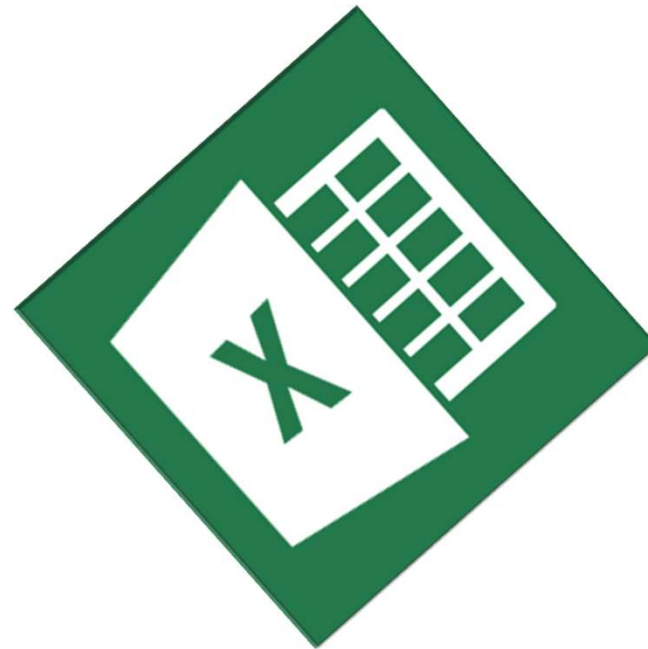




ADVANCED MICROSOFT EXCEL TRAINING



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Objectives

- Excel Formulas & Functions
- Large Excel Projects
- Excel protection and security
- Exploring Excel's Database Features
- Data analysis
- Advanced Analysis with PivotTables
- Customizing excel

**Hint: The motto of this training is:
“Say No to manual Work”**

Excel Formulas & Functions

Sum, Average, Min, Max and Count

General Syntax:

- Average Function **=AVERAGE(cell_range)**
- Minimum value function **=MIN (cell_range)**
- Maximum value function **=MAX (cell_range)**
- Counting (Qty) function **=COUNT (cell_range)**
- NB: Auto Average, Auto Min, Auto Max, Auto count

Exercise Files: average.xlsx

Working with Dates and Time

- Today's date (static): **(CTRL + ;)**
- Today's date (Dynamic): **=TODAY()**
- Today's Date and Time (Dynamic): **=NOW()**
- **NB:** To refresh the changes type in anything or make any changes in the values in the worksheet. However for shortcut key press **F9**

Exercise Files: dates.xlsx

Absolute vs. Relative Referencing

- Relative Referencing: **e.g. =SUM(A1:A10)**
- Absolute Referencing: (Hint: Use **F4** Key to lock)
- Locking Rows **e.g. =SUM(A\$1:A\$10)**
- Locking Columns **e.g. =SUM(\$A1:\$A10)**
- Locking a Cell **e.g. =A1/\$A\$10**

Exercise Files: absolute refs.xlsx

3.5. Text functions

- Length of a Text = **LEN(text)**
- Left characters = **LEFT (text, no. of characters from left)**
- Right characters = **RIGHT (text, no. of characters from right)**
- Middle characters = **MID(text,starting_char, no. of chars)**
- Finding the position/starting point of a word or character in a text
= **FIND(text_to_find, within_a_text, starting_point)**
- Removing all spaces between words = **TRIM(text)**
- Upper case = **UPPER(text)**
- Lower case = **LOWER(text)**
- Counting cells containing text values = **COUNTA(value1,value2...)**

If statements

- If statement have three arguments
 - The conditional statement to test
 - The value if statement is true
 - The value if statement is false

- General syntax:

= IF(logical_test, value_if_true, value_if_false)

e.g. =if(A6>10,"High","Low")

Exercise Files: if.xlsx

Nested If statements

o General Syntax

**=IF(logical_test1, value_if_true,
IF(logical_test2, value_if_true,
IF(logical_test2 ,value_if_true,
value_if_false)**

o Example:

**=IF(A6>80,"A", IF(A6>60,"B",IF(A6>40,"C",
IF(A6>20,"D", "F"))))**

Exercise Files: Nested if.xlsx

SUMIF statements

- o **General Syntax:**

=SUMIF(Lookup_Range,Criteria,SumRange)

