Q1. What is the difference between 'Paste' and 'Paste Special' in Excel? Briefly explain with examples.

Sol.

1. **Paste** - It inserts everything exactly as copied.

What it pastes:

- Values
- Formulas
- Formatting (font, color, borders)
- Comments, data validation, etc.

Example:

- Cell A1 contains =B1+C1 with yellow fill.
- Copy A1 → Paste in A2
  → A2 will also contain the **formula =B2+C2** and the **same yellow formatting.**

2. **Paste Special** - Paste Special lets you choose *specific components* of the copied data.

Common options with examples:

- **Values**
  Paste only the result, not the formula.
  - =B1+C1 → Paste Special → Values
    → Only the number (e.g., 50) is pasted.
- **Formulas**
  Paste only the formula, without formatting.
- **Formats**
  Paste only formatting (colors, fonts, borders).
- **Transpose**
  Convert rows into columns or columns into rows.
- **Multiply / Add / Subtract / Divide**
  Perform calculations while pasting.

Example:

- Copy cells with formulas → Paste Special → Values
  → Useful when sharing data or locking results.

Q2. Describe the functions and usefulness of 'Freeze Panes' and 'Split Panes' in Excel.

Sol.

Freeze Panes -

Function: Freeze Panes locks selected rows and/or columns so they remain visible while you scroll through the worksheet.

Usefulness:

- Keeps headers or key identifiers visible in large datasets
- Improves readability and data analysis
- Prevents losing context when scrolling

Example:

- Freezing the top row keeps column headings visible while scrolling down.
- Freezing the first column keeps row labels visible while scrolling right.

Split Panes -

Function: Split Panes divides the worksheet window into two or four separate panes, each with its own scroll bar.

Usefulness:

- Allows viewing and working on different parts of the same worksheet simultaneously
- Useful for comparing data from distant rows or columns
- Helps analyse large worksheets without switching views

Example:

- Splitting vertically lets you view column A and column Z at the same time.
- Splitting horizontally lets you compare top and bottom sections of a sheet.

Q3. Explain the difference between inserting a new row and inserting a new column in Excel. Can you insert multiple rows or columns at once?

Sol.

Inserting a New Row

- Adds a horizontal row to the worksheet.

- The new row is inserted above the selected row.
- Existing rows below shift downward.
- Used when you want to add more records or entries.

Example:
If you select row 5 and insert a row, the new row becomes row 5 and the original row 5 moves to row 6.

Inserting a New Column

- Adds a vertical column to the worksheet.
- The new column is inserted to the left of the selected column.
- Existing columns to the right shift rightward.
- Used when you want to add a new field or attribute.

Example:
If you select column C and insert a column, the new column becomes column C and the original column C shifts to column D.

Inserting Multiple Rows or Columns at Once -

Yes, you can insert multiple rows or columns at the same time.

How:

- Select multiple rows (or columns) equal to the number you want to insert.
- Right-click → Insert, or use Home → Insert → Insert Sheet Rows/Columns.

Example:

- Selecting 3 rows and inserting will add 3 new rows at once.
- Selecting columns B to D and inserting will add 3 new columns together.

Q4. What are logical functions in Excel? Provide examples of at least two logical functions and their applications.

Sol.

Logical Functions in Excel

Logical functions in Excel are used to test conditions and return results based on whether the condition is TRUE or FALSE. They help in decision-making and automate calculations based on criteria.

i) IF Function

Purpose:
Checks a condition and returns one value if the condition is TRUE, and another value if it is FALSE.

Syntax:

=IF(logical_test, value_if_true, value_if_false)

Example & Application:

- **Formula:**

  =IF(A1>=40, "Pass", "Fail")

- **Application:**
  Used in result sheets to determine whether a student has passed or failed based on marks.

ii) AND Function

Purpose:
Returns TRUE if all conditions are TRUE; otherwise returns FALSE.

Syntax:

=AND(condition1, condition2, ...)

Example & Application:

- **Formula:**

  =AND(A1>=40, B1>=40)

- **Application:**
  Checks whether a student has passed in all subjects.

iii) OR Function (Additional Example)

Purpose:
Returns TRUE if any one of the conditions is TRUE.

Example:

=OR(A1="Yes", B1="Yes")

Application:
Used to check eligibility if at least one criterion is satisfied.

Q5. Discuss the purpose of 'XLOOKUP' and how it differs from the traditional 'VLOOKUP' function.

Sol.

Purpose of XLOOKUP

XLOOKUP is a modern lookup function in Excel used to search for a value in a range or array and return a corresponding value from another range. It is designed to replace older lookup functions like VLOOKUP, HLOOKUP, and even many uses of INDEX - MATCH.

