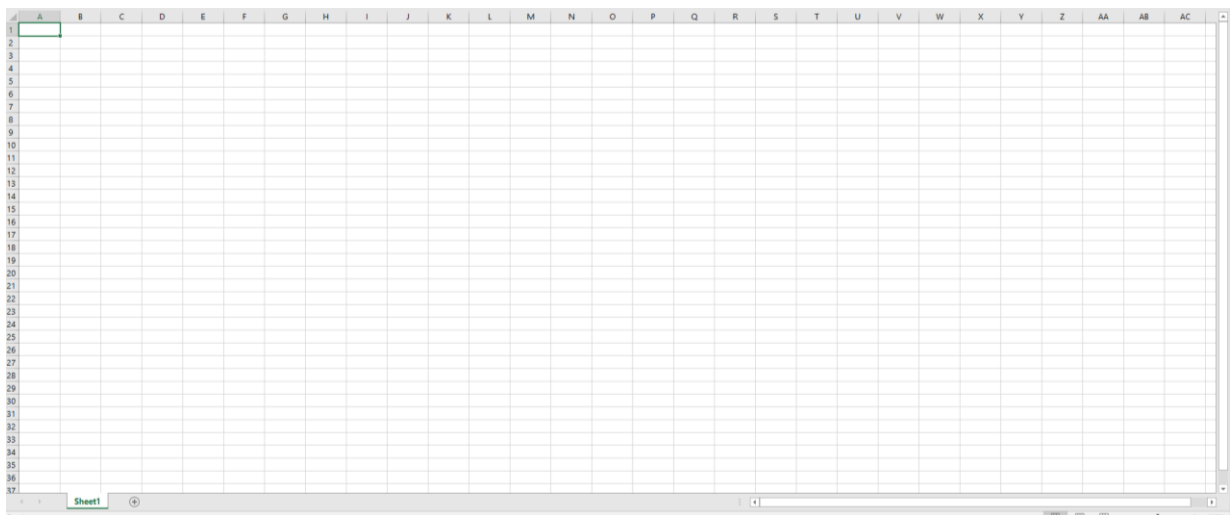


1. What is Excel?

Microsoft Excel is a **spreadsheet** program used for organizing and managing data. This data can be anything, but Excel is most useful when managing quantitative, or numerical, data such as for accounting, statistics, or record keeping.

Excel was included in the Microsoft Office suite of software since its first iteration in 1990. You need a license to use Excel on your own computer, but free alternatives exist like Google Sheets and LibreOffice, which offer similar experiences.

2. THE SPREADSHEET



The spreadsheet is a sheet full of rows and columns that make up a great many boxes or **cells**. **Columns** are labeled along the top of the SPREADSHEET **A** to **Z** and then **AA** to **ZZ** and so on. **Rows** are labeled along the left side of the SPREADSHEET numerically. A cell is designated by its row number and column letter. For example, the top left cell is cell **A1** and five spaces below it is cell **A6**. Five spaces to the right of cell **A6** is cell **F6**. The spreadsheet stretches out almost indefinitely; you'll never run out of cells.

Each cell is able to independently store data, calculations, formatting rules and more. Entering data into a cell is as easy as selecting that cell and typing. There are several ways to select an individual cell with the most natural method being to left click a cell. A selected cell will be uniquely outlined and the relevant column and row labels will be highlighted. In the screenshot above cell A1 is selected, and you can see that labels A and 1 are highlighted. You can move the selected region by pressing the arrow keys, thus selecting a different cell. Another method of

moving your selection and thus selecting a different cell is to press the enter key to move the selection down, or tab to move the selection to the right. This will not transfer a cell's data to a different cell.

It is also possible to select multiple regions at once. By clicking to select a cell and holding the mouse button down you can drag your cursor outward to draw a rectangle. This will select the cells in this region. You can achieve the same thing by selecting a cell, holding down the shift key, and using the arrow keys to move the selection and expand the selected region.

To select a non-continuous region, multiple cells that do not touch, you can hold down the CTRL key and click cells you want included in the selection.

