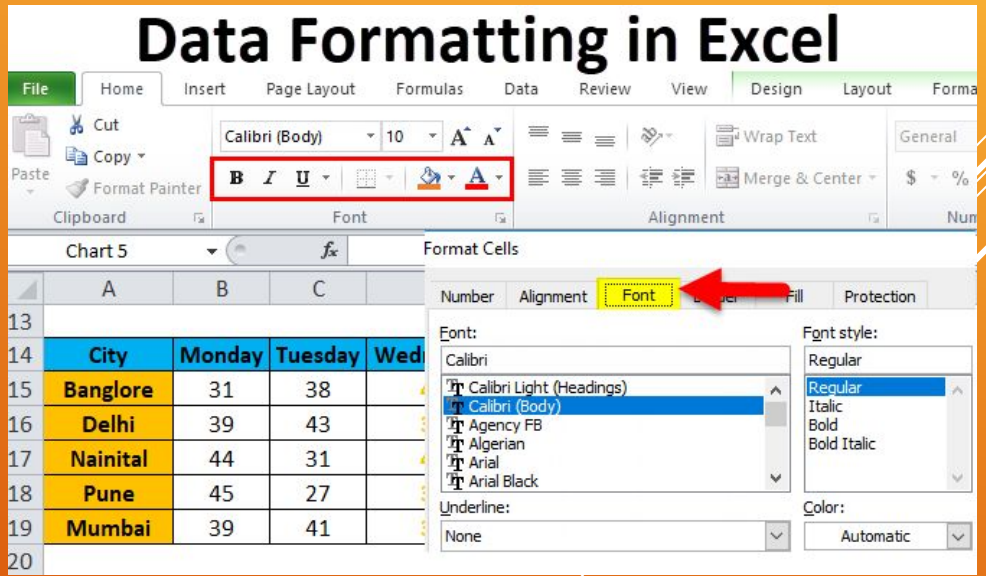
Components of Format Cells

- Number
- Alignment
- Font
- Border
- Fill
- Protection

Formatting

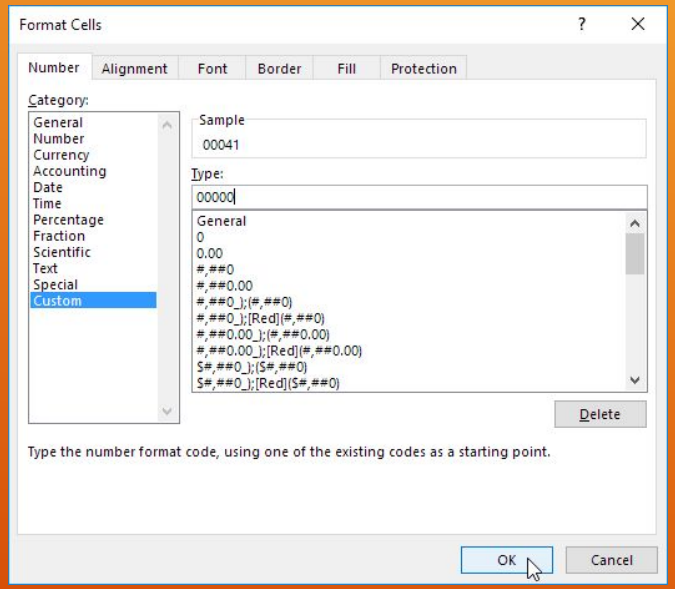
Data Formatting





Custom Formatting

Understand how to use Custom Formatting to format number and date values



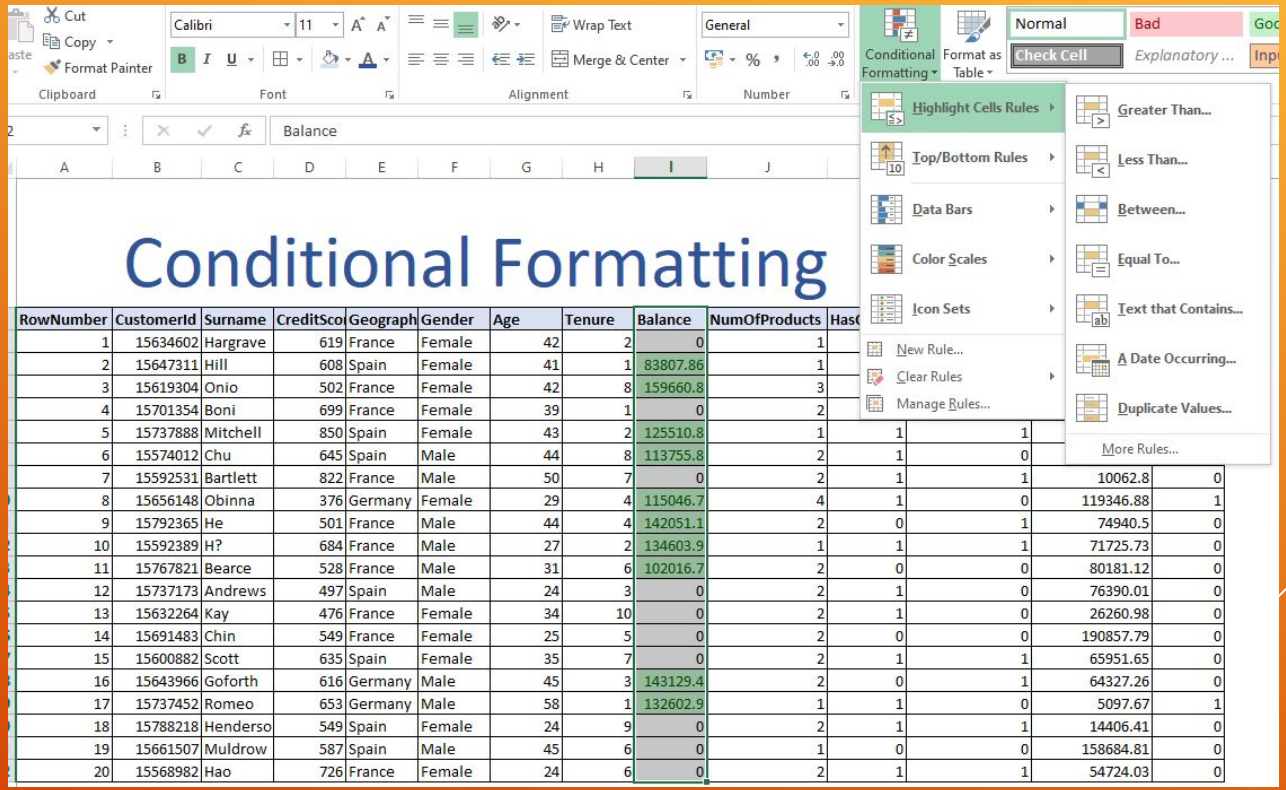
Conditional Formatting

Illustrate the use of conditional formatting in Excel

- Conditional formatting helps us visualize data and make worksheets easier to understand
- It quickly highlights important information in a spreadsheet by using colors, icons, and data bars
- It changes the appearance of one or more cells when cell values meet certain conditions

Formatting

Conditional Formatting



RowNumber	CustomerId	Surname	CreditSco	Geograph	Gender	Age	Tenure	Balance	NumOfProducts	Has				
1	15634602	Hargrave	619	France	Female	42	2	0	1					
2	15647311	Hill	608	Spain	Female	41	1	83807.86	1					
3	15619304	Onio	502	France	Female	42	8	159660.8	3					
4	15701354	Boni	699	France	Female	39	1	0	2					
5	15737888	Mitchell	850	Spain	Female	43	2	125510.8	1	1	1			
6	15574012	Chu	645	Spain	Male	44	8	113755.8	2	1	0			
7	15592531	Bartlett	822	France	Male	50	7	0	2	1	1	10062.8	0	
8	15656148	Obinna	376	Germany	Female	29	4	115046.7	4	1	0	119346.88	1	
9	15792365	He	501	France	Male	44	4	142051.1	2	0	1	74940.5	0	
10	15592389	H?	684	France	Male	27	2	134603.9	1	1	1	71725.73	0	
11	15767821	Bearce	528	France	Male	31	6	102016.7	2	0	0	80181.12	0	
12	15737173	Andrews	497	Spain	Male	24	3	0	2	1	0	76390.01	0	
13	15632264	Kay	476	France	Female	34	10	0	2	1	0	26260.98	0	
14	15691483	Chin	549	France	Female	25	5	0	2	0	0	190857.79	0	
15	15600882	Scott	635	Spain	Female	35	7	0	2	1	1	65951.65	0	
16	15643966	Goforth	616	Germany	Male	45	3	143129.4	2	0	1	64327.26	0	
17	15737452	Romeo	653	Germany	Male	58	1	132602.9	1	1	0	5097.67	1	
18	15788218	Henderso	549	Spain	Female	24	9	0	2	1	1	14406.41	0	
19	15661507	Muldrow	587	Spain	Male	45	6	0	1	0	0	158684.81	0	
20	15568982	Hao	726	France	Female	24	6	0	2	1	1	54724.03	0	