Basic syntax:

=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])

How XLOOKUP Differs from VLOOKUP -

Aspect	XLOOKUP	VLOOKUP
Lookup direction	Can look left or right	Can look only to the right
Column index required	No column number needed	Requires column index number
Exact match	Default behavior	Must specify FALSE
Handling not found values	Built-in if_not_found argument	Requires IFERROR
Search direction	Can search top-to-bottom or bottom-to-top	Top-to-bottom only
Range changes	Safer (no break if columns inserted)	Can break if columns are added/deleted
Ease of use	More flexible and readable	More rigid

Example Comparison

Using VLOOKUP:

=VLOOKUP(A2, A2:D10, 3, FALSE)

- Looks for value in column A
- Returns data from the 3rd column
- Breaks if column positions change

Using XLOOKUP:

=XLOOKUP(A2, A2:A10, C2:C10, "Not Found")

- Clearly defines lookup and return ranges
- Works even if columns move
- Returns a custom message if not found

Key Advantages of XLOOKUP

- More flexible and robust
- Easier to read and maintain
- Eliminates common VLOOKUP limitations
- Works as a powerful replacement for multiple lookup functions

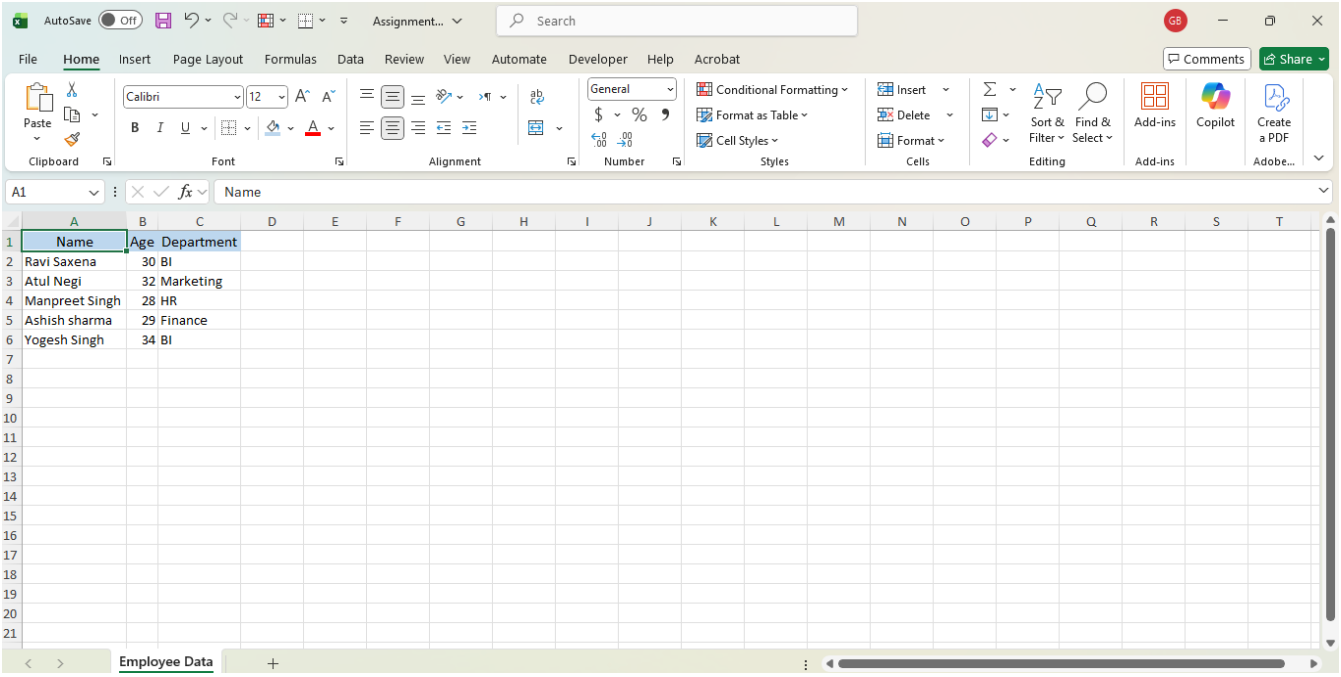
Q6. Create a worksheet titled 'Employee Data' with columns: Name, Age, Department. Add 5 rows of data.