To select an entire row or column, click the label in question. You can also use the shift key or CTRL key to select multiple continuous or non-continuous rows and columns.

To select an entire sheet, click the area between labels A and 1, with what appears to be a triangle inside.

Any change made, be it through typing or using a tool from the toolbar ribbon, will target the selected region.

You can adjust the size of a row or column by positioning your cursor between two labels. It should change shape to a bar with arrows pointing left and right for columns or up and down for rows. Left clicking and holding down the button will allow you to stretch or shrink the region. Alternatively, you can right click a label and click the option "Row Height..." or "Column Width..." to specify a size. Furthermore, you can do this to a region to specify the size of multiple rows or columns.

At the bottom left corner of the spreadsheet is a tab designating the title of the spreadsheet, and allowing you to add extra sheets. Excel files (workbooks by default, although Excel is capable of running many different kinds of files) can support multiple sheets.

3. THE FORMULA BAR

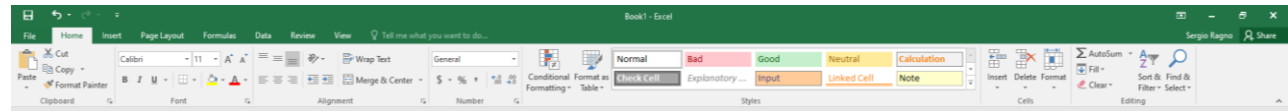


Above the spreadsheet is a long text box with an adjacent **fx** symbol. This is called the **formula bar**. When you select a cell and enter data, it is actually being entered here and just displaying in a cell. Often in Excel values displayed in cells are the end result of formatting, variables, or

calculations, but the formula bar preserves the base data. For instance, the formula (more on this later) $2+2$ is entered into a cell, it will display 4, but the formula bar will preserve $2+2$. The formula bar is also an easy place to fine tune the data in a cell, like correcting a spelling mistake, because it allows for easier manipulation of an insertion point. Normal means of moving the insertion point, like the arrow keys, will often select another cell when working outside of the formula bar.

4. The Toolbar Ribbon

Like other software in the Microsoft Office Suite, Excel features a **toolbar ribbon**.



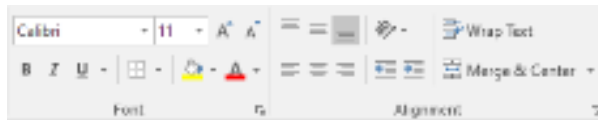
The toolbar ribbon contains a series of icons representing functions in Excel broken down into several tabs.

- **File:** Pertains to the file as a whole. Functions like saving the file, opening a different file, and printing the file are located here.
- **Home:** Contains the most commonly used functions, like changing the font size, style, and color, aligning objects in a cell, adding cell borders, and sorting values.
- **Insert:** Contains functions for adding objects to Excel, usually charts.
- **Page Layout:** Allows you to adjust elements like the orientation of the page (portrait or landscape) and size of the page.
- **Formulas:** Contains a reference for different formulas and functions supported in Excel.
- **Data:** Allows you to import data from other sources.
- **Review:** Contains review tools like spell check and a thesaurus. Quite handy as Excel does not automatically correct spelling and grammar in most cases.
- **View:** Allows you to adjust how the spreadsheet and other elements are displayed in Excel, such as by enabling or disabling the grid lines and labels, and by zooming in or out.

5. Formatting

Just like most Microsoft Office programs, Home is where you'll find the most frequently used tools, and many of these tools will be what we need for formatting because formatting is something you'll likely need to do in every project.

Tip: I advise entering all of your information first, and then applying your formatting later. This way you won't need to do this more than once.



Font allows you to control the style and size of font in a selected cell or region. You'll also be able to bold, italic, or underline characters through the B, I, and U toggle buttons respectively. A toggle button activates a feature when you interact with it, and then deactivates that feature when you interact with it again and so on, like a light switch. You can tell if a toggle button is active because it will be highlighted.