- o **Example:**

=SUMIF(A1:A10,"ASSET","B1:B10)

AVERAGEIF statements

- General Syntax:

=AVERAGEIF(Lookup_Range,criteria,Average_Range)

- Example:

=AVERAGEIF(A1:A10,"ASSET","B1:B10)

Exercise Files: sum if.xlsx

COUNTIF statements

- General Syntax:

=COUNTIF (Lookup_Range, criteria)

- Example: **=COUNTIF(A1:A10,"ASSET")**

Naming and using cells

- To give a name to a cell range simply select the cells you want to name and then while still selected type in the name in the name box
- **Alternatively:** Select the cells including the headers then go to **formulas tab -> create from selection**
- **Applying the names in the formulas:**
E.g. =SUM(January) instead of =SUM(B6:B9)
NB: Formulas tab -> Use in formula or Press the **F3** key to enter the cells name while in the formula

Exercise Files: creating range names.xlsx

Lookup Functions

- **VLOOKUP**: Used to lookup data that are arranged down the columns (**Vertically** to each other)
- **HLOOKUP**: Used to lookup data that are arranged across rows (**Horizontally** to each other)

NB: *VLOOKUP* is much more common

Exercise Files: lookups.xlsx

Lookup Functions

◦ VLOOKUP General Syntax:

=VLOOKUP(lookup value, data range, column no. to match, True/False)

◦ HLOOKUP General Syntax:

=HLOOKUP(lookup value, data range, row no. to match, True/False)

Exercise Files: lookups.xlsx

LOOKUP statements

General syntax

=VLOOKUP(lookup value, data range, column # to match, true/false)

Keys things to consider:

- **Lookup_value** should be put in “” or referred to a particular cell
- **data_range** should start from the column containing values that you want to lookup
- **Column # to match.** should be counted from the column containing lookup value
- **TRUE**=Approximate match & **FALSE(0)**=Exact Match

Exercise Files: lookups.xlsx

2. Large Excel Projects

Freezing panes

- Freezing the Top Row: **View Tab > Freeze pans > Freeze Top Row**
- Freezing the First Column: **View Tab > Freeze pans > Freeze First column**

Freezing Multiple Rows and columns:

- **Freezing Rows:** First **split** the work sheet into two views by dragging the top handler of vertical the scroll bar down below the rows that you want to freeze then go to **View Tab > Freeze pans**
- **Freezing Columns:** First **split** the work sheet into two views by dragging the right handler of the horizontal scroll bar to the left just before the columns that you want to freeze then go to **View Tab > Freeze pans**
- **Freezing both Rows and Columns:** First split the rows then split the columns as explained in the two steps above before freezing the panes then after setting the desired split area then go to **View Tab > Freeze pans**
- **NB:** To undo the split click the **split button** and to unfreeze click **unfreeze**

Exercise Files: freezing panes.xlsx

Repeating row and column titles

- First insert page break after each instance of data that you want to appear in separate pages. Before inserting the page break make sure u have selected the row that you want it to appear first in the next page (**page layout > Breaks > Insert page break**)
- **Hint:** In excel incase you want to repeat the same action multiple times simply perform the action once then to use **F4** key to repeat the action
- To select the rows to repeat as titles when printing the document go to **page layout > Print Titles > Rows to repeat**
- To select the columns to repeat as titles when printing the document go to **page layout > Print Titles > columns to repeat**
- **NB:** To view the changes go to File > Print > print preview and scroll to see how the page breaks have affected the file and how the rows/columns are repeating

Exercise Files: repeating rows.xlsx

Hiding or grouping rows and columns

- To **hide** columns or rows simply select the columns or rows then while selected **right click** and select **Hide** from the **pop up menu**
- To **Unhide** rows or columns select rows or columns that are adjacent to the hidden rows/columns then **right click** and select **unhide** from the **pop up menu**
- To **Group** multiple rows/columns simply select the rows or columns then go to the **Data Tab > Group** or use keyboard shortcut (**ALT + SHIFT + →**)
- To **Ungroup** rows/columns simply select the rows or columns then go to the **Data Tab > Ungroup** or use keyboard shortcut (**ALT + SHIFT + ←**)
- **HINT:** To ungroup all the sheet got to **Data Tab > Clear outline**