Format as follows:

- Bold and center-align the header row
- Apply a fill color
- Auto-fit column width

(*Include a screenshot showing your formatted table.*)

Sol. Please find below screenshot -



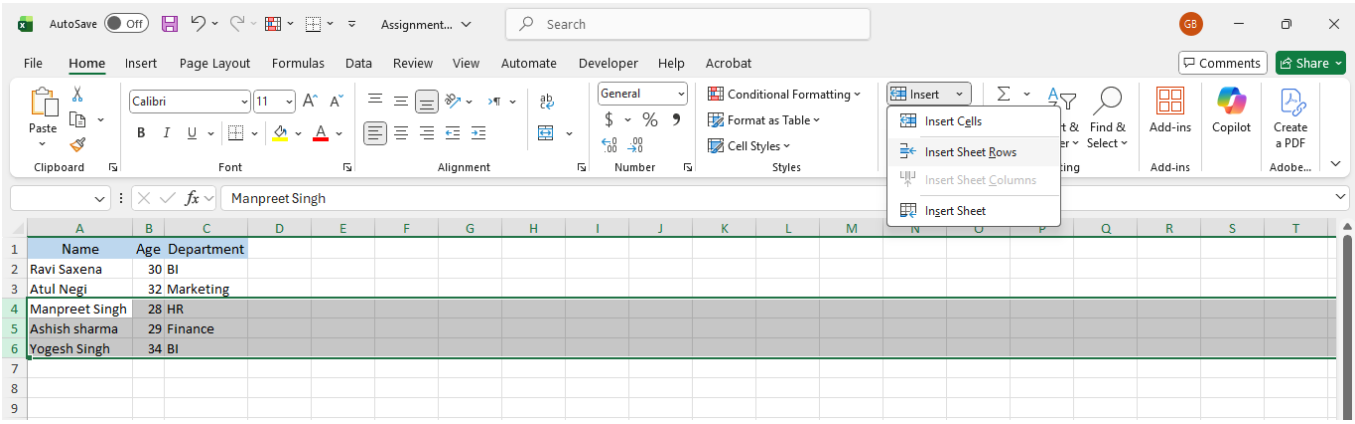
Q7. Demonstrate how to insert and delete multiple rows and columns in Excel.

(*Provide screenshots before and after the changes.*)

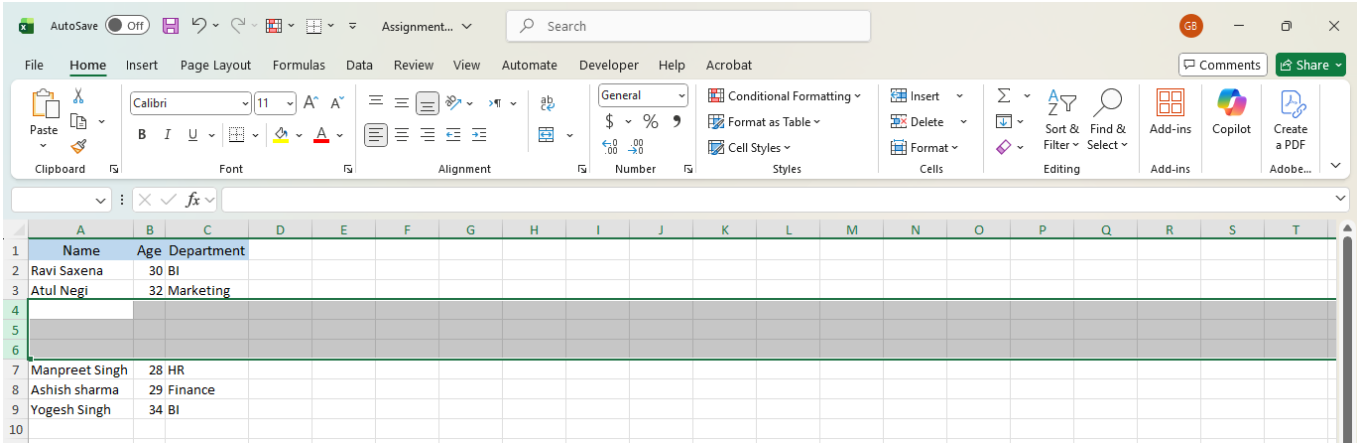
Sol. Please find below screenshot for inserting multiple rows and columns -

