## UNIT 1- INTRODUCTION TO EXCEL

1. MS-EXCEL is a part of Microsoft Office suite software. It is an electronic spreadsheet with numerous rows and columns, used for organizing data, graphically represent data(s), and performing different calculations. There are $\mathbf{1 6 , 3 8 4}$ columns and $\mathbf{1 , 0 4 8 , 5 7 6}$ rows in each Excel worksheet since Excel 2007. That makes $\mathbf{1 7 , 1 7 9 , 8 6 9 , 1 8 4 ~ c e l l s . ~}$

Microsoft Excel is a spreadsheet developed by Microsoft for windows, mac os, android and ios. It features calculation or computation capabilities, graphing tools, pivot tables and a macro programming language called Visual Basic for Applications.

Excel contains a large number of boxes called cells that are ordered in rows and columns. Data is placed in these cells.

## What is a cell?

A spreadsheet is in the form of a table comprising rows and columns. The rectangular box at the intersection point between rows and columns forms a cell. Given below is an image of a cell:


## Name Range

 used to avoid hard-coded values ring in formulas and to mak stored in what is known as the Name Manager in Excel.


## 2. WHY ARE EXCEL MACROS USED IN EXCEL?

As humans, we are creatures of habit. There are certain things that we do on a daily basis, every working day. Wouldn't it be better if there were some magical way of pressing a single button and all our routine tasks are done? I can hear you say yes. Macro in Excel helps you to achieve that. In a layman's language, a macro is defined as a recording of your routine steps in Excel that you can replay using a single button.

For example, you are working as a cashier for a water utility company. Some of the customers pay through the bank and at the end of the day, you are required to download the data from the bank and format it in a manner that meets your business requirements.

You can import the data into Excel and format. The following day you will be required to perform the same ritual. It will soon become boring and tedious. Macros solve such problems by automating such routine tasks. You can use a macro to record the steps of

- Importing the data
- Formatting it to meet your business reporting requirements.


## SORTING AND OUERYING DATA

Sorting is the process of arranging the strings or integers so that they can be placed in ascending or descending order. In this article, we will look into how we can do Sorting in Excel.
To do so follow the steps below:
Sorting Strings:
Step 1: Formatting data for sorting.

|  | A |
| :--- | :--- |
| 1 | Strings |
| 2 | North |
| 3 | South |
| 4 | East |
| 5 | West |

## Step 2: Converting data from un

|  | $A$ |
| :---: | :--- |
| 1 | Strings |
| 2 | North |
| 3 | South |
| 4 | East |
| 5 | West |

Step 3: Then, click to Data on the Ribbon. In the Sort \& Filter group, click Sort.


Step 4: - In the Sort box, select A to Z in order to sort the data in ascending order, then click Ok.

| Sort |  |  |  |  |  |  |  |  |  | ? |  | $\times$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{\text { }}$ ¢ $\downarrow$ Add Level |  | $\times$ Delete Level |  | E.e.epy | - | * | Opti | s... | $\square$ | My data | as | ders |
| Column |  |  |  | Sort On |  |  |  | Order |  |  |  |  |
| Sort by | Integers \& Strings |  | $\checkmark$ | Values |  |  | $\checkmark$ | Ato |  |  |  | $\checkmark$ |
|  |  |  |  |  |  |  |  | $\begin{aligned} & \text { A to Z } \\ & \text { Z to A } \\ & \text { Custom List... } \end{aligned}$ |  |  |  |  |
|  |  |  |  |  |  |  |  |  | OK |  |  |  |

Now, data are sorted in ascending ordel

|  | A |
| :--- | :--- |
| 1 | Strings |
| 2 | East |
| 3 | North |
| 4 | South |
| 5 | West |

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Step 5: Now, if we want to sorin descending then we have to select Z tow in order to sort the data in descending order, then click Ok.


Now, data are sorted in descending order.

|  | A |
| :--- | :--- |
| 1 | Strings |
| 2 | West |
| 3 | South |
| 4 | North |
| 5 | East |

## 3. HOW TO HIDE, UNHIDE AND GROUP, UNGROUP ROWS AND COLUMNS IN EXCEL

You have an Excel table with some unimportant rows, but you don't want to delete them. In such case, you might want to "hide" them. There are two options of hiding rows (and columns): Either right-click on the row (or column) number and click on "Hide" or use the grouping function in order to create a group.

