# SUMMARY: INTRODUCTION TO MS EXCEL-II

## SESSION OVERVIEW:

By the end of this session, the students will be able to:
- Understand **conditional formatting** in detail.
- Understand how **cell referencing** works.
- Perform different **functions** in MS Excel.
- Understand different **data AI tools** in MS Excel.

## KEY TOPICS AND EXAMPLES:

1. **Conditional formatting:** **(Dataset)**

   a. **Uses:**
      i. Highlight data based on specified conditions
      ii. Aiding in data analysis
      iii. Visualization
      iv. Error spotting
      v. Creating visually appealing reports or dashboards.

   b. **Steps:**
      i. Select the data range.
      ii. Go to the "Home" tab.
      iii. Click "Conditional Formatting."
      iv. Choose a rule from the dropdown menu.
      v. Set the condition and formatting style.
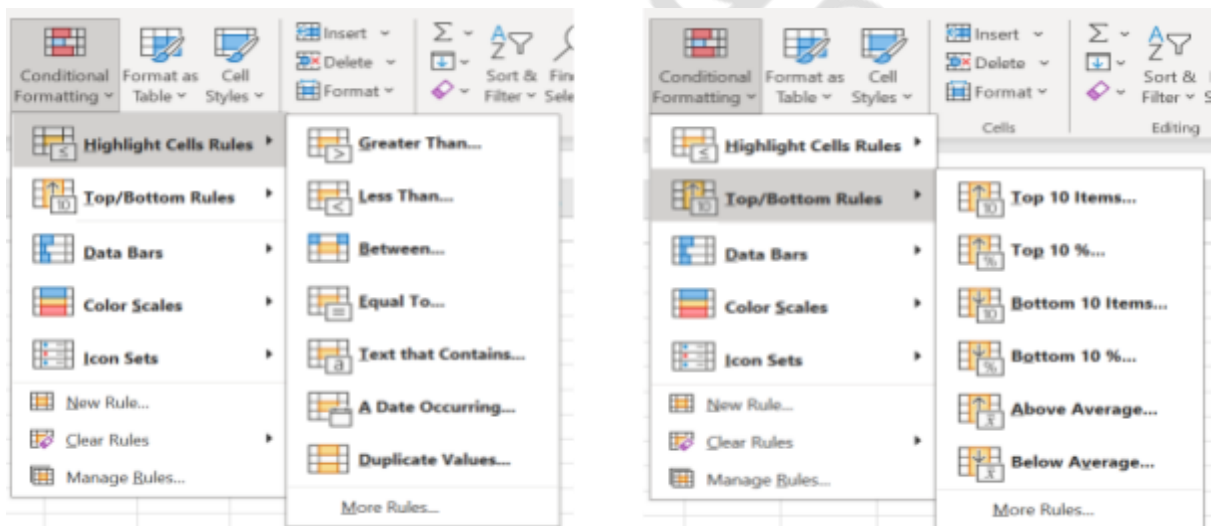      vi. Click "OK" to apply the formatting.