Rows -

Screenshot before inserting multiple rows -



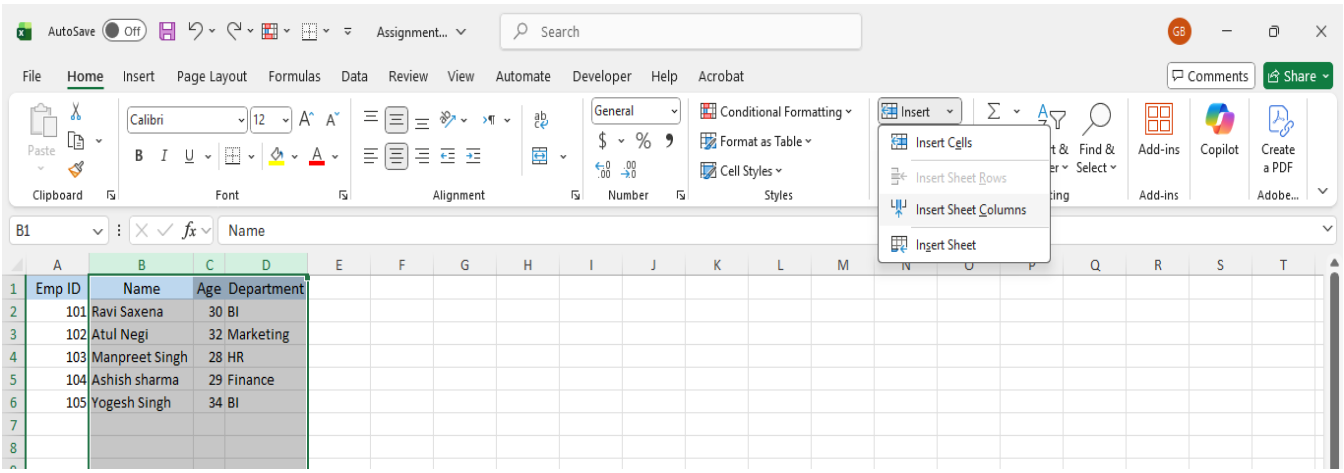
Screenshot after inserting multiple rows -



	Name	Age	Department
1	Ravi Saxena	30	BI
2	Atul Negi	32	Marketing
3			
4			
5	Manpreet Singh	28	HR
6	Ashish sharma	29	Finance
7	Yogesh Singh	34	BI

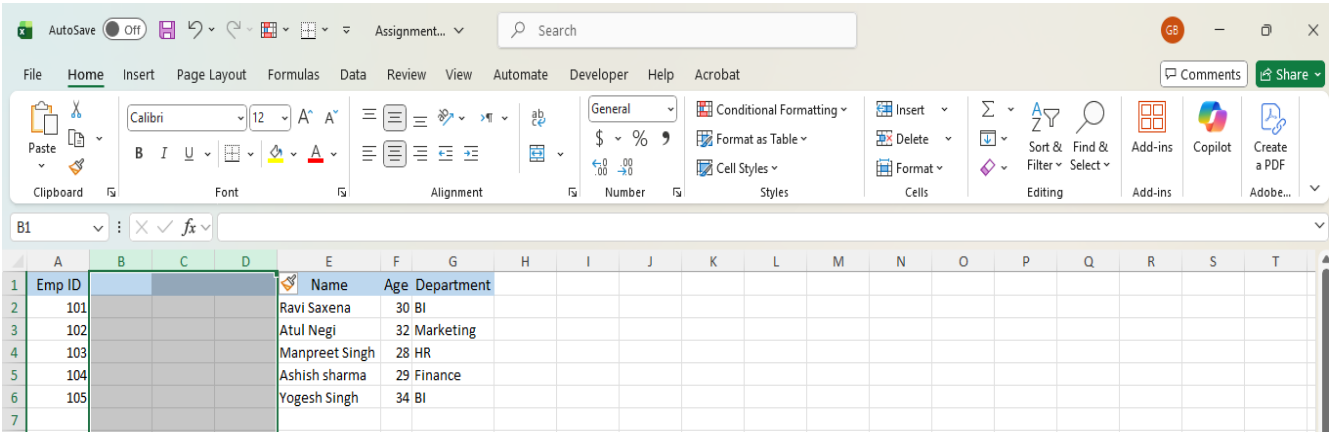
Columns -

Screenshot before inserting multiple columns -



	Emp ID	Name	Age	Department
1	101	Ravi Saxena	30	BI
2	102	Atul Negi	32	Marketing
3	103	Manpreet Singh	28	HR
4	104	Ashish sharma	29	Finance
5	105	Yogesh Singh	34	BI

