Creating and Navigating worksheets and adding information to worksheets

Creating a workbook:

1. Open Microsoft Excel on your computer.
2. Go to the "File" menu and select "New."
3. Select "Blank workbook" from the template options.
4. The new workbook will open in a new window. You can start entering data into the cells or customize the workbook by adding sheets, formatting the cells, and so on.
5. The ribbon:
6. Home: Contains commands for formatting cells, such as font size, font color, and cell background color. It also includes commands for aligning and merging cells, inserting and deleting rows and columns, and other common tasks.
7. Insert: Contains commands for inserting objects, such as tables, charts, and shapes, into your workbook. It also includes commands for inserting links and hyperlinks, headers and footers, and page numbers.
8. Page Layout: Contains commands for formatting the layout of your worksheet, such as margins, page orientation, and page size. It also includes commands for adding page borders and backgrounds.
9. Formulas: Contains commands for inserting and editing formulas, as well as functions and named ranges. It also includes commands for performing calculations, such as sum, average, and count.
10. Data: Contains commands for managing data in your workbook, such as sorting and filtering, consolidating data from multiple sources, and working with PivotTables and PivotCharts.
11. Review: Contains commands for proofreading and reviewing your workbook, such as spell check, track changes, and adding comments. It also includes commands for protecting your workbook and sharing it with others.
12. View: Contains commands for changing the way your workbook is displayed, such as zooming in and out, hiding and showing the ribbon, and displaying the workbook in different view modes.
13. Developer: Contains commands for developing custom solutions for Excel, such as creating macros and customizing the ribbon. This tab is not displayed by default, but you can add it by going to the "File" menu and selecting "Options," then "Customize Ribbon."
14. Add-Ins: Contains commands for working with add-ins, which are programs that add custom functionality to Excel. This tab is not displayed by default, but you can add it by going to the "File" menu and selecting "Options," then "Customize Ribbon."

**The Home tab** in the Excel ribbon is a collection of commands for formatting cells, rows, and columns in your worksheet. It is typically the tab that you will use most frequently when working in Excel.

Here are some of the commands and features available on the Home tab:

1. Font: Contains commands for formatting the font of selected cells, such as font type, font size, font color, and bold, italic, and underline options.
2. Alignment: Contains commands for aligning the content of selected cells, such as horizontal alignment (left, center, right), vertical alignment (top, center, bottom), and text wrapping.
3. Number: Contains commands for formatting the number format of selected cells, such as currency, percentage, date, and time.
4. Styles: Contains a set of predefined cell styles that you can apply to selected cells to quickly change their appearance.
5. Cells: Contains commands for inserting and deleting rows and columns, merging and unmerging cells, and setting the width and height of rows and columns.
6. Editing: Contains commands for cutting, copying, and pasting cells, as well as undoing and redoing actions.
7. Find & Select: Contains commands for finding and replacing data in your worksheet, as well as selecting cells, rows, and columns.
8. Sort & Filter: Contains commands for sorting and filtering data in your worksheet, such as by value, color, or cell icon.
9. Conditional Formatting: Contains commands for applying formatting to cells based on certain conditions, such as cell value, text, or date.
10. Formulas: Contains commands for inserting and editing formulas in your worksheet, as well as functions and named ranges.

In addition to these commands, the Home tab also includes a ribbon gallery, which is a group of buttons that display a drop-down list of options when clicked. The ribbon gallery can be found at the right side of the Home tab, and it includes options for changing the cell color, font color, and cell style.

**Find and replace:**The Find and Replace feature in Excel allows you to search for a specific piece of data or text in your worksheet and replace it with something else. This can be useful when you need to update or correct data in your worksheet, or when you want to find and highlight certain cells or data points.

To use the Find and Replace feature, follow these steps:

1. Go to the Home tab in the ribbon and click on the "Find & Select" button.
2. From the drop-down menu, select "Find" or "Replace."
3. In the Find and Replace dialog box that appears, type the text or data that you want to find in the "Find what" field. If you are using Replace, type the replacement text in the "Replace with" field.
4. Click on the "Find Next" or "Replace" button to find or replace the first occurrence of the text or data in your worksheet.
5. If you want to find or replace additional occurrences, click on the "Find Next" or "Replace" button again.
6. To find or replace all occurrences at once, click on the "Find All" or "Replace All" button.