## HIDE FUNCTION

Many people love the "Hide" function for hiding rows or columns, because it is very easy to use: (the numbers are corresponding with the image)

1. Mark the row(s) or column(s)

2. Right-click on the row number of column letter and click" on "Hide".


## Unhide (all) hidden rows and columns

Unfortunately, hiding rows and columns has one big disadvantage: Hidden rows or columns are very hard to be seen. It's only symbolized by a thin double line between the row or column number (3). A better way for hiding rows or columns is the Group function (4).

## 4. CELL REFERENCING

A cell reference refers to a cell or a range of cells on a worksheet and can be used in a formula so that Microsoft Office Excel can find the values or data hat you want that formula to calculate.

In one or several formulas, you can

- Data from one or more contiguo
- Data contained in different area
- Data on other worksheets in the

For example:

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This formula: Refers to:
$=\mathrm{C} 2$
=A1:F4
=Asset-Liability
\{=Week1+Week2 $\}$
$=$ Sheet $2!$ B2

Cell C2
Cells A1 through F4

The cells named Asset and Liability
The cell ranges named Week1 and Week2

Cell B2 on Sheet2

## And Returns:

The value in cell C2.
The values in all cells, but you must press Ctrl+Shift+Enter after you type in your formula.

Note: This functionality doesn't work in Excel for the web.

The value in the cell named Liability subtracted from the value in the cell named Asset.
The sum of the values of the cell ranges named Week1 and Week 2 as an array formula.
The value in cell B2 on Sheet2.

## DATA VALIDATION

Use data validation to restrict the type of data or the values that users enter into a cell. One of the most common data validation uses is to create a drop-down list.

1. Select the cell(s) you want to create a rule for.
2. Select Data >Data Validation.

3. On the Settings tab, under Allow, select an option:

- Whole Number - to restrict the cell to accept only whole numbers.
- Decimal - to restrict the cell to accept only decimal numbers.
- List - to pick data from the drop-down list.
- Date - to restrict the cell to accept only date.
- Time - to restrict the cell to accept only time.
- Text Length - to restrict the length of the text.
- Custom - for custom formula.

2. Under Data, select a condition.
3. Set the other required values based on what you chose for Allow and Data.
4. Select the Input Message tab and customize a message users will see when entering data.
5. Select the Show input message when cell is selected checkbox to display the message when the user selects or hovers over the selected cell(s).
6. Select the Error Alert tab to customize the error message and to choose a Style.
7. Select OK.

## 5. Name A Cell Or Range With The Define Name Option

Although the previous method is the easiest way to define a name, the Define Name option in Excel enables you to do more such as setting the name's scope and adding a comment. Furthermore, Excel's Define Name option allows you to create a name for a constant or formula. Please follow the below steps to name a cell or range with the Define Name option.

1. Select the cell or cell range that you-want to hame. You also can select non-contiguous cells or ranges by holding the Ctrl key.
2. On the Formulas tab, in the Define Names group, click Define Name.
3. In the pop-up New Name dialog box, please do as follows:

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- In the Name box, type the range name.
- In the Scope drop-down list, set the name scope within which the name is recognized without qualification (Workbook by default).
- In the Comment box, leave a comment if you need.
- In the Refers to box, check the reference and correct it if needed by clicking the up-arrow button $\uparrow$ at right and selecting a new range. Note: By default, names use absolute cell references. If you'd rather have a relative named range, remove the dollar signs (\$) from the reference.



## 

4. Click $\mathbf{O K}$ to save and define the name.

## 6. BASIC FORMULAS

## 1. SUM

The $\operatorname{SUM}()$ function, as the name suggests, gives the total of the selected range of cell values. It performs the mathematical operation which is addition. Here's an example of it below:


As you can see above, to find the total amount of sales for every unit, we had to simply type in the function " $=\operatorname{SUM}(\mathrm{C} 2: \mathrm{C} 4)$ " or $=\mathrm{A} 2+\mathrm{B} 2$. This automatically adds up 300,385 , and 480 . The result is stored in C5.


## 2. AVERAGE

The AVERAGE() function focuses on calculating the average of the selected range of cell values. As seen from the below example, to find the avg of the total sales, you have to simply type in "AVERAGE(C2, C3, C4)".