Charts in Excel

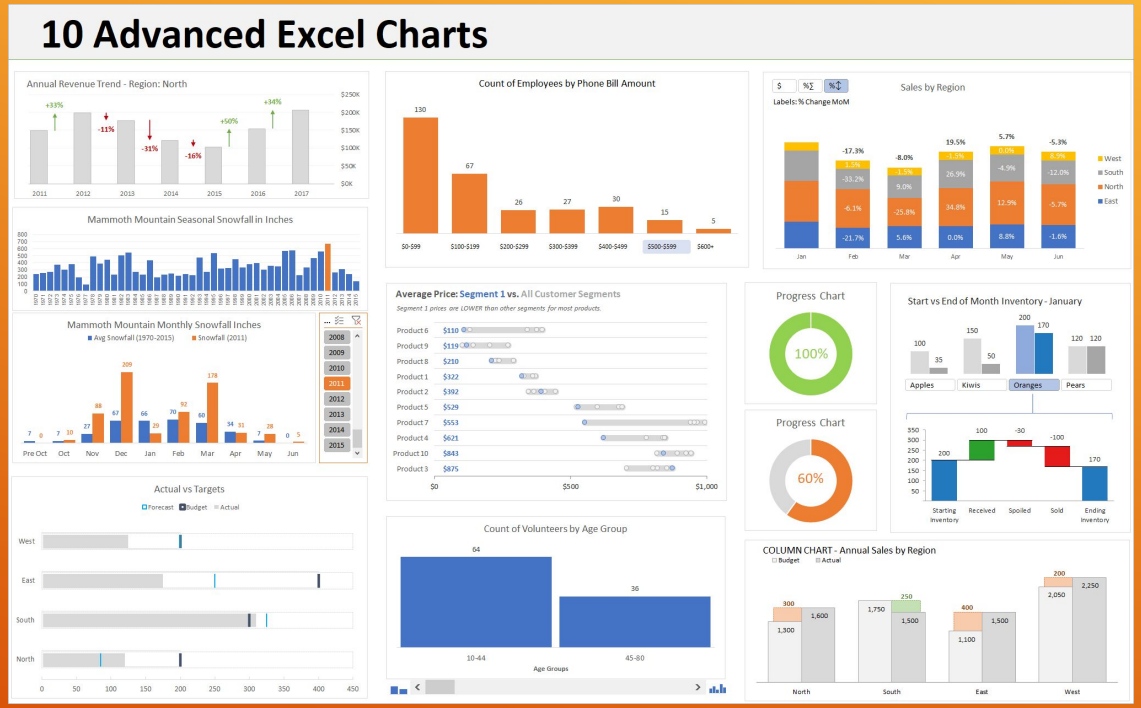
You'll learn these things:

- Inserting a Chart
- Adjusting a Chart
- Improving a Chart
- Add series to a chart
- Create Combination Charts

MS Excel
Excel Online
Google Sheets

All are in a way similar in nature

Charts in Excel



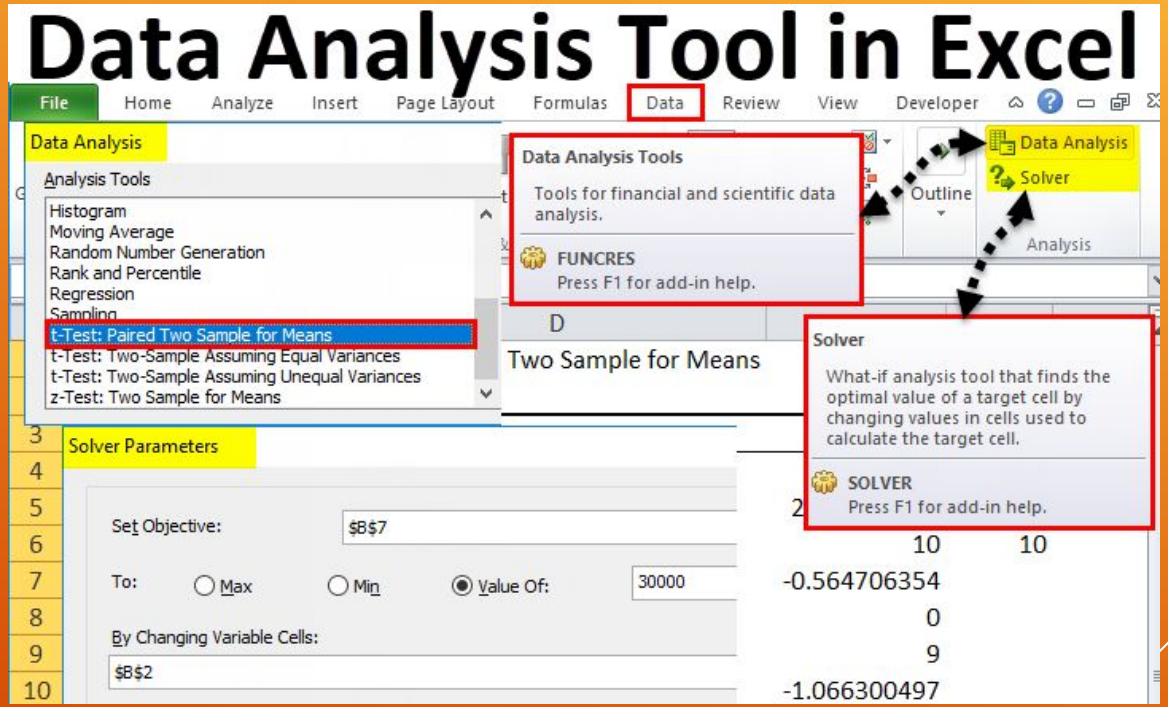
Statistical Analysis using Excel

Let’s see how do we perform various statistical tests in Excel

First of all, is it possible to perform the same Statistical tests in Excel that we usually perform in Python

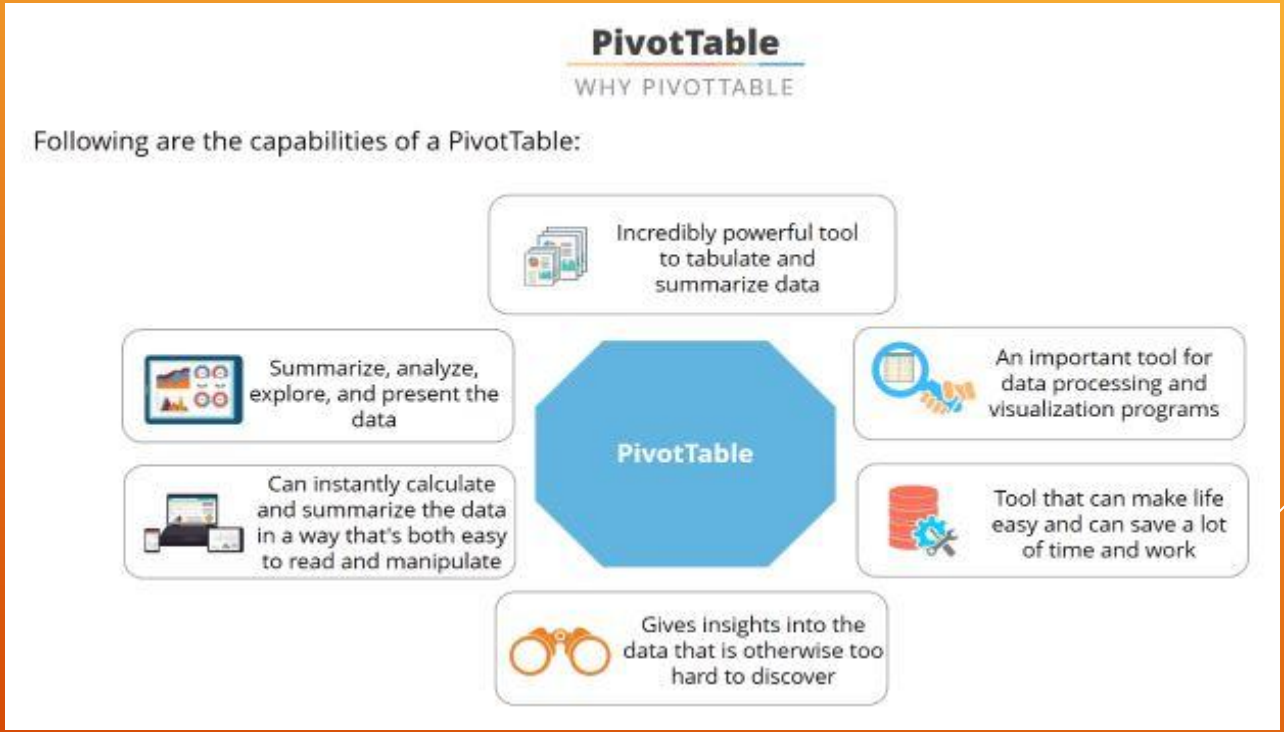
The answer is YES!!