You can also use the Find and Replace feature to find and select cells that meet certain criteria, such as cells that contain a specific value or formula. To do this, use the "Look in" and "Within" options in the Find and Replace dialog box to specify the range of cells that you want to search, and use the "Match case" and "Match entire cell contents" options to further refine your search.

Note that the Find and Replace feature does not search hidden cells or cells on hidden sheets. To search these cells, you will need to unhide them first.

**To add a header or footer** to a worksheet in Excel, follow these steps:

1. Go to the Page Layout tab in the ribbon and click on the "Page Setup" group.
2. Click on the "Header/Footer" button.
3. In the "Header/Footer" dialog box that appears, select the "Header" or "Footer" tab, depending on which one you want to add.
4. In the "Edit Header" or "Edit Footer" section, use the drop-down menus and text boxes to customize the header or footer. You can insert predefined elements, such as the page number or file name, or you can type your own custom text.
5. To apply the header or footer to all pages in your worksheet, make sure the "Apply to" option is set to "All sheets."
6. Click on the "OK" button to apply the header or footer.

**A cell reference** in Excel refers to the address of a cell or a range of cells in a worksheet. Cell references are used in formulas and functions to refer to the data in those cells.

There are two types of cell references: relative and absolute.

Relative cell references refer to cells in relation to the current cell. For example, if the current cell is A1 and you use the reference "B1," it will refer to the cell one column to the right of the current cell. If you copy or move the formula that contains the relative cell reference, the reference will change to reflect the new location of the formula.

**Formulas:**

**Count:** In Excel, the COUNT function is a statistical function that counts the number of cells in a range that contain numbers. The syntax for the COUNT function is as follows:

=COUNT(value1, [value2], ...)

The COUNT function ignores cells that are empty or contain text or error values, such as #N/A or #VALUE!.

CountA: In Excel, the COUNTA function is a statistical function that counts the number of cells in a range that are not empty. The COUNTA function counts cells that contain text, numbers, dates, and logical values (TRUE or FALSE). It does not count cells that contain error values, such as #N/A or #VALUE!, or cells that are formatted as blank.

The syntax for the COUNTA function is as follows:

=COUNTA(value1, [value2], ...)

Countif&ifs: Count allows you to count cells based on a specific criterion. For example, you can use the COUNTIF function to count the number of cells in a range that contain a specific word or number, or that meet a certain condition.

The syntax for the COUNTIF function is as follows:

=COUNTIF(range, criterion): allows you to count cells based on a specific criterion. For example, you can use the COUNTIF function to count the number of cells in a range that contain a specific word or number, or that meet a certain condition.

The syntax for the COUNTIF function is as follows:

=COUNTIF(range, criterion)

you can use the COUNTIFS function, which allows you to specify multiple criteria.

**Average& sum** are self explanotary,

Average =AVERAGE(A1:A10)

Sum= SUM(value1, [value2], ...)

**Max & Min:**

In Excel, the MAX and MIN functions are statistical functions that find the largest and smallest values, respectively, in a range of cells.

The syntax for the MAX function is as follows:

=MAX(value1, [value2], ...)

The syntax for the MIN function is as follows:

=MIN(value1, [value2], ...)

**Vlookup:**

VLOOKUP and HLOOKUP are functions in Microsoft Excel that allow you to search for a specific value in a table or range of cells and return a corresponding value from a different column. These functions are often used to look up data in a database or spreadsheet.

VLOOKUP (vertical lookup) searches for a value in the leftmost column of a table and returns a value from a specified column to the right. The syntax for the VLOOKUP function is as follows:

=VLOOKUP(lookup\_value, table\_array, col\_index\_num, [range\_lookup])

The lookup\_value argument is the value that you want to search for. The table\_array argument is the range of cells that contains the data that you want to search. The col\_index\_num argument is the column number in the table\_array that contains the value that you want to return. The range\_lookup argument is optional and specifies whether the function should return an approximate match (TRUE) or an exact match (FALSE) for the lookup\_value.