Screenshot after inserting multiple columns -

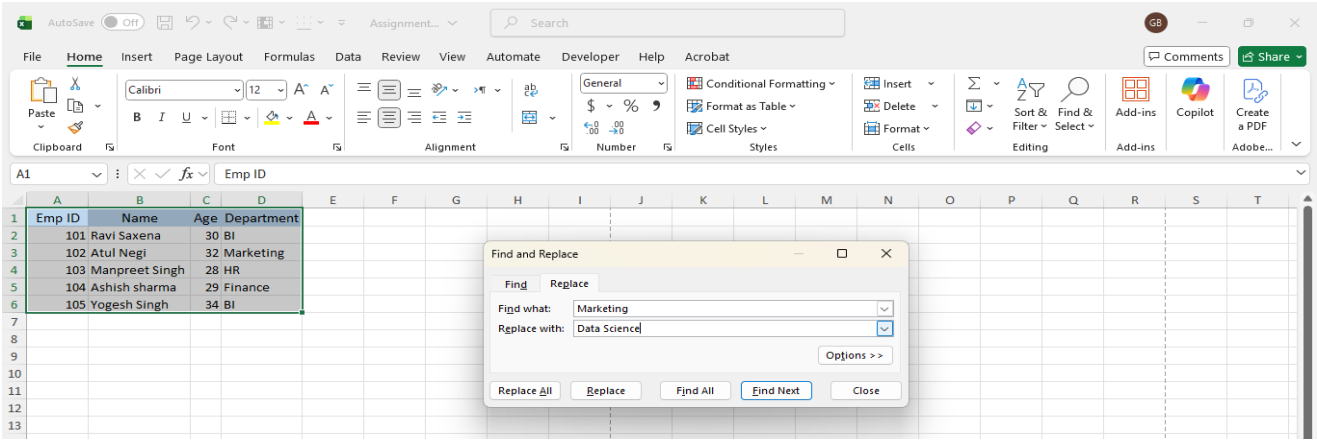


	Emp ID				Name	Age	Department
1	101				Ravi Saxena	30	BI
2	102				Atul Negi	32	Marketing
3	103				Manpreet Singh	28	HR
4	104				Ashish sharma	29	Finance
5	105				Yogesh Singh	34	BI

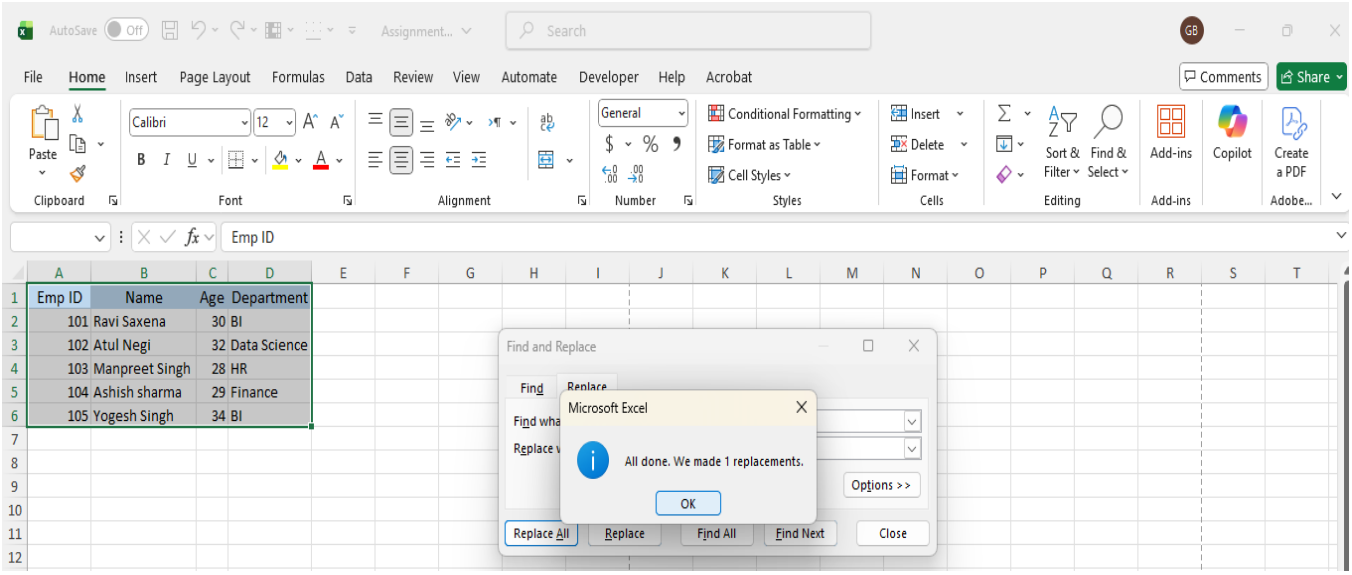
Q8. Use Excel's 'Find and Replace' feature to update department names in a sample table.

(*Include a screenshot showing the replaced data.*)