Data Analysis using Excel



Analysing Data with Pivot Tables

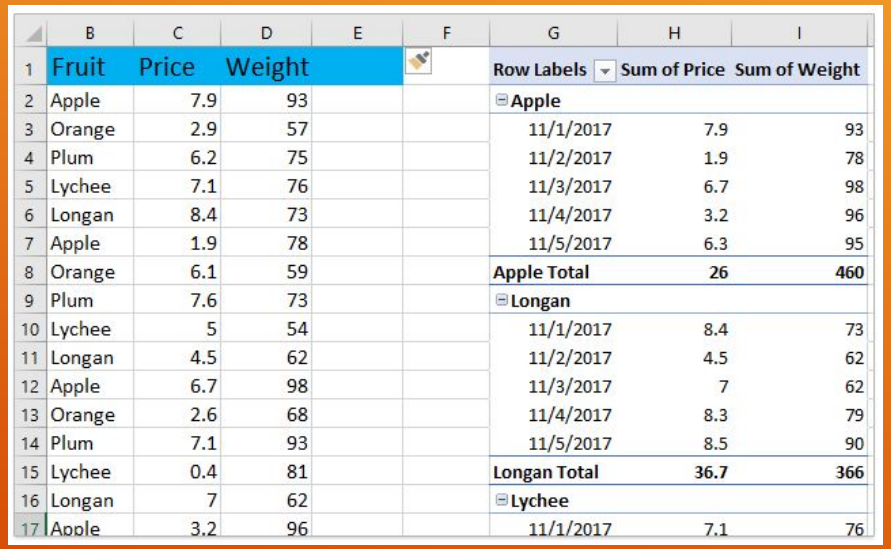
Doing a proper analysis of the available data helps companies make critical business decisions. But sometimes it's difficult to understand where to start, especially when the data is huge



Analysing Data with Pivot Tables

How it works…

One can design a PivotTable by simply, dragging and dropping relevant information into the appropriate boxes. This tool quickly pivots or reorganizes data allowing us to answer different questions and even experiment with the data to discover new trends and patterns



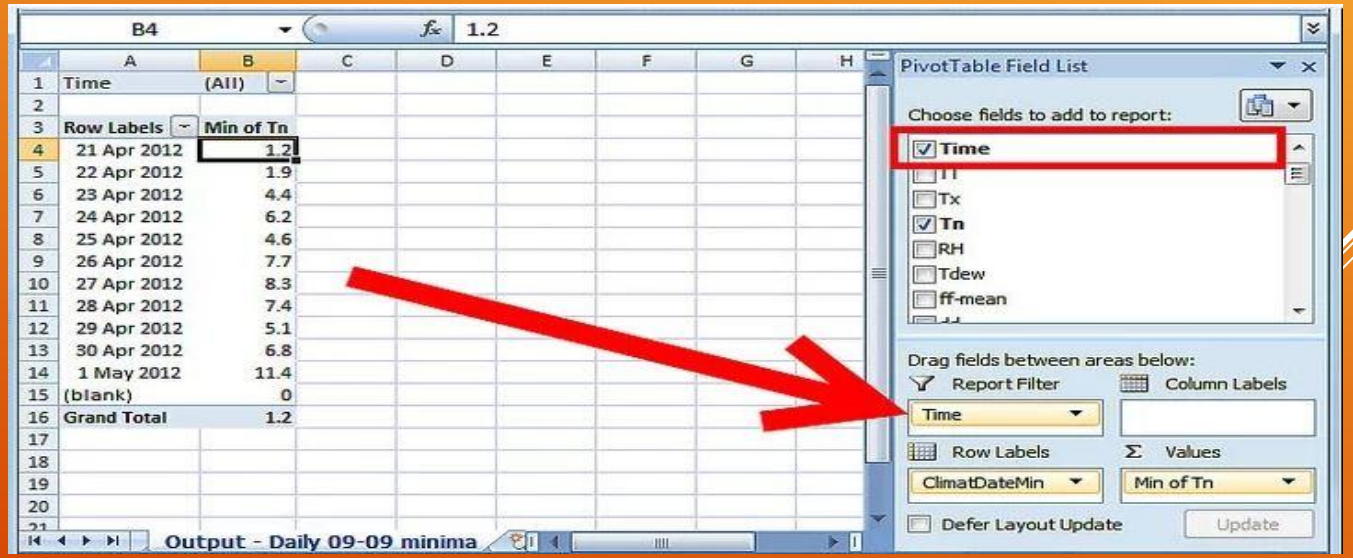
	Fruit	Price	Weight
2	Apple	7.9	93
3	Orange	2.9	57
4	Plum	6.2	75
5	Lychee	7.1	76
6	Longan	8.4	73
7	Apple	1.9	78
8	Orange	6.1	59
9	Plum	7.6	73
10	Lychee	5	54
11	Longan	4.5	62
12	Apple	6.7	98
13	Orange	2.6	68
14	Plum	7.1	93
15	Lychee	0.4	81
16	Longan	7	62
17	Apple	3.2	96

Row Labels	Sum of Price	Sum of Weight
⊟Apple		
11/1/2017	7.9	93
11/2/2017	1.9	78
11/3/2017	6.7	98
11/4/2017	3.2	96
11/5/2017	6.3	95
Apple Total	**26**	**460**
⊟Longan		
11/1/2017	8.4	73
11/2/2017	4.5	62
11/3/2017	7	62
11/4/2017	8.3	79
11/5/2017	8.5	90
Longan Total	**36.7**	**366**
⊟Lychee		
11/1/2017	7.1	76

Analysing Data with Pivot Tables

Filters

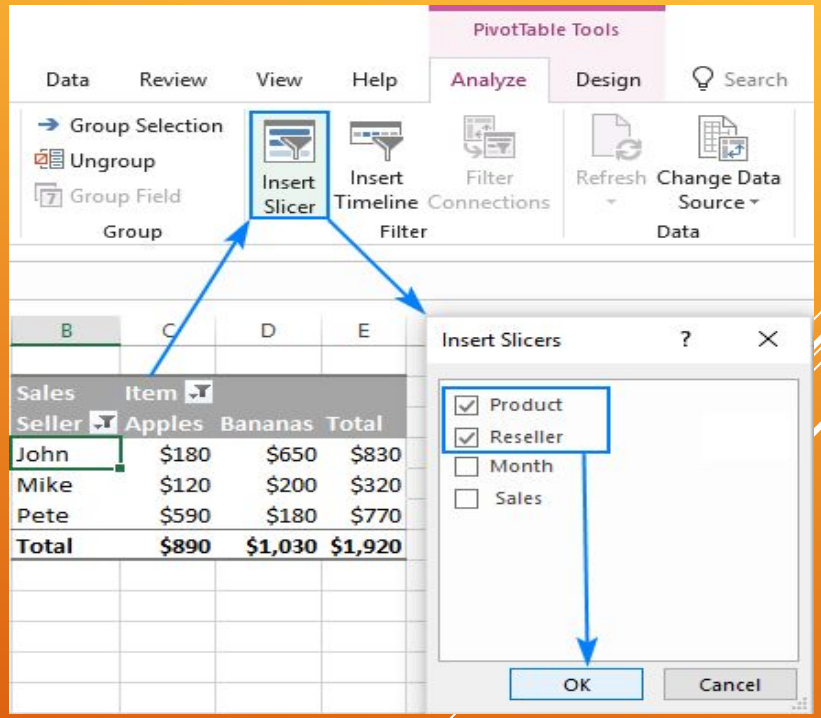
A PivotTable helps to extract the important information from a large, detailed dataset. Sometimes, the focus is required on just a certain section of our data. Filters help us narrow down the data in the PivotTable, extracting the required information



Analysing Data with Pivot Tables

Slicers

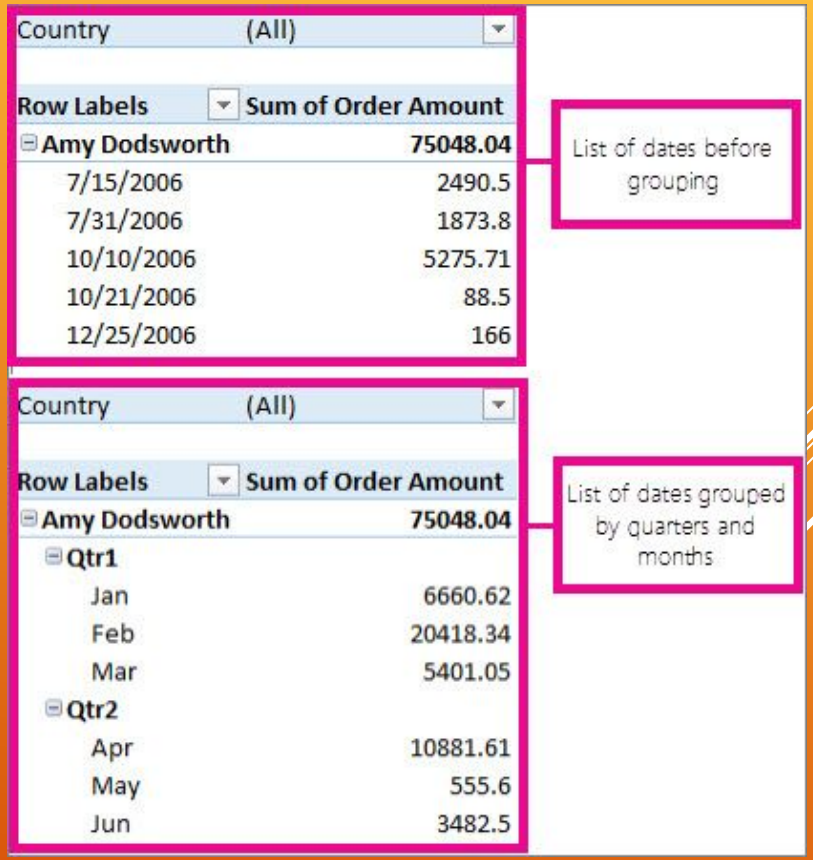
Another important tool of Excel, Slicers, makes filtering data in PivotTables even easier. Slicers contain a set of buttons which make filtering data in PivotTables easier and quicker. We do not have to open the drop-down lists to find the items we want to filter. We can create slicers for any field and can filter a Pivot Table by selecting the type of data we want.