**Hlookup;**

HLOOKUP (horizontal lookup) is a function in Microsoft Excel that allows you to search for a specific value in the top row of a table or range of cells and return a corresponding value from a different row. HLOOKUP is often used to look up data in a database or spreadsheet.

The syntax for the HLOOKUP function is as follows:

=HLOOKUP(lookup\_value, table\_array, row\_index\_num, [range\_lookup])

* **lookup\_value**: The value to search for in the top row of the table.
* **table\_array**: The table or range of cells in which to search for the **lookup\_value**.
* **row\_index\_num**: The row number in the table from which to return a value.
* **[range\_lookup]**: An optional argument that specifies whether the function should perform an exact match (**TRUE**) or an approximate match (**FALSE**). If omitted, the default value is **TRUE**.

**IF & SUMIF:**

The IF function in Excel allows you to specify a logical test and two actions: one for when the test is true, and one for when the test is false. It has the following syntax:

IF(logical\_test, value\_if\_true, value\_if\_false)

The SUMIF function allows you to sum a range of cells based on a specified condition. It has the following syntax:

SUMIF(range, criteria, [sum\_range])

* **range**: The range of cells to be tested.
* **criteria**: The criteria to be met. This can be a number, text, or a logical expression.
* **[sum\_range]**: The range of cells to be summed. If omitted, the **range** argument is used.

**AND & NOT**

The AND function tests whether multiple conditions are met, and returns TRUE if all of the conditions are TRUE, and FALSE if any of the conditions are FALSE. It has the following syntax:

AND(logical1, [logical2], ...)

The NOT function negates a logical value, returning TRUE if the value is FALSE, and FALSE if the value is TRUE. It has the following syntax:

NOT(logical)

**OR**

The OR function takes one or more logical arguments, which can be either TRUE or FALSE values, or references to cells that contain TRUE or FALSE values. The function returns TRUE if any of the specified conditions are TRUE, and FALSE if all of the conditions are FALSE.

Here is the syntax for the OR function in Microsoft Excel:

OR(logical1, [logical2], ...)

**String Functions:**

* LEN: LEN(text)
  + The LEN function returns the length of a string (i.e., the number of characters in the string).
  + The "text" argument is the text value (string) that you want to find the length of.
* LEFT: LEFT(text, [num\_chars])
  + The LEFT function returns a specified number of characters from the left side of a string.
  + The "text" argument is the text value (string) that you want to extract characters from.
  + The "num\_chars" argument is optional and specifies the number of characters to extract from the left side of the string. If this argument is not provided, the function will return 1 character.
* RIGHT: RIGHT(text, [num\_chars])
  + The RIGHT function returns a specified number of characters from the right side of a string.
  + The "text" argument is the text value (string) that you want to extract characters from.
  + The "num\_chars" argument is optional and specifies the number of characters to extract from the right side of the string. If this argument is not provided, the function will return 1 character.
* MID: MID(text, start\_num, [num\_chars])
  + The MID function returns a specified number of characters from a string, starting at a specified position.
  + The "text" argument is the text value (string) that you want to extract characters from.
  + The "start\_num" argument is the position of the first character that you want to extract.
  + The "num\_chars" argument is optional and specifies the number of characters to extract. If this argument is not provided, the function will return all characters from the start position to the end of the string.
* CONCATENATE: CONCATENATE(text1, text2, ...)
  + The CONCATENATE function combines two or more strings into a single string.
  + The "text1", "text2", etc. arguments are the strings that you want to combine. You can include up to 255 text arguments in a single formula.
* UPPER: UPPER(text)
  + The UPPER function converts a string to all uppercase.
  + The "text" argument is the text value (string) that you want to convert to uppercase.
* LOWER: LOWER(text)
  + The LOWER function converts a string to all lowercase.
  + The "text" argument is the text value (string) that you want to convert to lowercase.
* PROPER: PROPER(text)
  + The PROPER function converts a string to proper case (i.e., the first letter of each word is capitalized).
  + The "text" argument is the text value (string) that you want to convert to proper case.
* TRIM: TRIM(text)
  + The TRIM function removes leading and trailing spaces from a string.
  + The "text" argument is the text value (string) that you want to remove spaces from.