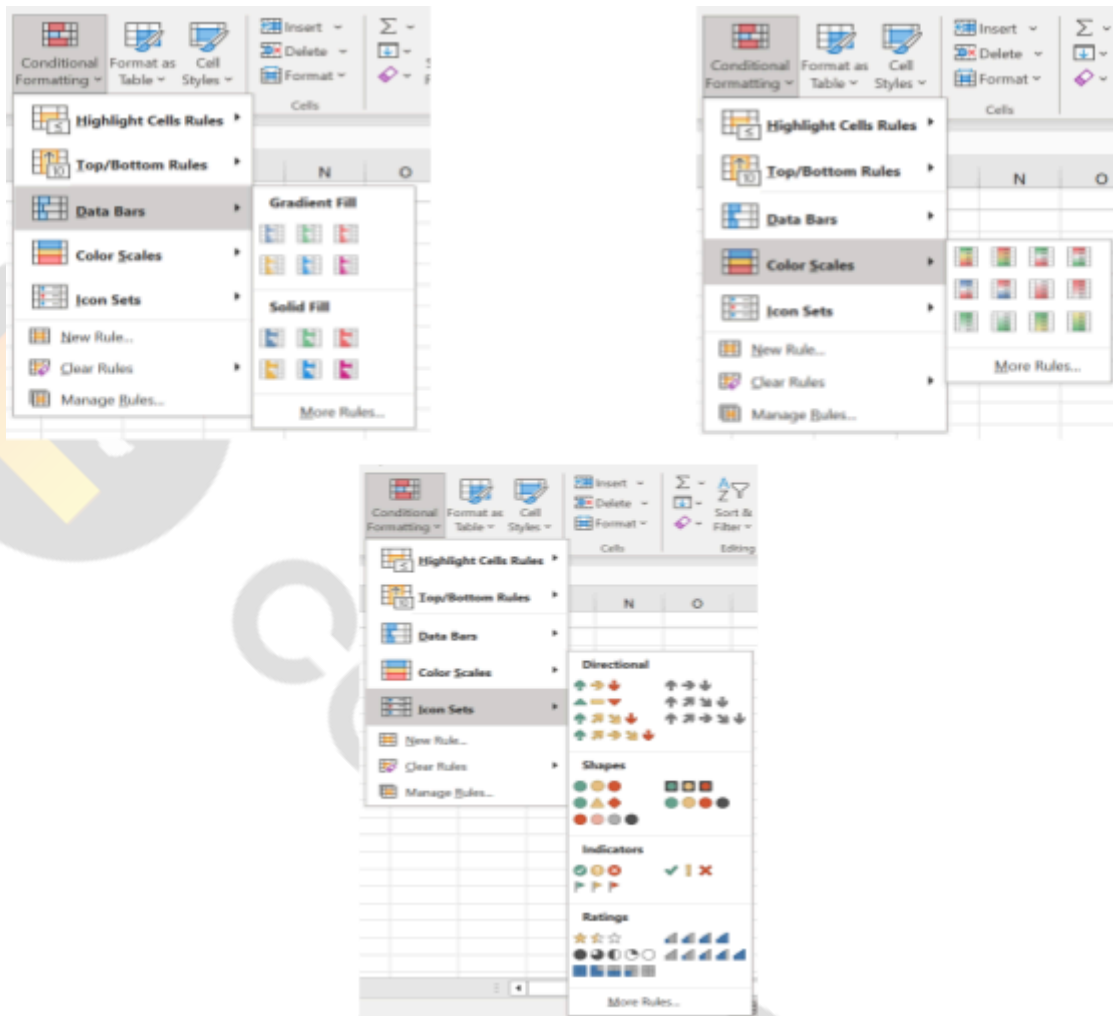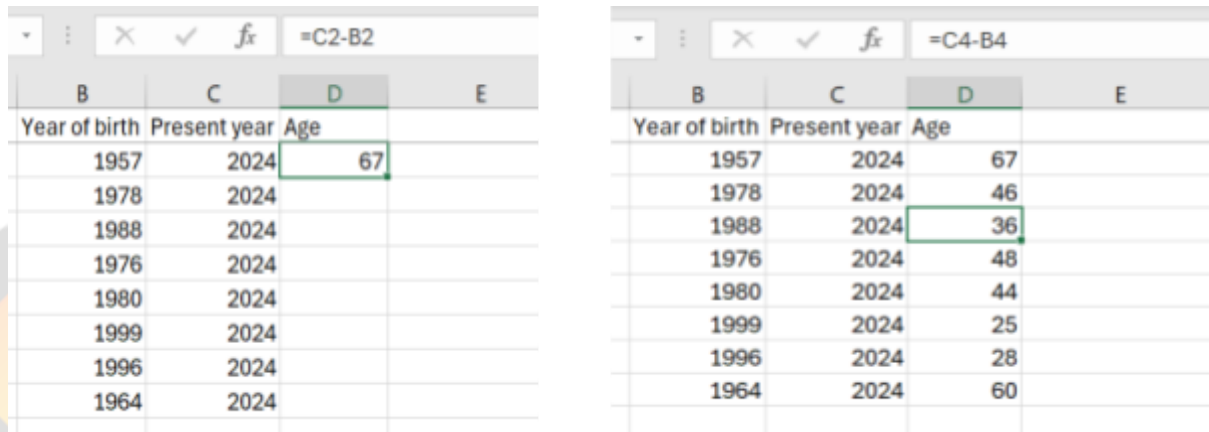*Figure 1: Representation of different conditional formatting-1*

*Figure 2: Representation of conditional formatting-2*

## 2. Understanding cell referencing in MS Excel:

### a. Relative referencing: (Dataset)

- Relative referencing in Excel refers to a method where cell references in formulas are adjusted based on their relative position to the cell containing the formula when copied to other cells.
- Relative referencing is the default behavior in Excel, and it's useful for creating formulas that can be easily copied and applied to different parts of a worksheet without having to manually adjust cell references.