Analysing Data with Pivot Tables

Grouping

It is often useful to group the fields in a PivotTable by the header values. Grouping data in a PivotTable allows us to group the data for any field added as a row or a column. Excel can do this automatically for numeric values (including dates and time).



Country	(All)	
Row Labels	Sum of Order Amount	
Amy Dodsworth	75048.04	
7/15/2006	2490.5	
7/31/2006	1873.8	
10/10/2006	5275.71	
10/21/2006	88.5	
12/25/2006	166	

List of dates before grouping

Country	(All)	
Row Labels	Sum of Order Amount	
Amy Dodsworth	75048.04	
Qtr1		
Jan	6660.62	
Feb	20418.34	
Mar	5401.05	
Qtr2		
Apr	10881.61	
May	555.6	
Jun	3482.5	

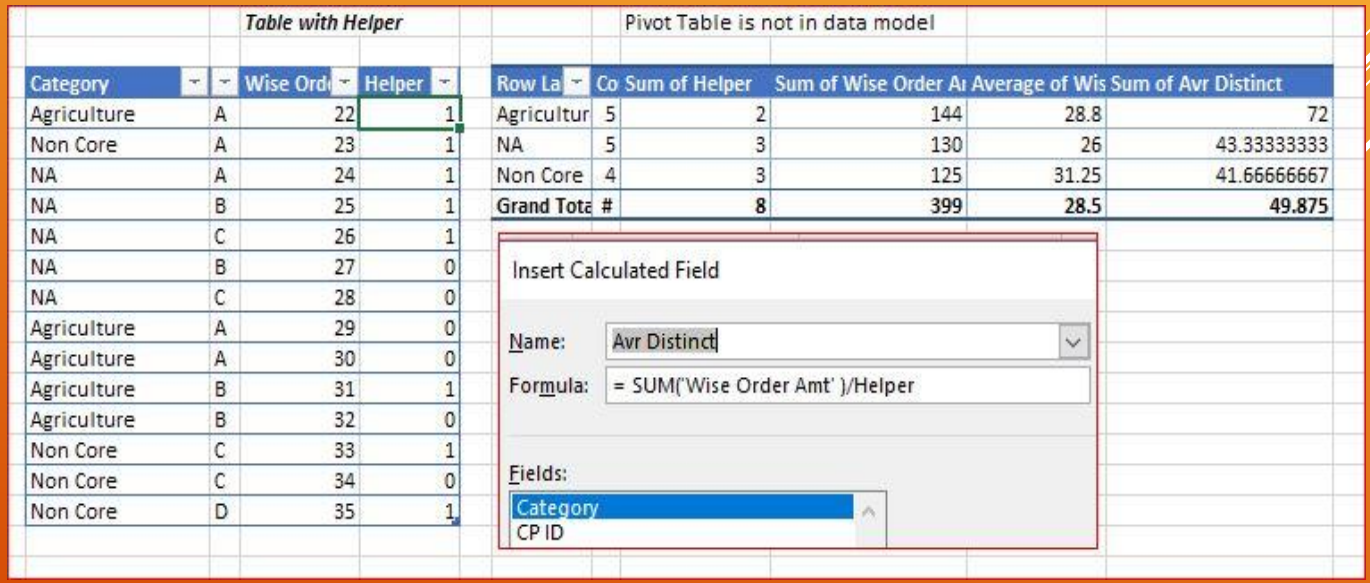
List of dates grouped by quarters and months

Analysing Data with Pivot Tables

Custom Calculation

Sometimes, there is a need to change the way the values are displayed in the PivotTable.

The value can be displayed in terms of a percentage instead of a total or an average of the values instead of summing them



Category		Wise Ord	Helper
Agriculture	A	22	1
Non Core	A	23	1
NA	A	24	1
NA	B	25	1
NA	C	26	1
NA	B	27	0
NA	C	28	0
Agriculture	A	29	0
Agriculture	A	30	0
Agriculture	B	31	1
Agriculture	B	32	0
Non Core	C	33	1
Non Core	C	34	0
Non Core	D	35	1

Row La	Co	Sum of Helper	Sum of Wise Order Ar	Average of Wis	Sum of Avr Distinct
Agricultur	5	2	144	28.8	72
NA	5	3	130	26	43.33333333
Non Core	4	3	125	31.25	41.66666667
Grand Tota	**#**	**8**	**399**	**28.5**	**49.875**

Analysing Data with Pivot Tables

Calculated Field and Calculated Item

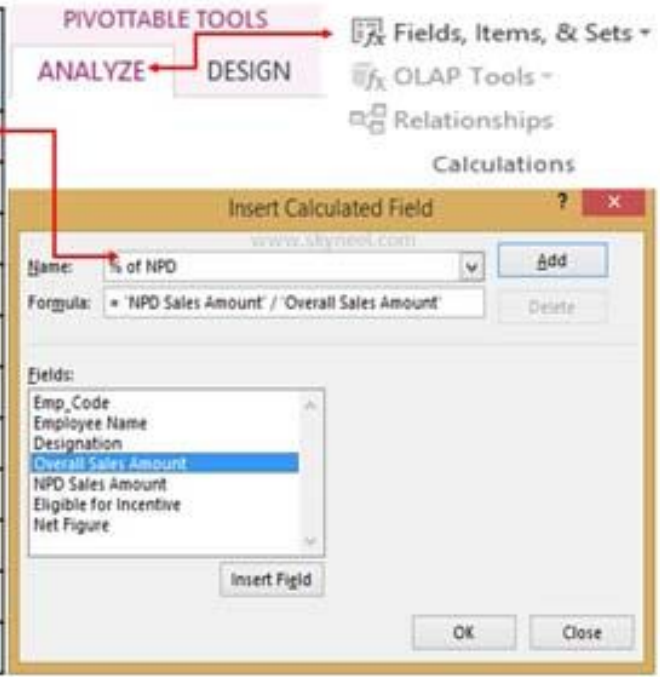
Once we have created a PivotTable, we can add calculated fields and calculated items in it

- Calculated fields help us enhance the results by allowing us to write our own formulas. This functionality helps to create a new field in the table that performs the calculations based on other pivot fields. Let us understand how to use these fields with the help of an example..
- We can also add one or more calculated items in a PivotTable field apart from the existing items. Calculated items are used to perform calculations between items within the fields

Analysing Data with Pivot Tables

Calculated Field and Calculated Item

Row Labels	Sum of Overall Sales Amount	Sum of NPD Sales Amount	Sum of % of NPD
Anil	120000	70000	58%
Deepak	45000	20000	44%
Mahesh	90000	45000	50%
Narender	400000	200000	50%
Rajender	209000	124000	59%
Rajesh	80000	35000	44%
Sunil	100000	60000	60%
Suresh	50000	30000	60%
Vikas	75000	45000	60%
Yash	49000	19000	39%
Grand Total	1218000	648000	53%

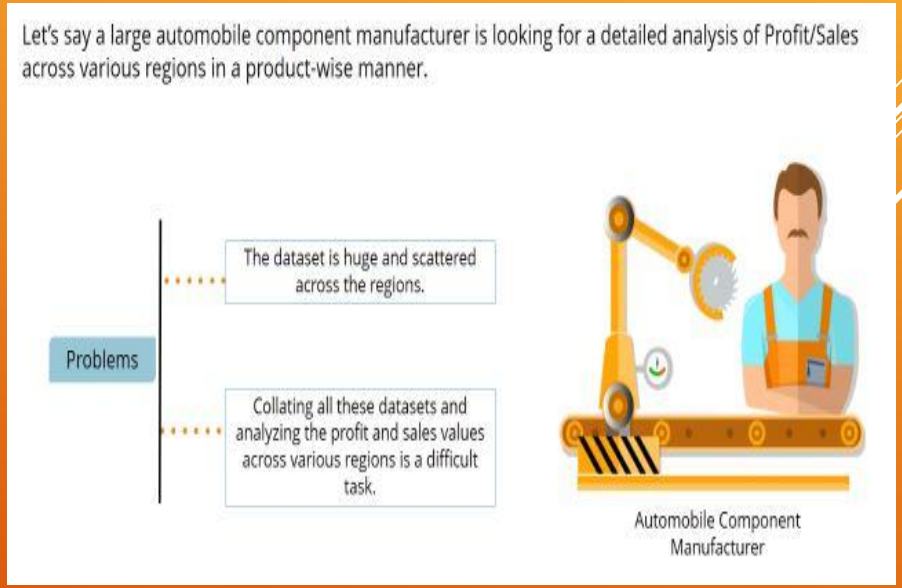


Dashboarding

- Create and format different types of charts such as Thermometer and Pareto Charts
- Importance of interactive charts
- Form Controls such as Combo box, Check box, and Radio buttons