**Date Functions:**

* NOW: NOW()
  + The NOW function returns the current date and time.
* TODAY: TODAY()
  + The TODAY function returns the current date.
* DATE: DATE(year, month, day)
  + The DATE function returns a date based on a given year, month, and day.
  + The "year" argument is the year value that you want to use in the date.
  + The "month" argument is the month value that you want to use in the date.
  + The "day" argument is the day value that you want to use in the date.
* MONTH: MONTH(date)
  + The MONTH function returns the month of a given date.
  + The "date" argument is the date that you want to find the month of.
* YEAR: YEAR(date)
  + The YEAR function returns the year of a given date.
  + The "date" argument is the date that you want to find the year of.

**Mathematical functions:**

* ROUND: The ROUND function rounds a number to a specified number of digits. Syntax: ROUND(number, num\_digits)
  + The "number" argument is the number that you want to round.
  + The "num\_digits" argument is the number of digits to which you want to round the number. If this argument is positive, the number will be rounded to the specified number of decimal places. If this argument is negative, the number will be rounded to the left of the decimal point.
* ROUNDDOWN: The ROUNDDOWN function rounds a number down to the nearest integer or to the nearest specified multiple. Syntax: ROUNDDOWN(number, num\_digits)
  + The "number" argument is the number that you want to round down.
  + The "num\_digits" argument is optional and specifies the multiple to which you want to round the number. If this argument is not provided, the function will round the number down to the nearest integer. If this argument is provided, the function will round the number down to the nearest multiple of the specified value.
* ROUNDUP: The ROUNDUP function rounds a number up to the nearest integer or to the nearest specified multiple. Syntax: ROUNDUP(number, num\_digits)
  + The "number" argument is the number that you want to round up.
  + The "num\_digits" argument is optional and specifies the multiple to which you want to round the number. If this argument is not provided, the function will round the number up to the nearest integer. If this argument is provided, the function will round the number up to the nearest multiple of the specified value.
* CEILING: The CEILING function rounds a number up to the nearest integer or to the nearest specified multiple. Syntax: CEILING(number, significance)
  + The "number" argument is the number that you want to round up.
  + The "significance" argument is the multiple to which you want to round the number. The function will round the number up to the nearest multiple of the specified value.
* FLOOR: The FLOOR function rounds a number down to the nearest integer or to the nearest specified multiple. Syntax: FLOOR(number, significance)
  + The "number" argument is the number that you want to round down.
  + The "significance" argument is the multiple to which you want to round the number. The function will round the number down to the nearest multiple of the specified value.
* INT: The INT function rounds a number down to the nearest integer. Syntax: INT(number)
  + The "number" argument is the number that you want to round down.
* MOD: The MOD function returns the remainder after a number is divided by a divisor. Syntax: MOD(number, divisor)
  + The "number" argument is the number that you want to divide.
  + The "divisor" argument is the number by which you want to divide the number.
* SQRT: The SQRT function returns the square root of a number. Syntax: SQRT(number)
  + The "number" argument is the number for which you want to find the square root.
* ABS: The ABS function returns the absolute value of a number. Syntax: ABS(number)
  + The "number" argument is the number whose absolute value you want to find.
* AVERAGE: The AVERAGE function calculates the average (arithmetic mean) of a group of numbers. Syntax: AVERAGE(number1, number2, ...)
  + The "number1", "number2", etc. arguments are the numbers that you want to include in the average. You can include up to 255 numbers in a single formula.