Sol. Screenshot before replacing department -



Screenshot after replacing department -

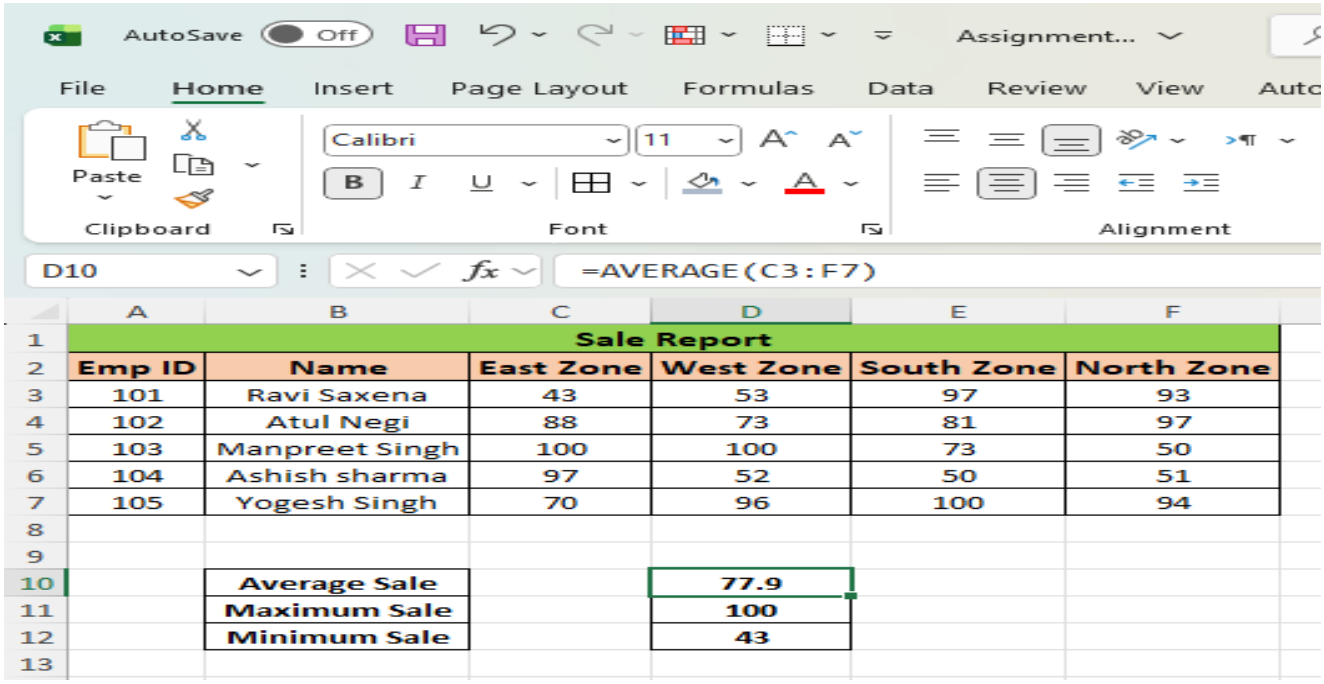


Q9. Create a small numerical dataset and apply the following functions:

- AVERAGE
- MAX
- MIN

(*Include a screenshot showing the formulas and their results.*)