An appropriately designed dashboard can:

- Quicken decision-making processes
- Provide better coordination for your organization’s efforts
- Record the performance outcome



Dashboarding

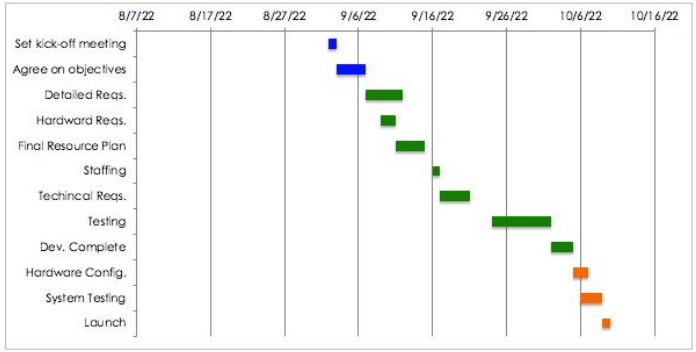
- Using dashboards, the data visualization tool of Excel, it is easy to create the detailed analysis reports.
- These dashboard reports will provide insights and alert us in case of negative trends or projections for Profit/Sales in specific regions which can then be used to develop future strategy.
- Dashboards are highly effective in validating the effectiveness of the matrices captured over time and bringing out the leading trends.
- Dashboards help consolidate and organize these metrics through a summary.

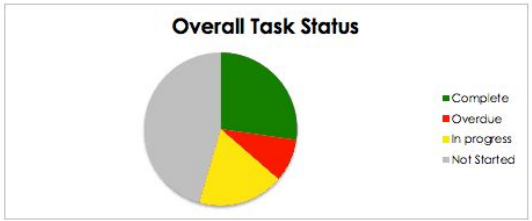
Dashboarding

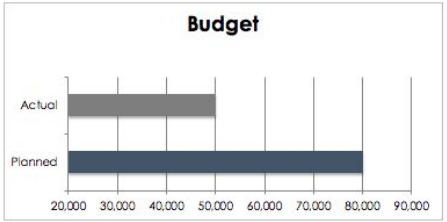
PROJECT MANAGEMENT DASHBOARD

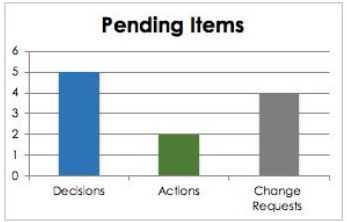
PROJECT NAME	[Name]
REPORT DATE	[Date]
PROJECT STATUS	On track
COMPLETED	27%

TASKS	ASSIGNED TO	PRIORITY	STATUS
Set kick-off meeting	Alex B.		COMPLETE
Agree on objectives	Frank C.	★	COMPLETE
Detailed Requests	Jacob S.		COMPLETE
Hardware Requests	Jacob S.	★	OVERDUE
Final Resource Plan	Jacob S.		INPROGRESS
Staffing	Alex B.	★	INPROGRESS
Technical Requests	Frank C.		NOT STARTED
Testing	Kennedy K.	★	NOT STARTED
Dev. Complete	Jacob S.	★	NOT STARTED
Hardware Configuration	Alex B.		NOT STARTED
System Testing	Kennedy K.	★	NOT STARTED
Launch			