**Example**: In the example mentioned below, we can see that in the formula the cells are automatically being adjusted.
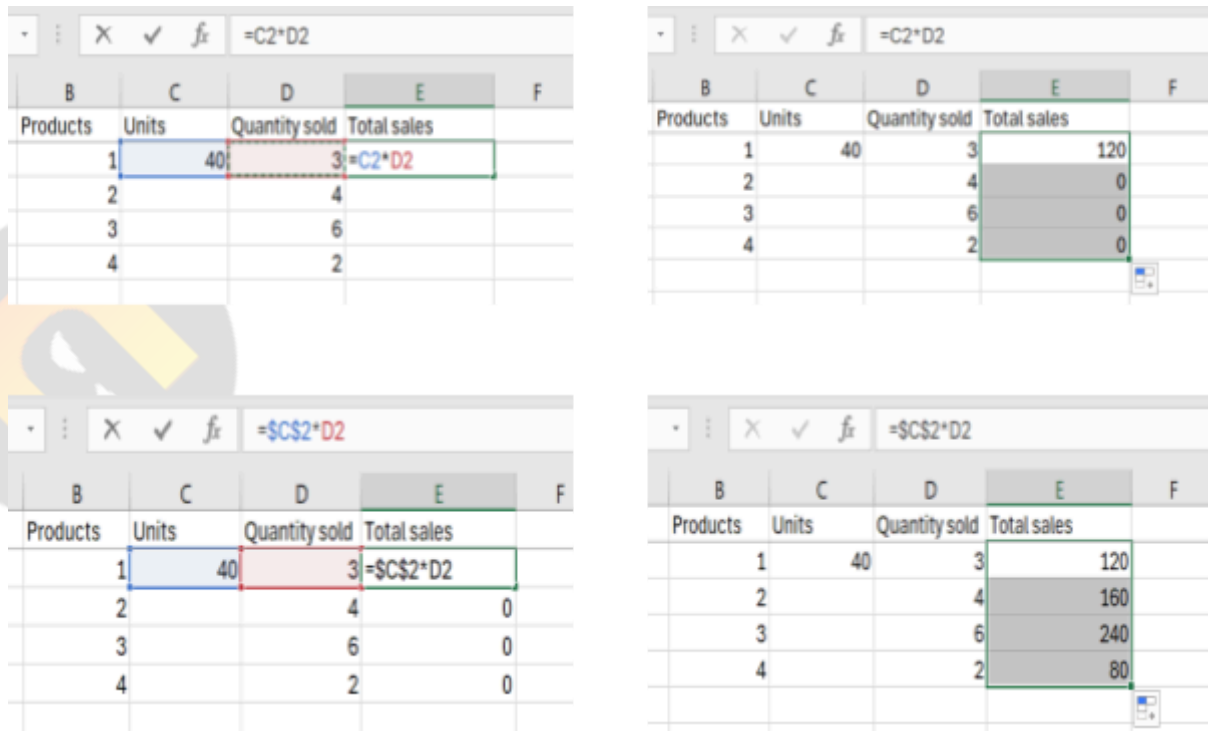
*Figure 25: Representation relative referencing*

b. **Absolute referencing: (Dataset)**
- Absolute referencing in Excel refers to a method where cell references in formulas are fixed and do not change when the formula is copied to other cells. This means that the reference to a specific cell remains constant regardless of where the formula is copied within the worksheet.
- In absolute referencing, cell references are denoted by adding a dollar sign ($) before the column letter, row number, or both.
- Absolute referencing is useful when you want to refer to a specific cell or range of cells that should not change when copying formulas to other parts of the worksheet. This ensures that the formula always refers to the same cells, regardless of its position within the worksheet.

**Example**: The below-mentioned is a hypothetical example of total sales.
1. The first diagram shows the utilization of the formula in the data.
2. The second diagram shows the formula not working in relative referencing.
3. The third diagram represents the use of $ for absolute referencing.
4. The fourth diagram represents the results after using $.

*Figure 26: Represents Absolute referencing*

## 3. A.  Importance of Functions in MS Excel:

- **Automating Calculations**: Functions allow users to automate complex calculations, saving time and reducing the risk of errors.
- **Data Analysis**: Excel functions facilitate data analysis by performing statistical, financial, and mathematical calculations, enabling users to derive insights from their data.
- **Decision Making**: Logical functions help users make decisions based on specified criteria, allowing for conditional formatting, data validation, and dynamic reporting.
- **Data Manipulation**: Functions enable users to manipulate and transform data, such as extracting text, splitting strings, or combining values from different cells.
- **Customization**: Excel functions provide users with the flexibility to customize formulas and functions based on their specific requirements, allowing for tailored solutions to unique problems.
- **Efficiency:** By leveraging built-in functions, users can accomplish tasks more efficiently, enhancing productivity and streamlining workflow processes.