Example:
=AVERAGE(B2:B11) - Shows a simple average, also similar to (SUM(B2:B11)/10)


## 3. COUNT

The COUNT function counts all cells in a given range that contain only numeric values.
=COUNT (value 1, [value 2], ...)
Example:
$\operatorname{COUNT}(\mathbf{A}: \mathbf{A )}$ - Counts all values that are numerical in A column. However, you must adjust the range inside the formula to count rows.
COUNT(A1:C1) - Now it can count rows.


## 4. COUNTA

Like the COUNT function, COUNT regardless of type. That is, unlike COI logical values, errors, empty string, or =COUNTA(value 1, [value 2],

Example:
COUNTA(C2:C13) - Counts rows 2 to 13 in column C regardless of type. However, like COUNT, you can't use the same formula to count rows. You must make an adjustment to the selection inside the brackets - for example, COUNTA(C2:H2) will count columms C to H .


## 5. COUNTBLANK

The Excel COUNTBLANK function returns a count of empty cells in a range. Cells that contain text, numbers, errors, spaces, etc. are not counted. Formulas that return empty text are counted.


## 6. MAX \& MIN

The MAX and MIN functions help in finding the maximum number and the minimum number in a range of values.
=MIN(number1, [number2], ...)
Example:

11 in both columns B and C.
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=MAX(number1, [number2], ...)
Example:
$=\mathbf{M A X}(\mathbf{B 2 : C 1 1 )}$ - Similarly, it finds the maximum number between column B from B2 and column C from C 2 to row 11 in both columns B and C.

## Dare:


7. DATA ANALYSIS FUNCTION

## 1. SUMIF



It will sum up cells that meet the given criteria. The critena are based on dates, numbers, and text. It supports logical operators such as ( $\rangle,\langle,\langle \rangle,=$ ) and also wildcards (*,? ).

Formula
$=$ SUMIF(range, criteria, [sun_range])
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## EXAMPLE

We wish to find total sales for the East region and the total sales for February. The formula to use to get the total sales for East is:


Text criteria, or criteria that includes math symbols, must be enclosed in double quotation marks (" ").We
get the result below:


## Dare:



The formula for total sales in February is:


We get the result below:


## 2. SUMIES

SUMIFS is a function to sum cells that meet multiple criteria. SUMIFS can be used to sum values when corresponding cells meet criteria based on dates, numbers, and text. SUMIFS supports logical operators (>,<,<>,=) and wildcards (*,?) for partial matching.

Syntax

## Dare:

=SUMIFS (sum_range, range1, criteria1, [range2], [criteria2], ...)
example
In the worksheet shown, there are two SUMIFS formulas. In the first example (I5), SUMIFS returns a sum of values in column F where the color in column C is "red". In the second example (I6), SUMIFS sums values in column F when the color is "red" and the state is Texas (TX):

## =SUMIFS(F5:F15,C5:C15,"red")// color="red" <br> =SUMIFS(F5:F15,C5:C15,"red",D5:D15,"TX")// color="red", state="TX"

Notice the equals sign (=) is not required when constructing "is equal to" criteria. Also notice SUMIFS is not case-sensitive; you can use "red" or "Red", and "TX" or "tx".


## 3. COUNTIF

The powerful COUNTIF function in Excel couth cells based on one eriteria.
EXAMPLE
syib mainianing colutar
Use the COUNTIF function in Excel to count cells that are equat to a value, count cells that are greater than or equal to a value, etc.

1. The COUNTIF function below counts the number of cells that are equal to 20 .


## Dare:

The following COUNTIF function gives the exact same result.

3. The COUNTIF function below counts the number of cells that are greater than or equal to 10 .


The following COUNTIF function gives theqexact same result.eer


Explanation: the \& operator joins the 'greater than or equal to' symbol and the value in cell C 1 .

## 4.COUNTIES

The COUNTIFS excel function counts the values of the supplied range based on one or multiple criteria (conditions). The supplied range can be single or multiple and adjacent or non-adjacent. Being a statistical function of Excel, the COUNTIFS supports the usage of comparison operators and wildcard characters. For example, given the following table, the COUNTIFS excel function can count the total number of products with the name "B" for the east region. The formula "=COUNTIFS(A2:A13,"EAST",B2:B13,"B")" returns 2.