**Financial Functions:**

rate: the interest rate per period

RATE (rate of return) - RATE(nper, pmt, pv, [fv], [guess])

nper: the total number of payment periods

NPER (number of periods) - NPER(rate, pmt, pv, [fv], [type])

pmt: the payment made each period; it cannot change over the life of the loan

PMT (payment) - PMT(rate, nper, pv, [fv], [type])

pv: the present value, or the total amount that a series of future payments is worth now; also known as the principal

PV (present value) - PV(rate, nper, pmt, [fv], [type])

fv: the future value, or a cash balance you want to attain after the last payment is made

FV (future value) - FV(rate, nper, pmt, [pv], [type]) PV (present value) - PV(rate, nper, pmt, [fv], [type

The IRR function in Excel calculates the internal rate of return for a series of cash flows. It takes the following arguments:

* values: a series of cash flows that correspond to a schedule of payments in dates
* guess (optional): a number that you guess is close to the result of IRR
* Here is the syntax for the IRR function:
* IRR(values, [guess])

PPMT function in Excel calculates the principal payment for a given period for an investment based on periodic, constant payments and a constant interest rate

PPMT(rate, per, nper, pv, [fv], [type])

The IPMT function in Excel calculates the interest payment for a given period for an investment based on periodic, constant payments and a constant interest rate.

IPMT(rate, per, nper, pv, [fv], [type])

The NPV function in Excel calculates the net present value of an investment based on a series of periodic cash flows and a discount rate.

NPV(rate, value1, value2, ...)

**What if analysis:**

**Data table:** data table in Excel is a range of cells that displays the results of a formula for different input values. You can create a one-variable or two-variable data table to see how different input values affect the result of your formulas.

To create a one-variable data table, you need to have a formula in a cell, and a range of cells with the input values that you want to test. Here is an example of how you can create a one-variable data table:

Suppose you have a formula in cell D2 that calculates the total cost of an order based on the quantity and the unit price, as follows:

=B2\*C2

And you have a range of cells with different quantities in column B, and a range of cells with different unit prices in column C.

You can create a one-variable data table to see the total cost for each combination of quantity and unit price as follows:

1. Select the range of cells where you want to see the results of the data table (in this example, select cells E2:F7).
2. On the Data tab, in the Data Tools group, click the What-If Analysis button, and then click Data Table.
3. In the Data Table dialog box, do the following:
   * In the Column Input Cell box, enter the reference to the cell with the input value that you want to vary (in this example, enter B2).
   * In the Row Input Cell box, leave it blank, as this is a one-variable data table.
4. Click OK.

Excel will create a data table with the results of the formula for each combination of quantity and unit price.

Goal seek: Goal Seek is a tool in Excel that allows you to find the input value that produces a specific result in a formula. You specify the result that you want, and then Excel varies the input value until it finds the result that you specified.

To use Goal Seek, you need to have a formula in a cell, and a single input value that you want to vary in order to achieve a specific result. Here is an example of how you can use Goal Seek:

Suppose you have a formula in cell D2 that calculates the total cost of an order based on the quantity and the unit price, as follows:

=B2\*C2

And you want to find the quantity that produces a total cost of $500, given a unit price of $100.

You can use Goal Seek to find the quantity as follows:

1. On the Data tab, in the Data Tools group, click the What-If Analysis button, and then click Goal Seek.
2. In the Goal Seek dialog box, do the following:
   * In the Set Cell box, enter the reference to the cell with the formula (in this example, enter D2).
   * In the To Value box, enter the result that you want to achieve (in this example, enter 500).
   * In the By Changing Cell box, enter the reference to the cell with the input value that you want to vary (in this example, enter B2).
3. Click OK.

Excel will vary the value in cell B2 until it finds the quantity that produces a total cost of $500. In this case, it will find that the quantity is 5.

You can use Goal Seek to find the input value that produces a specific result in a formula, or to find the result that a formula produces for a specific input value. It is a useful tool for analyzing different scenarios and making informed decisions.

**Scenario manager:**

The Scenario Manager in Excel is a tool that allows you to save different sets of values as scenarios, and then switch between them to see the results of your formulas for each scenario. You can create up to 32 different scenarios in a workbook.