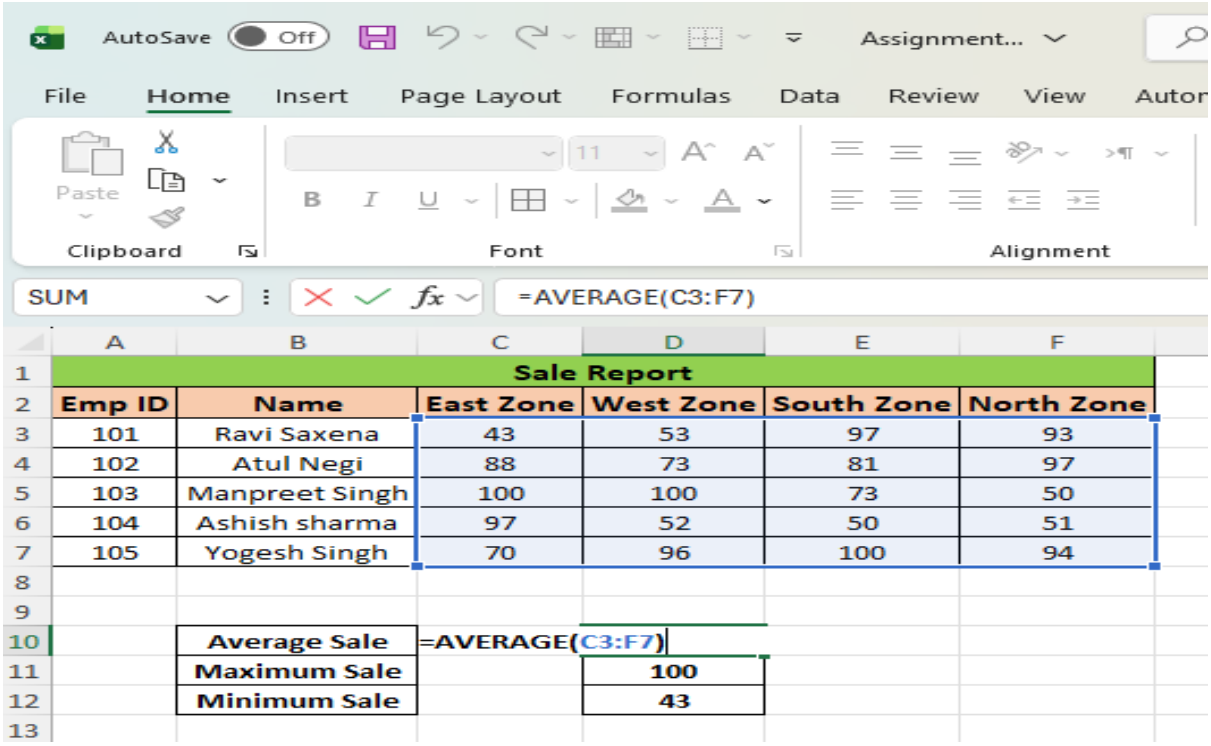
Sol. Screenshot of result –



	A	B	C	D	E	F
1		Sale Report				
2	Emp ID	Name	East Zone	West Zone	South Zone	North Zone
3	101	Ravi Saxena	43	53	97	93
4	102	Atul Negi	88	73	81	97
5	103	Manpreet Singh	100	100	73	50
6	104	Ashish sharma	97	52	50	51
7	105	Yogesh Singh	70	96	100	94
8						
9						
10		Average Sale		77.9		
11		Maximum Sale		100		
12		Minimum Sale		43		
13						