You can also adjust the color of characters or the background in a cell or region with the two buttons with colors beneath them. Use the button with the paint can icon, **Fill Color**, to color the background of a cell. Use the icon with the fancy A, **Font Color**, to color the text of a cell.

Alignment orients the contents of cells vertically (left, center, or right) and horizontally (top, middle, bottom). When you type in a cell and go beyond the boundaries of the cell, the text will be cut off visually (it will still be there, you just won't see it). You can either stretch the cell manually, or click **Wrap Text** to automatically adjust the cell height to fit the content.

Below wrap text is **Merge and Center** which will allow you to merge two or more cells into one, and will also center any text within.

Between the buttons for underline and fill color is the **Border Tool**. This tool allows you to add predetermined borders to a cell or region and includes a feature that allows you to specify border parameters like thickness and style.

Borders are also accessible in the **Format Cells...** feature accessible by right clicking a cell or region. Format cells allows you define more specific settings, most notably numeric formatting. Sometimes a cell will not present values the way you intend. For instance, it may add or delete decimal places. This can be defined in the **Number** tab, which controls how the cell expresses values within it, be it by including or eliminating decimals or by rounding up. You can also specify other numeric details like decimal places, currency symbols, or the expression of the date.

6. SORTING

On the right side of the home tab you'll find **Edit**. Edit contains two essential functions, the first being **Sort**. Sort allows you to rearrange the values in a column to organize your rows. You cannot SORT values by ROWS to organize your columns. You can sort by first highlight the column you wish to sort. For best results only use one column. Click on sort and select either **A->Z** (Smallest to Largest) or **Z->A** (Largest to Smallest). Sometimes you will get a prompt asking if you wish to expand the selection to include nearby values. This is asking you if you missed a

value in the column you highlighted, if you did miss something select “expand the selection” if you did not miss anything select “continue.”

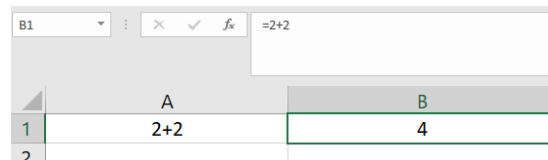


Another method is to use the Custom Sort option. This will allow you to specify how a region is to be sorted with a hierarchy of rules. You are also able to specify if columns have headers here, which will exclude the first cells in a region from being sorted.

7. Formulas

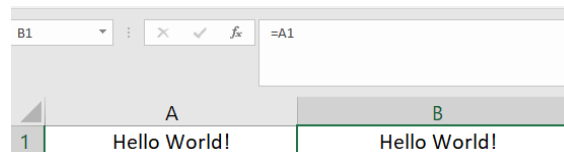
The real power of Excel comes from its ability to perform calculations. In this introductory guide we will just touch the basics.

When the data in a cell begins with “=” it is considered a function and will show a result.



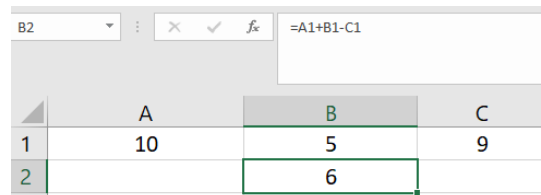
The value of cell A1 is “2+2” and the value of cell B1 is “=2+2”

A cell can refer to another cell by referring to its cell name within a function.

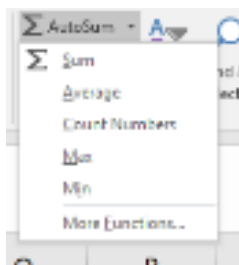


The value of cell A1 is “Hello World!” and the value of cell B1 is “=Hello World!”

Therefore, you can perform calculations using the values in cells as your values.



The value of cell B2 is “=A1+B1-C1”



A quick tool to perform simple calculations lives in the Home tab, **Auto Sum**. To use AutoSum click a cell that you would like to display your result, and then click the AutoSum button. AutoSum is best used by selecting a cell under a column that you would like to use as values in your calculation. This will automatically select that region for your calculation, but you can also manually specify a region.