Exercise Files: grouping.xlsx

3. Excel protection and security

Workbook permissions and protection

- **Locking Cells:** Home > select the cells that you want to be editable (unlocked) > go to Format > Lock cells > while still selecting the cells that are not to be locked > go again to Format > Protect worksheet > Remove the tick from select locked cells check box > Enter password > Re-enter password
- **Unlocking cells:** Home > Format > Unprotect sheet > Enter password
- **Protecting the entire work book/ Excel File with password:** File > Info > permissions > Protect workbook > Encrypt with password > Enter Password > OK
- **Mark document as Final** so as to indicate that editing is complete and this is the final version of the document: File > Info > permissions > Protect workbook > Mark as final
- **Add a digital signature** to ensure security of the file when sharing across the internet: This can be done by purchasing Security certificates from trusted sources e.g. from www.globalsign.com

Exercise Files: permissions.xlsx

4. Exploring Excel's Database Features

Splitting cell data into multiple cells

- To split the data into multiple cells first insert a new column in the right side of the column containing the data to be split then select the data in the column containing data to be split (**CTRL + SHIFT + ↓**) then go to **Data Tab > Text to columns > Delimited > choose delimiter that has separated the data e.g. Space delimited > Next > Format the data if necessary > Finish**
- **Alternatively:** Go to the next empty Column or insert a new column in front of the column containing values you want to split then write the First word from the sentence you want to split and ENTER then go to **Home > Flash Fill (Shortcut CTRL + E) then do the same for the Remaining words in the sentence**

Exercise Files: [splitting.xlsx](#)

Joining data from multiple cells

To join data into multiple cells first insert a new column in the right side of the column containing the data to be split then:

Joining by using Formula: (&)

- E.g. = A5 & B5

Joining by using Function: CONCATENATE ()

- E.g. = concatenation(A5 ,B5)

Alternatively: Go to the next empty Column or insert a new column in front of the column containing values you want to join then write the full sentence you want to obtain from the first cell in the columns and ENTER then go to **Home > Flash Fill (Shortcut CTRL + E)** then do the same for the Remaining words in the sentence

Exercise Files: merging.xlsx

Using tables to sort and filter data

- **To convert a data range into a table** simply click anywhere in the data range and go to **Insert > Table**
- **Removing Duplicates:** Click anywhere in the data in the table then go to **Design Tab > Remove Duplicates > Select the fields that should be compared when removing duplicates > OK**
- **To convert a table into data range:** **Design Tab > Convert to range**

Exercise Files: tables.xlsx

Inserting automatic subtotals

- **Hint:** Before inserting subtotals make sure your data is properly sorted in the columns that requires the subtotals
- **Data Tab > Sub Totals > Choose at each change in > Choose the function e.g. sum, average, count, etc. > Choose which column or data field to add subtotal to**
- **NB:** To add more subtotals without replacing make sure to uncheck the **Replace current subtotals** check box and to insert page break after each subtotal make sure to check the **page break between groups** check box
- **To Remove subtotals: Data Tab > Sub Totals > Remove All**

Exercise Files: subtotals.xlsx

5. Analyzing Data

Using auditing to diagram

- Auditing Tools are available under the **Formula Tab**
- **Important Terminologies:**
 - A dependency is a **formula** that a cell feeds into
 - A Precedent is the **data** that feeds into a formula
- Direct Dependency: a formula that a cell directly feeds into. Key board shortcut: **CTRL +]**
- Indirect Dependency: formula that a cell indirectly feeds into. Key board shortcut: **CTRL + SHIFT +]**
- Direct Precedency: data that directly feeds into a formula. Key board shortcut: **CTRL + [**
- Indirect Precedency: data that indirectly feeds into a formula. Key board shortcut: **CTRL + SHIFT + [**
- Checking the cause of errors in the formula: **Click the formula with errors > go to formula tab > Error checking (Down arrow) > Trace error**