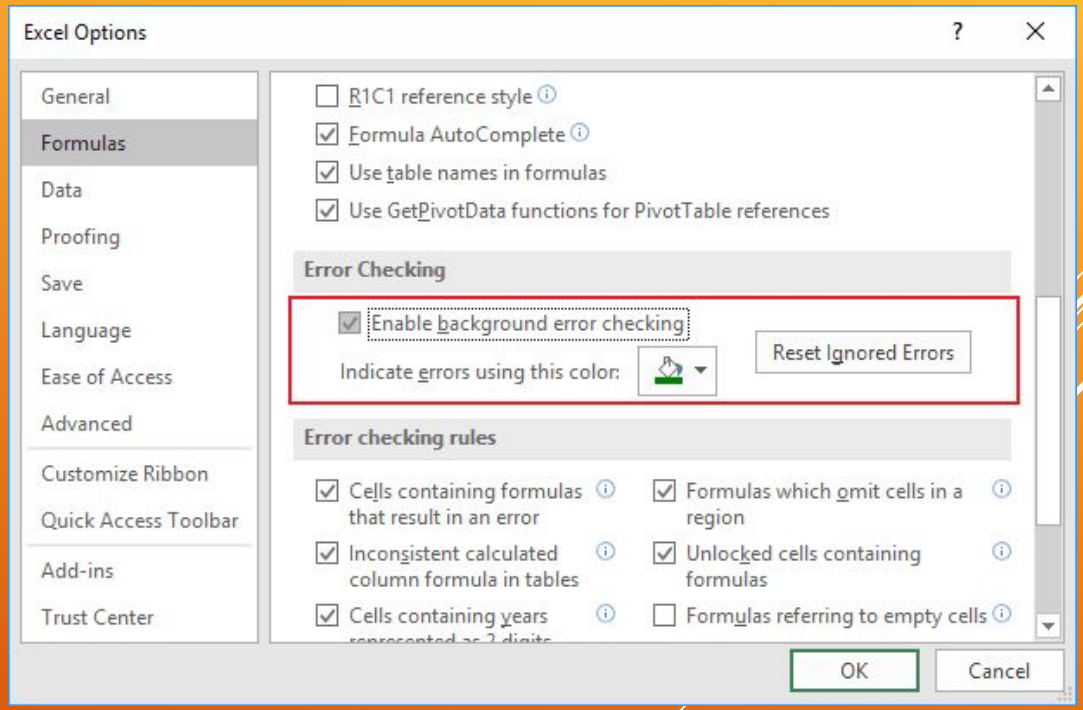




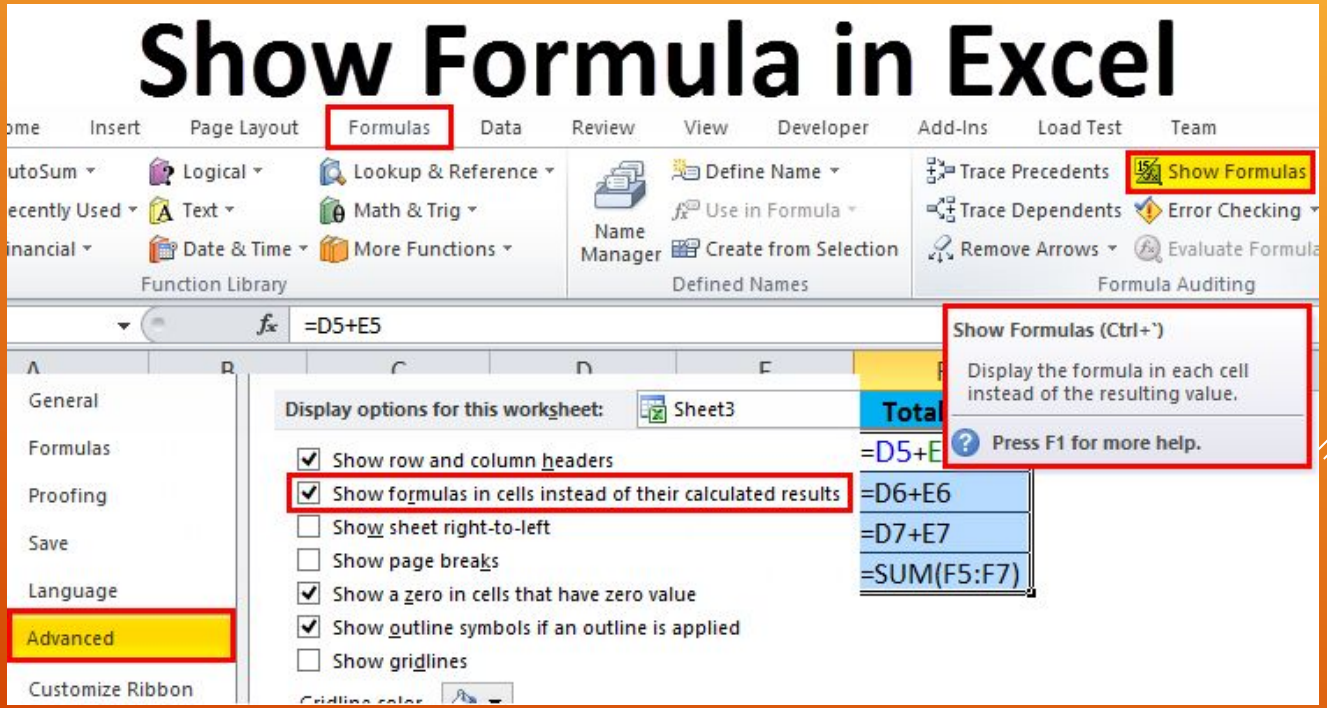




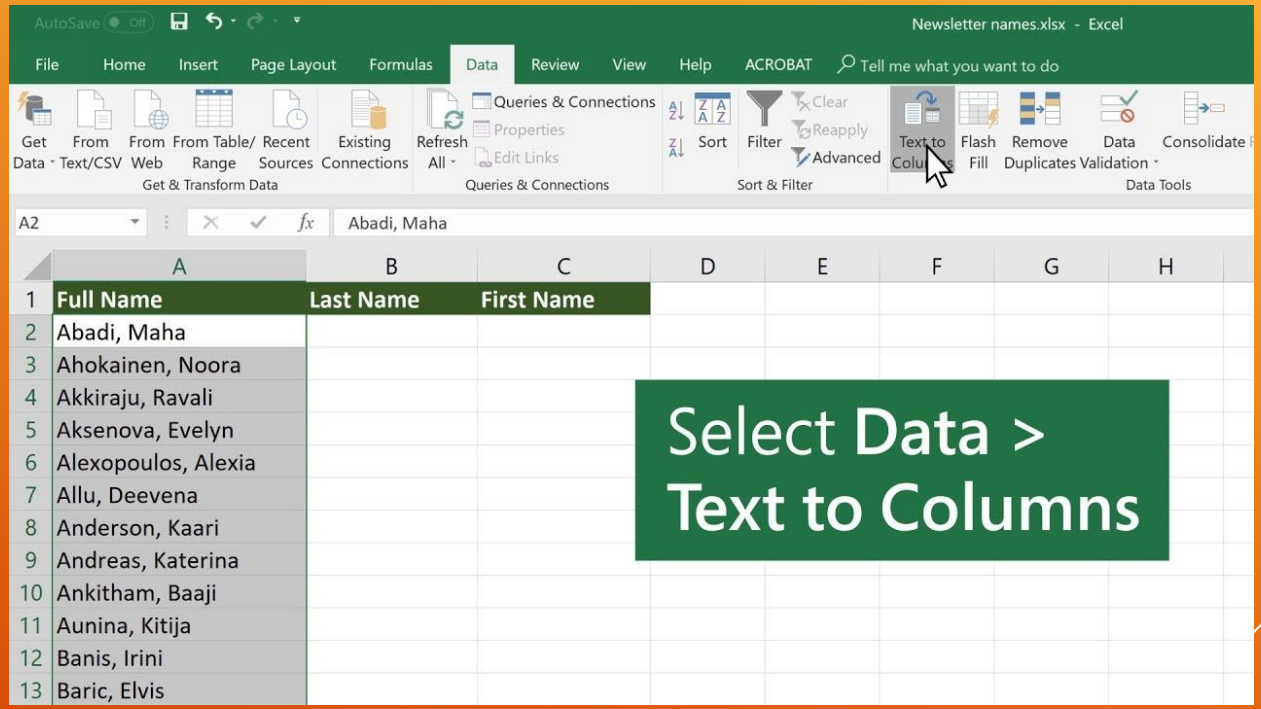
Error Checking



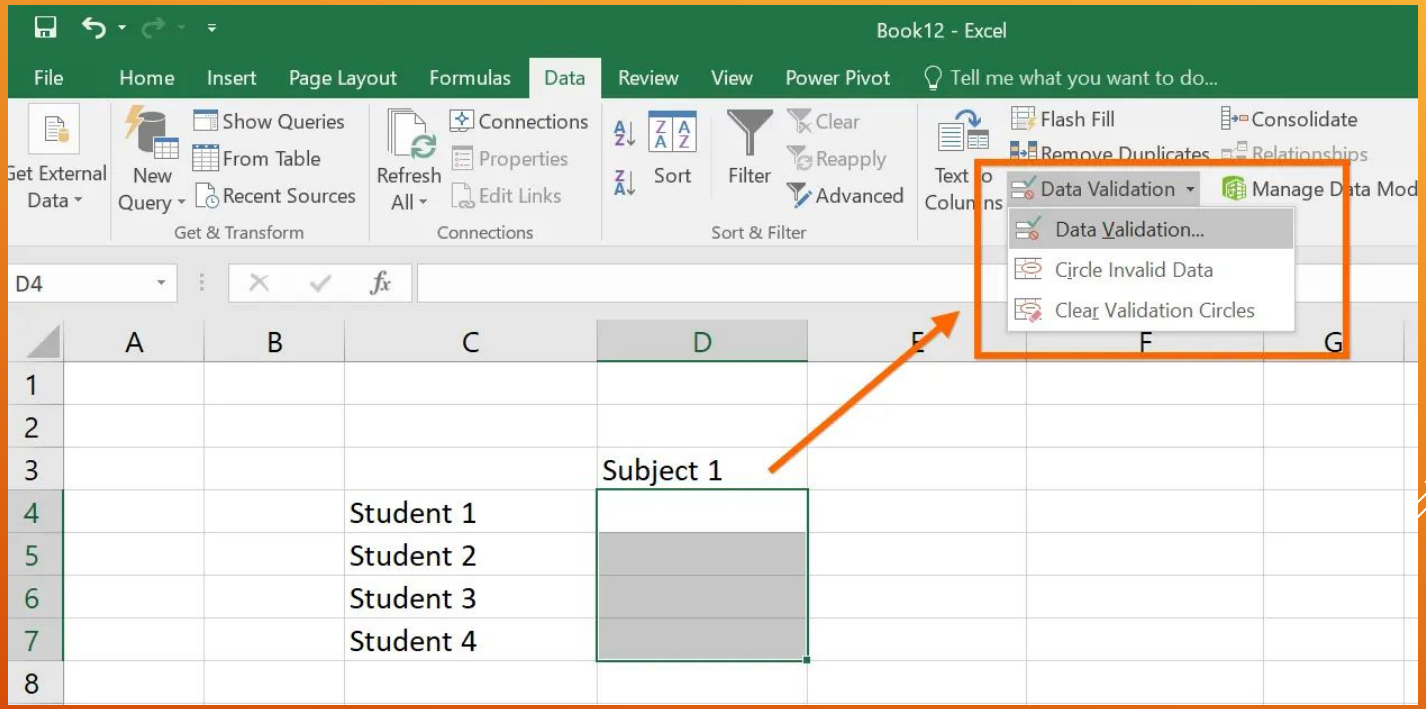
Show Formulas



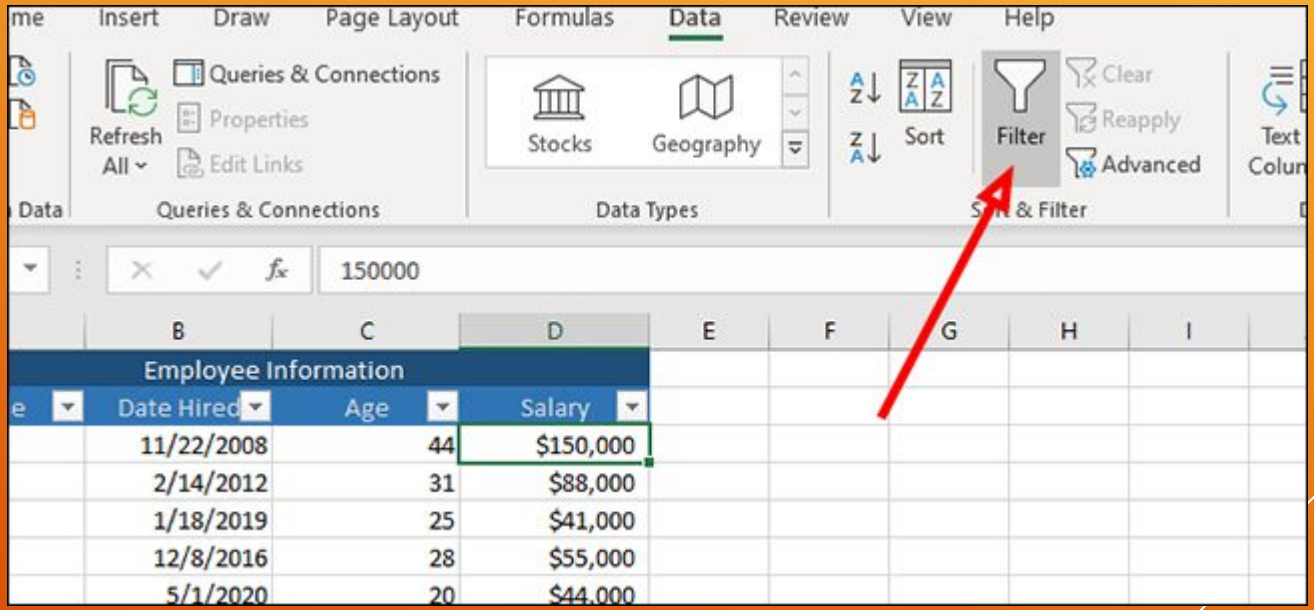
Text to Column



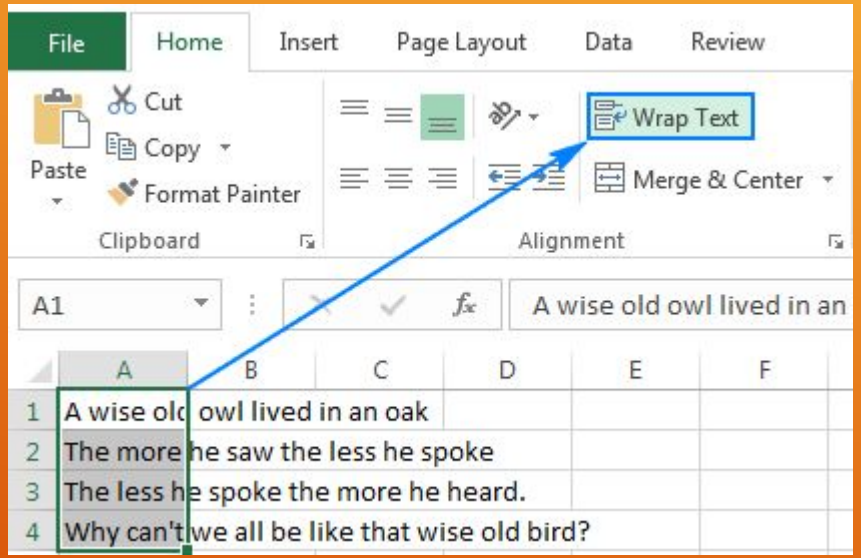
Data Validation



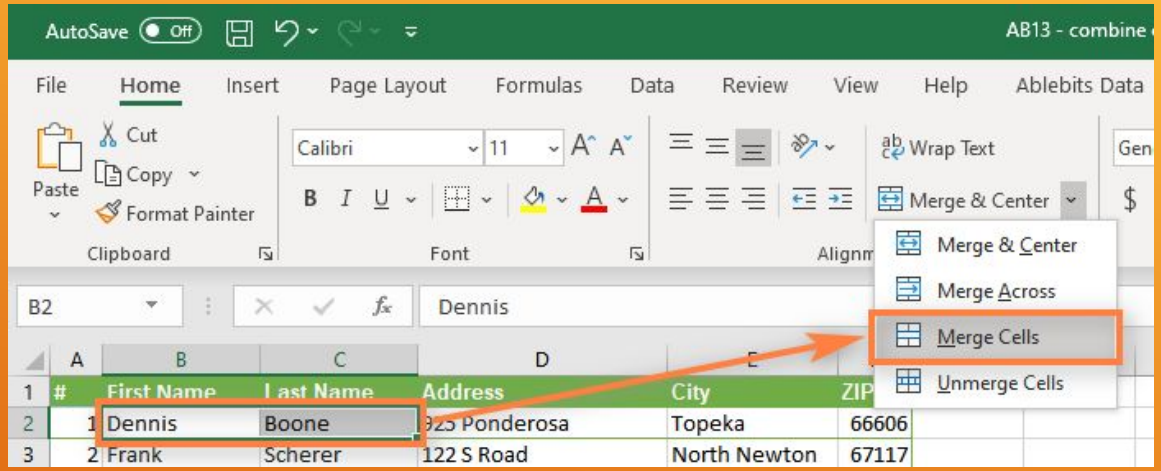
Sort And Filter