## Dare:

|  | A | B |  |
| :---: | :---: | :---: | :---: |
| C |  |  |  |
|  | Region | Product |  |
| 2 | North | A |  |
| 3 | East | B |  |
| 4 | West | V |  |
| 5 | South | C |  |
| 6 | North | A |  |
| 7 | East | B |  |
| 8 | West | V |  |
| 9 | South | C |  |
| 10 | North | C |  |
| 11 | East | A |  |
| 12 | West | B |  |
| 13 | South | V |  |
| 14 |  |  |  |

## 8. HOW GOOGLE FORMS WORK

## 1. Log into your Google account using Google Chrome Browser

 see your image in the upper right-hand corner:

## Google

e or type a URL


Once logged in, click on the set of square boxes just to the left of your picture, and select "Google Drive".

> 2. Once on the Google Drive page, click on "New"

From the dropdown, select "More", and then click on Google Forms:


## Dare:


3. Once your Google Form opens, start by formatting your form

Start by giving your Google Form a name that deseriber what you're using it for.
As an example, you might call it "Pod left-hand corner where it says "untitled

In the upper right-hand corner you have all of your settings (from left to right):

- Add-ons (like Form Notifications
- Customize Theme (colors, images)
- Preview (to view your form)
- Settings (customized settings)

Spend some time reviewing these setting sand deciaing how youmani your form to function.
The most important things to payattention to here are under the Settings


- General
- Presentation
- Quizzes

Under General, you'll want to make sure you check the appropriate boxes based on your survey needs. For example, in the image below, no one outside of my organization would be able to fill out this Form (not the setting I want to have checked if I'm sending this out to my audience).

## Dare:



Under your Presentation settings, you' and check any boxes that apply to how


I haven't personally used the Quizzes settings for anything up to this point; however, if you're interested in creating a quiz with point values, this is the section where you'd set that criteria:

## Dare:

| Settings |  |  |
| :---: | :---: | :---: |
| General | Presentation | Quizzes |
| ( Make this a quiz <br> Assign point values to questions and allow auto-grading. |  |  |
| Quiz options |  |  |
| Release grade: |  |  |
| ( Immediately after each submission |  |  |
| Later, after manual review Turns on email collection |  |  |
| Respondent can see: |  |  |
| $\checkmark$ missed questions (3) |  |  |
| $\square$ Correct answers (3) |  |  |
|  |  | Cancel |

## 4. Add your first question by typing it

When adding your questions, be sure to consider things like:

- Do I want to collect email address
can follow
th those who submit the Form?
- Do I need any other geographical data to help informpy suryey?
- Should I be adding in any description text to help myusers better understand the question?
- Do I want all (or some) of my questions to be "required"?
 you can dictate whether the question is required or has a description usin the settings below the question box:


## Dare:



5. Add multiple questions to your Google Form

You can add multiple questions to your form (fecommendedfor best engagement and survey results) by clicking "Add Question" to the right of your orm?


This is also where you can add images, videos, and change the text of your questions.

## Dare:

## 6. Select your Form sharing options (add collaborators)

Once you've finished entering all of your questions, be sure you have the sharing options set if you want to have collaborators on your Form.

You can do this by clicking on the 3 dots in the upper right-hand corner (next to your overall Form settings), and then selecting Add Collaborators:


Once the sharing options open, you can choose to share the link with collaborators or send them a message directly letting them know you're sharing your Form with them.

Note: if you choose to share the link with collaborators be sure you click on the "Change..." link to allow others access to your Form:

Sharing settings

```
Link to share (only accessible by collaborators)
    https://docs.google.com/forms/d/1tDyzCoJco5OzWHxjxrhwICqIXIJvfyyUzOZvvU1UIxN
```

Note: editors will be able to view and delete form responses

Who has access
@ Private - Only you can access
Change...

Kate Erickson (you)
Kate@entrepreneuronfire.com


Owner settings Learn more
$\square$ Prevent editors from changing access and adding new people

## Dare:

## 7. Preview and share your Google Form!

Now it's time to preview and share your Google Form with your intended audience!
It's always important to double check your Form settings and appearance, so be sure to "Preview" your Google Form (using the eye icon in the upper right-hand corner) and test it out before sharing it with the public.

Once approved by you, click on the "send" box in the upper right-hand corner and choose how you will share your Form:

- Email it automatically to contacts
- Link to it manually in an email, blog post, or on social media
- Embed it on your website


## 8. Review responses

As you continue to promote your Form and receive feedback, make sure you're checking it regularly!
You can view a summary of your responses straight from your Google Form, or you can also choose to have a Google Spreadsheet created with
$\square$

## 9. FILTER IN EXCEL

Filter your Excel data if you only want to display records that meet certain criteria.