Exercise Files: auditing.xlsx

Using evaluation in Excel

- Formula evaluating Tool is available under the **Formula Tab > Evaluate Formula**
- The Evaluate formula tool evaluates the validity of the formula by checking the actual data produced by the formula computations and comparing the data with the actual results.
- To evaluate a formula **click the cell that contains the formula > go to formula tab > click evaluate formula > click evaluate**

Exercise Files: evaluate.xlsx

Working with Goal Seek

- The Goal seek tool helps a user to evaluate various outcomes incase the original goal or plan is changed.
- To perform a goal seek analysis: go to **Data > What if Analysis > Goal Seek > Set cell** that you want to analyze > **To value:** that you want it to be the outcome > **By changing cell:** value that you want to change if the goal sought is changed

Exercise Files: goal seek.xlsx

Using data tables in formulas

- Data tables can be used to evaluate various outcomes in case a certain goal or plan changes e.g. how will the monthly loan payments change if the loan repayment period changes
- **Select all the values in the table** then go to **Data Tab > What if Analysis > Data Table > Enter the cell(s) that will affect the columns/rows' outcome in case it changes > OK**

Using scenarios in formulas

- Scenario manager can be used to evaluate various outcomes of a formula in multiple scenario changes.
- **Select the values used as inputs in the formula** then go to **Data Tab > What if Analysis > Scenario manager > Add > OK > Put in a scenario name > Put in a comment (optional) > Enter values for the scenario > Add (to add another scenario) > Repeat Entering values for other scenarios > OK > Show > click on scenarios to navigate through outcomes > Click Summary to get a full report**

Exercise Files: scenarios.xlsx

6. Advanced Analysis with PivotTables

Discovering PivotTables

- Pivot tables are useful when
 - You have a lot of data to analyze
 - Can't see how they relate to each other
- Pivot tables summarizes data and Turn data into knowledge
- Anatomy/Structure of the Pivot table

- Row Labels
- Column Labels
- Summary area
- Report filter

The screenshot shows a PivotTable with a filter for 'Month' set to '(All)'. The table summarizes the 'Sum of Quantity' by region (Central, Northeast, Southeast, West) and container size (1 liter, 2 liter, 750 ml), along with a Grand Total. The 'Row Labels' are the regions, and the 'Column Labels' are the container sizes and the Grand Total.

Row Labels	1 liter	2 liter	750 ml	Grand Total
Central	10617	76211	30766	117594
Northeast	15337	69035	32125	116497
Southeast	40851	63120	10375	114346
West	112597	124340	90088	327025
Grand Total	179402	332706	163354	675462

- **NB:** Pivot Tables are flexible such that in just one or two clicks you can swap columns, rows and filters

Exercise Files: sparklines.xlsx

Creating a basic PivotTable

- Creating pivot table: **Click any where in the data range > go to Insert Tab > Pivot table >**
- **Hint:** It is more practical to create it in a separate sheet
- Drag and drop the items in the pivot table field list into the columns labels, rows labels , values and report filter boxes according to the structure that you desire for the pivot table

Exercise Files: create pivot table.xlsx

Modifying a PivotTable

- Modifying the pivot table simply move around the the items in the pivot table field list into the columns labels, rows labels , values and report filter boxes according to the structure that you desire for the pivot table when modifying the pivot table structure
- **Slicers:** are interactive panels that can be used in filtering data **Inserting Slicers: Options > Insert Slicer**

Exercise Files: modifying a pivottable.xlsx

7. Customizing Excel

Customizing the Quick Access Toolbar (QAT)

- Go to the QAT click the down arrow and choose the command you want to add to the QAT however for more commands click **more commands then choose the command you want and click Add**
- **Alternatively** go to the command you want, right click it and choose **Add to Quick Access Tool Bar**

Customizing the Ribbon bar

- Right click any where on the ribbon bar and choose **Customize the Ribbon**
- NB: You can not add a command directly to the Tab, you should add it to a group. However you can add a group to an existing Tab a you can create your own Group or even your own custom Tab by clicking **New Group** or **New Tab**
- To share the customization to other computers choose **Import/Export**

Exercise Files: recording macro.xlsx

Thank You for your time



Any question?



**You are officially an
Advanced user of
MS EXCEL**

THE END