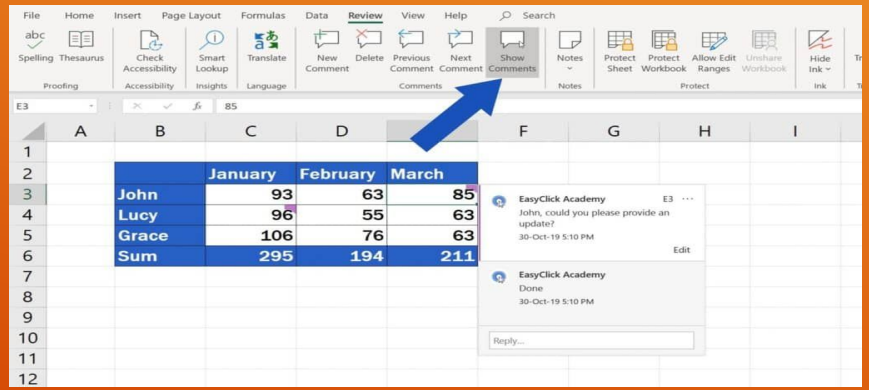


Wrap Text


File
Home
Insert
Page Layout
Data
Review
Cut
Copy
Format Painter
Paste
Clipboard
Wrap Text
Merge & Center
Alignment
A1
A wise old owl lived in an
A
B
C
D
E
F
1 A wise old owl lived in an oak
2 The more he saw the less he spoke
3 The less he spoke the more he heard.
4 Why can't we all be like that wise old bird?