To use the Scenario Manager, you need to have a range of cells with the values that you want to save as a scenario. Here is an example of how you can use the Scenario Manager:

Suppose you have a worksheet with a range of cells that contain the input values for a financial model. You want to create two scenarios: one with optimistic assumptions, and one with conservative assumptions.

You can use the Scenario Manager to create and manage these scenarios as follows:

1. On the Data tab, in the Data Tools group, click the What-If Analysis button, and then click Scenario Manager.
2. In the Scenario Manager dialog box, click the Add button.
3. In the Add Scenario dialog box, do the following:
   * In the Scenario Name box, enter a name for the scenario (for example, "Optimistic").
   * In the Changing Cells box, enter the reference to the range of cells that contain the input values for the scenario (for example, B2:D10).
   * Enter the values for the input cells in the Scenario Values box.
4. Click Add, and then click Close.
5. Repeat steps 2 to 4 to create the second scenario ("Conservative").
6. In the Scenario Manager dialog box, you can select a scenario from the list and click the Show button to see the results of the formulas for that scenario.
7. To delete a scenario, select it from the list

**Custom Filters:**

To apply a custom filter to a range or table in Excel, you can follow these steps:

1. Select the range or table that you want to filter.
2. On the Data tab, in the Sort & Filter group, click the Filter button.
3. Click the drop-down arrow for the column that you want to filter, and then select the Custom Filter option.
4. In the Custom Filter dialog box, you can specify the criteria that you want to use to filter the data. You can use the drop-down lists to select the operator and the value for each criterion.
5. If you want to add more criteria, click the Add button, and then specify the additional criteria.
6. To remove a criterion, click the Remove button next to it.
7. When you are done specifying the criteria, click the OK button.

Excel will apply the filter to the range or table, and only show the rows that meet the criteria that you specified

**Graphical representation:**

here are many different types of graphs and diagrams that you can create using C++. Some common types include:

* Line graphs: Line graphs are used to display data that changes over time. They consist of data points connected by lines, and can be used to visualize trends or patterns in the data.
* Bar graphs: Bar graphs are used to compare different values or categories. They consist of horizontal or vertical bars, and can be used to show the distribution or frequency of the data.
* Pie charts: Pie charts are used to show the proportions or percentages of different categories. They consist of a circle divided into wedges, and can be used to show the relationships between parts and the whole.
* Scatter plots: Scatter plots are used to show the relationship between two sets of numerical data. They consist of data points plotted on a coordinate plane, and can be used to visualize patterns or trends in the data.
* Histograms: Histograms are used to show the distribution of continuous data. They consist of bins that represent ranges of values, and can be used to show the frequency or density of the data.
* Flowcharts: Flowcharts are used to represent a process or system. They consist of shapes and lines that represent the steps or decisions in the process, and can be used to visualize the flow of information or actions.  
  These are just a few for a detailed read visit: <https://www.tutorialspoint.com/excel_charts/excel_charts_types.htm>

**Stats In excel:**

* BINOM.DIST: Calculates the probability of a specific number of successes in a fixed number of independent trials, where each trial has only two possible outcomes: success or failure. The BINOM.DIST function requires three arguments: the number of successes (k), the number of trials (n), and the probability of success in each trial (p).
* POISSON.DIST: Calculates the probability of a specific number of events occurring in a given time or space, where the events occur randomly and independently of each other. The POISSON.DIST function requires two arguments: the number of events (k) and the average rate of occurrence of the events (lambda).
* NORM.DIST: Calculates the probability of a specific value occurring in a Normal (or Gaussian) distribution. The NORM.DIST function requires four arguments: the value (x), the mean (mu), the standard deviation (sigma), and a logical value indicating whether to compute the cumulative distribution function (CDF) or the probability density function (PDF).
* EXPON.DIST: Calculates the probability of a specific value occurring in an Exponential distribution. The EXPON.DIST function requires three arguments: the value (x), the rate of occurrence of the events (lambda), and a logical value indicating whether to compute the CDF or the PDF.