1. Click any single cell inside a data set.
2. On the Data tab, in the Sort \& Filter group, click Filter.


Arrows in the column headers appear.

## Dare:

| 4 | A | B | c | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Last Nan - | Sales -- | Count - | Quart - |  |
| 2 | Smith | \$16,753.00 | uk | Qtr 3 |  |
| 3 | Johnson | \$14,808.00 | USA | Qtr 4 |  |
| 4 | Williams | \$10,644.00 | UK | Qtr 2 |  |
| 5 | Jones | \$1,390.00 | USA | Qtr 3 |  |
| 6 | Brown | \$4,865.00 | USA | Qtr 4 |  |
| 7 | Williams | \$12,438.00 | UK | Qtr 1 |  |
| 8 | Johnson | \$9,339.00 | UK | Qtr 2 |  |
| 9 | Smith | \$18,919.00 | USA | Qtr 3 |  |
| 10 | Jones | \$9,213.00 | USA | Qtr 4 |  |
| 11 | Jones | \$7,433.00 | UK | Qtr 1 |  |
| 12 | Brown | \$3,255.00 | USA | Qtr 2 |  |
| 13 | Williams | \$14,867.00 | USA | Qtr 3 |  |
| 14 | Williams | \$19,302.00 | UK | Qtr 4 |  |
| 15 | smith | \$9,698.00 | USA | Qtr 1 |  |
| 16 |  |  |  |  |  |

3. Click the arrow next to Country.
4. Click on Select All to clear all the check boxes, and click the check box next to USA.

5. Click OK.

Result. Excel only displays the sales in

## Dare:

| 4 | A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Last Nan - | Sales | Count-T | Quart - |  |
| 3 | Johnson | \$14,808.00 | USA | Qtr 4 |  |
| 5 | Jones | \$1,390.00 | USA | Qtr 3 |  |
| 6 | Brown | \$4,865.00 | USA | Qtr 4 |  |
| 9 | Smith | \$18,919.00 | USA | Qtr 3 |  |
| 10 | Jones | \$9,213.00 | USA | Qtr 4 |  |
| 12 | Brown | \$3,255.00 | USA | Qtr 2 |  |
| 13 | Williams | \$14,867.00 | USA | Qtr 3 |  |
| 15 | Smith | \$9,698.00 | USA | Qtr 1 |  |
| 16 |  |  |  |  |  |

6. Click the arrow next to Quarter.
7. Click on Select All to clear all the check boxes, and click the check box next to Qtr 4.

8. Click OK.

Result. Excel only displays the sales in

9. To remove the filter, on the Data tab, in the Sort \& Filter group, click Clear. To remove the filter and the arrows, click Filter.




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There's a quicker way to filter Excel data.
10. Select a cell.

| 4 | A | B | C | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Last Name | Sales | Country | Quarter |  |
| 2 | Smith | \$16,753.00 | UK | Qtr 3 |  |
| 3 | Johnson | \$14,808.00 | USA | Qtr 4 |  |
| 4 | Williams | \$10,644.00 | UK | Qtr 2 |  |
| 5 | Jones | \$1,390.00 | USA | Qtr 3 |  |
| 6 | Brown | \$4,865.00 | USA | Qtr 4 |  |
| 7 | Williams | \$12,438.00 | UK | Qtr 1 |  |
| 8 | Johnson | \$9,339.00 | UK | Qtr 2 |  |
| 9 | Smith | \$18,919.00 | USA | Qtr 3 |  |
| 10 | Jones | \$9,213.00 | USA | Qtr 4 |  |
| 11 | Jones | \$7,433.00 | UK | Qtr 1 |  |
| 12 | Brown | \$3,255.00 | USA | Qtr 2 |  |
| 13 | Williams | \$14,867.00 | USA | Qtr 3 |  |
| 14 | Williams | \$19,302.00 | UK | Qtr 4 |  |
| 15 | Smith | \$9,698.00 | USA | Qtr 1 |  |
| 16 |  |  |  |  |  |

11. Right click, and then click Filter, Filter by Selected Cell's Value.


Result. Excel only displays the sales in the USA.