## 3. B.  Disadvantages of Functions in MS Excel:

- **Complexity**: As Excel offers a vast array of functions, it can be overwhelming for users to understand and remember all available functions and their syntax.
- **Learning Curve:** Learning how to use functions effectively requires time and effort, especially for complex functions or formulas.

- **Errors**: Misusing functions or inputting incorrect parameters can lead to errors in calculations, potentially resulting in inaccurate results or decisions.
- **Performance Issues**: Complex formulas or functions can slow down spreadsheet performance, especially in large datasets or files with many calculations.
- **Limited Functionality**: Excel functions have limitations, and some tasks may require more advanced programming or scripting languages to accomplish.
- **Version Compatibility**: Functions may behave differently across different versions of Excel, leading to compatibility issues when sharing files between users with different versions.

## 4. Perform different functions in MS Excel: (dataset)

- **Mathematical Calculations**: Functions like SUM, AVERAGE, MAX, and MIN are used for basic arithmetic operations and statistical calculations.
- **Statistical Analysis:** Functions like COUNT, COUNTA, COUNTIF, and SUMIF are used for counting and summing data based on specified conditions, as well as other statistical calculations.
- **Logical Operations:** Functions like IF, AND, OR, and NOT are used to perform logical operations and make decisions based on specified criteria.
- **Text Manipulation:** Functions like CONCATENATE, LEFT, RIGHT, and MID are used to manipulate and concatenate text strings. These operations are majorly used in data cleaning before the data analysis.
- **Date and Time Operations**: Functions like TODAY, NOW, DATE, and TIME are used to work with date and time values and perform calculations based on them.

a. **Mathematical functions: (Dataset)**

**Steps:**
- Click on the cell where you want the result of the function to appear.
- Start typing the name of the function you want to use (e.g., SUM, AVERAGE, MIN, MAX).
- After typing the function name, open parentheses "(" to begin entering arguments.
- Enter the range of cells or values you want to include in the calculation. Separate multiple arguments with commas.
- Close parentheses ")" to indicate the end of the function's arguments.
- Press Enter to complete the function. Excel will calculate the result based on the specified function and arguments.

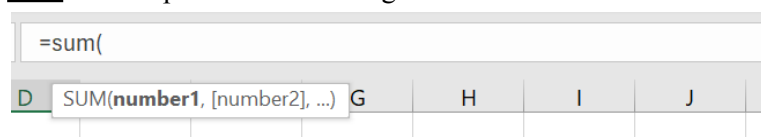i. **Sum**: Adds up numbers in a range.



*Figure 3: Representation of SUM function in Excel*

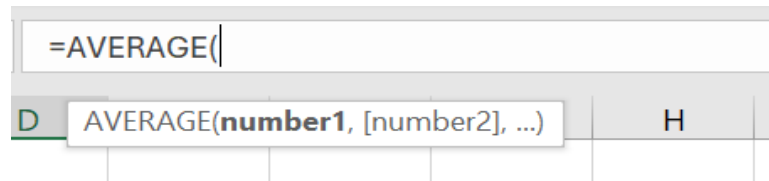ii.  **Average**: Calculates the average of numbers in a range.



*Figure 4: Representation of the AVERAGE function in Excel*
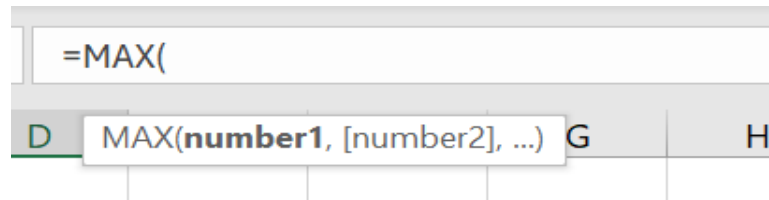
iii.  **MAX:** Finds the maximum number in a range.



*Figure 5: Representation of MAX function in Excel*
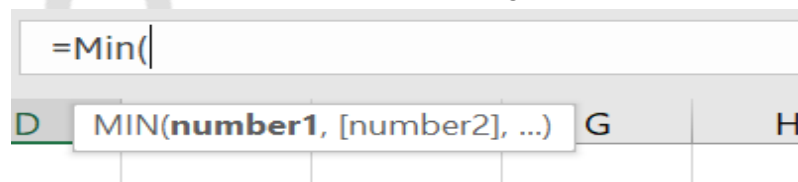
iv.  **MIN:** Finds the minimum number in a range.



*Figure 6: Representation of the MIN function in Excel*

**Datasets:**

The instructor will perform all the operations on this **Dataset** throughout this module.