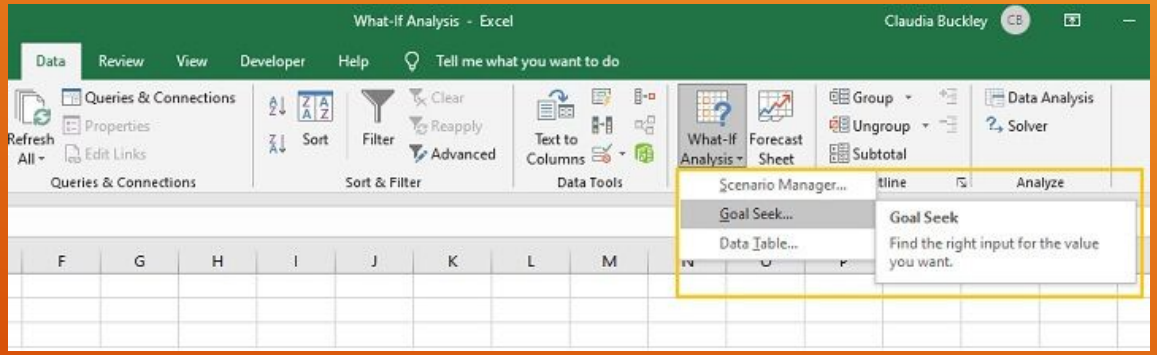
Merge Cell & Insert Comments



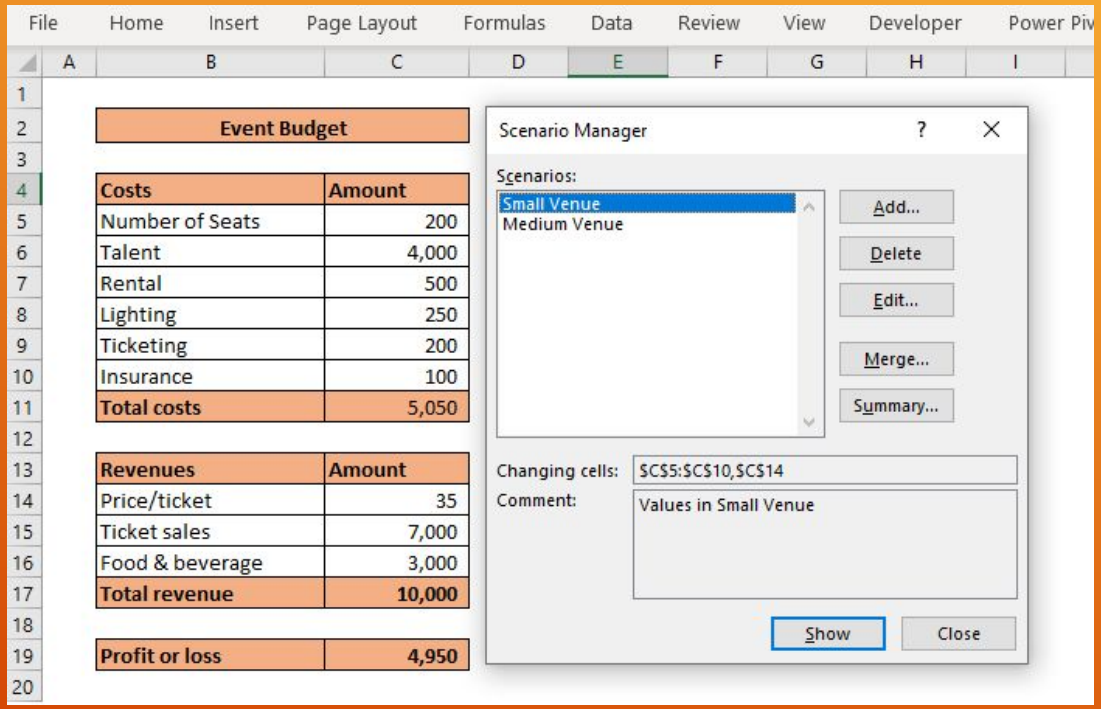


What-if Tools

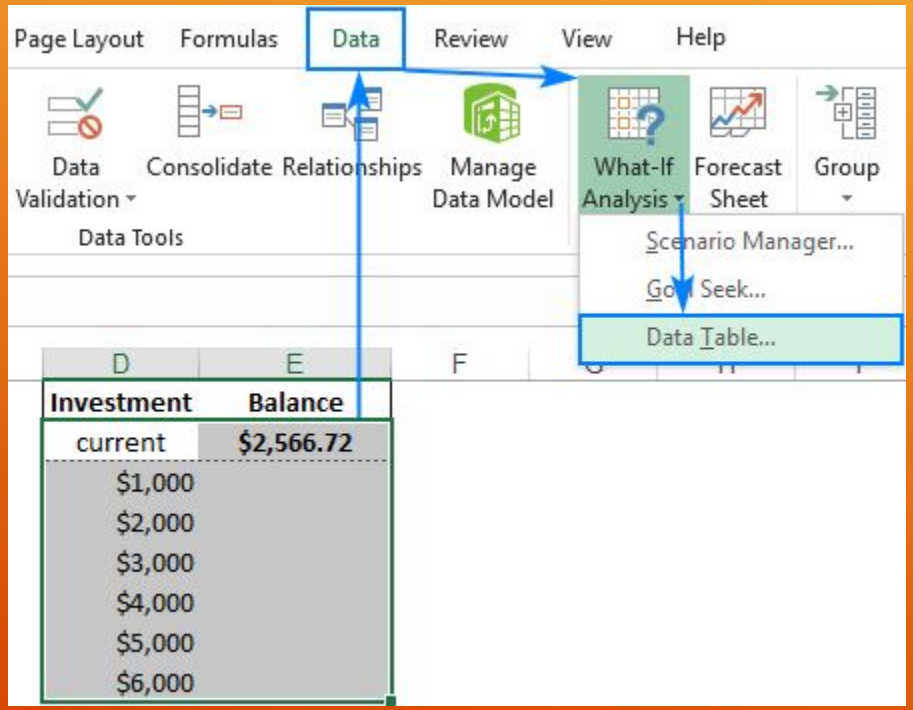
What-If Analysis is the process of changing the values in cells to see how those changes will affect the outcome of formulas on the worksheet. Three kinds of What-If Analysis tools come with Excel: Scenarios, Goal Seek, and Data Tables. Scenarios and Data tables take sets of input values and determine possible results.



Scenario Manager



Data Table


Page Layout
Formulas
Data
Review
View
Help
Data Validation
Consolidate
Relationships
Manage Data Model
What-If Analysis
Forecast Sheet
Group
Data Tools
Scenario Manager...
Goal Seek...
Data Table...
D
E
F
Investment
Balance
current
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$1,000
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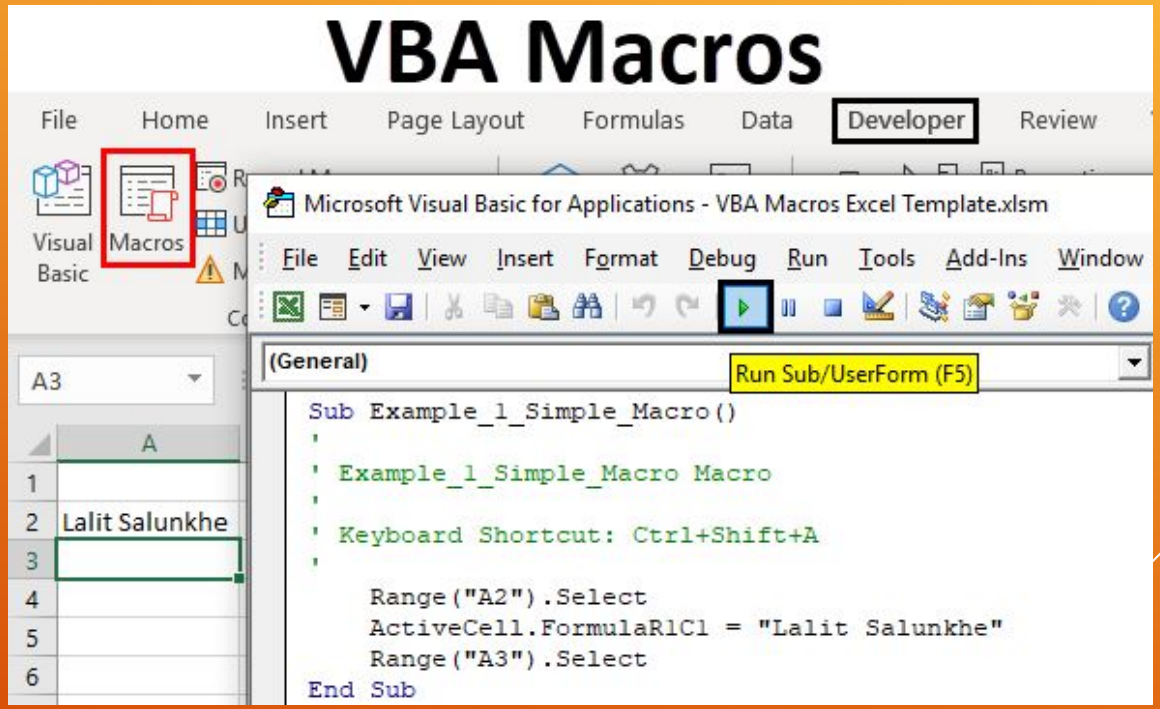
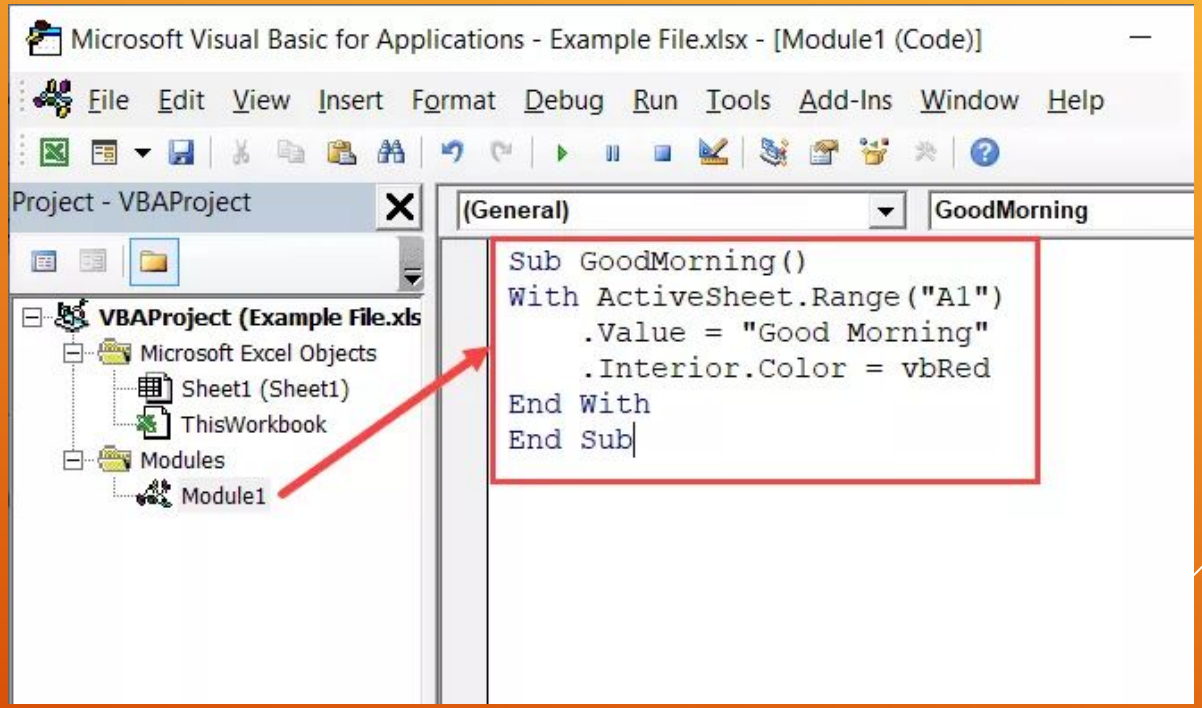
$5,000
$6,000

VBA & Macros


VBA Macros
File
Home
Insert
Page Layout
Formulas
Data
Developer
Review
Visual Basic
Macros
Microsoft Visual Basic for Applications - VBA Macros Excel Template.xlsm
File
Edit
View
Insert
Format
Debug
Run
Tools
Add-Ins
Window
(General)
Run Sub/UserForm (F5)
A3
A
1
2
Lalit Salunkhe
3
4
5
6
Sub Example_1_Simple_Macro()
'
' Example_1_Simple_Macro Macro
'
' Keyboard Shortcut: Ctrl+Shift+A
'
Range("A2").Select
ActiveCell.FormulaR1C1 = "Lalit Salunkhe"
Range("A3").Select
End Sub

Assign A Macros



Record A Macros