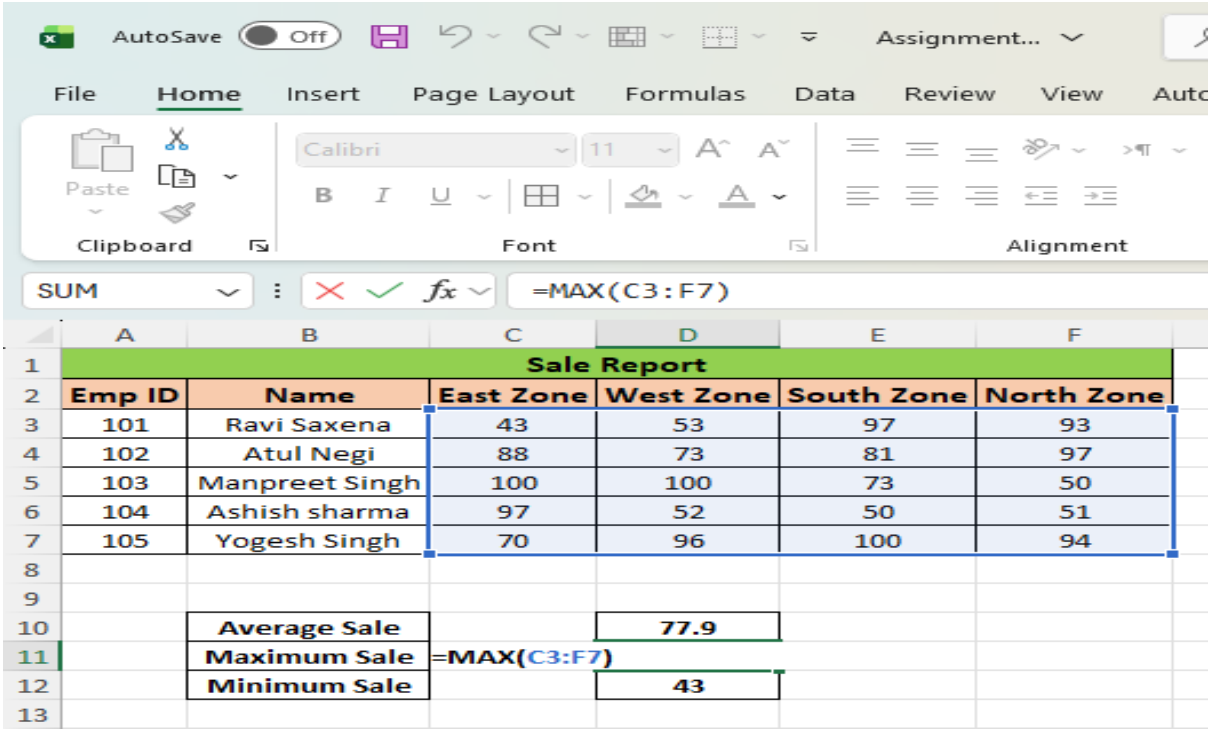
Screenshot of formulas –

i) Average –



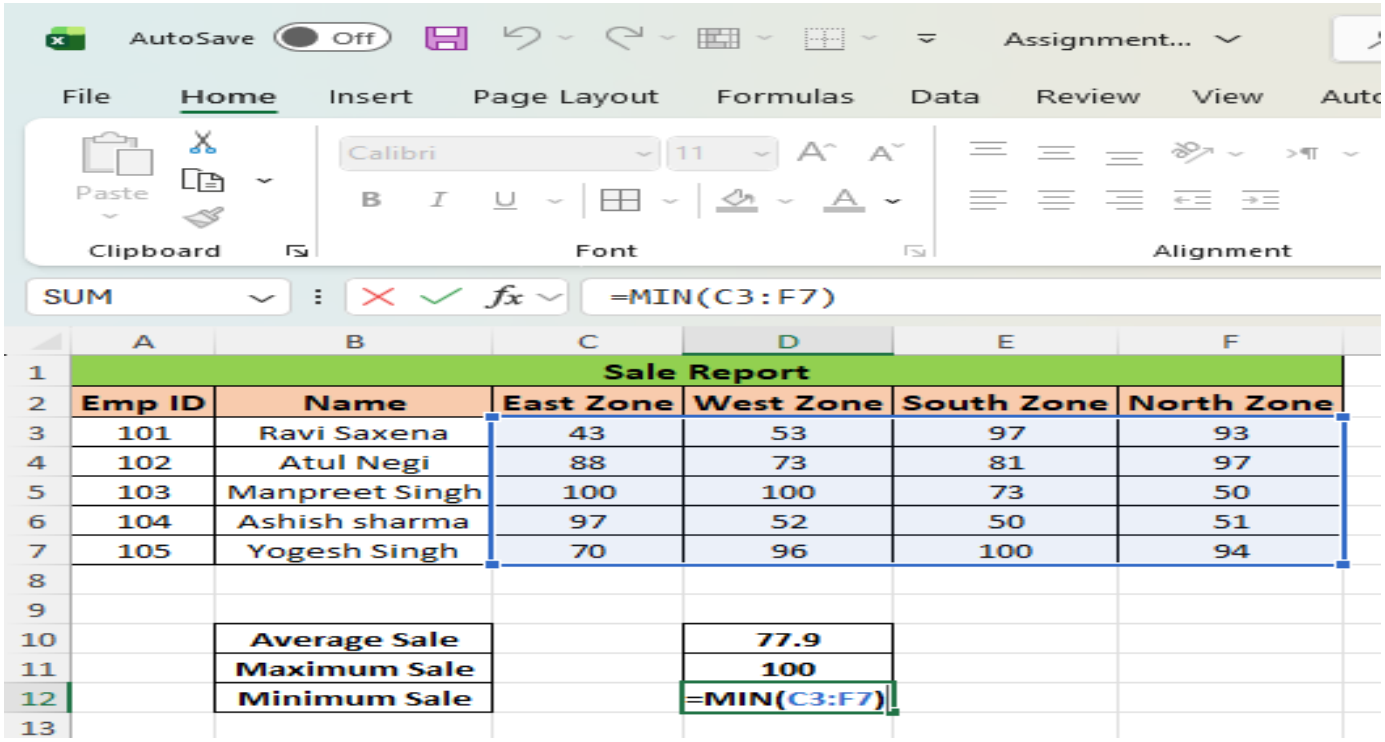
	A	B	C	D	E	F
1		Sale Report				
2	Emp ID	Name	East Zone	West Zone	South Zone	North Zone
3	101	Ravi Saxena	43	53	97	93
4	102	Atul Negi	88	73	81	97
5	103	Manpreet Singh	100	100	73	50
6	104	Ashish sharma	97	52	50	51
7	105	Yogesh Singh	70	96	100	94
8						
9						
10		Average Sale	=AVERAGE(C3:F7)			
11		Maximum Sale		100		
12		Minimum Sale		43		
13						

ii) Maximum –



	A	B	C	D	E	F
1		Sale Report				
2	Emp ID	Name	East Zone	West Zone	South Zone	North Zone
3	101	Ravi Saxena	43	53	97	93
4	102	Atul Negi	88	73	81	97
5	103	Manpreet Singh	100	100	73	50
6	104	Ashish sharma	97	52	50	51
7	105	Yogesh Singh	70	96	100	94
8						
9						
10		Average Sale		77.9		
11		Maximum Sale	=MAX(C3:F7)			
12		Minimum Sale		43		
13						

iii) Minimum -



	A	B	C	D	E	F
1		Sale Report				
2	Emp ID	Name	East Zone	West Zone	South Zone	North Zone
3	101	Ravi Saxena	43	53	97	93
4	102	Atul Negi	88	73	81	97
5	103	Manpreet Singh	100	100	73	50
6	104	Ashish sharma	97	52	50	51
7	105	Yogesh Singh	70	96	100	94
8						
9						
10		Average Sale		77.9		
11		Maximum Sale		100		
12		Minimum Sale		=MIN(C3:F7)		
13						

Q10. You're working with a dataset that contains missing values. As a Data Scientist, explain how you'd detect and handle missing data using Excel. Mention tools like:

- Go To Special
- ISBLANK
- COUNTBLANK

(Include a screenshot showing how blanks are identified or processed.)

Sol. In Excel, I would detect and manage missing values using the following tools and functions:

i) **Detecting Missing Data in Excel**

- **Go To Special (Blanks) – Purpose:** Quickly locate all blank cells in a dataset.

Steps:

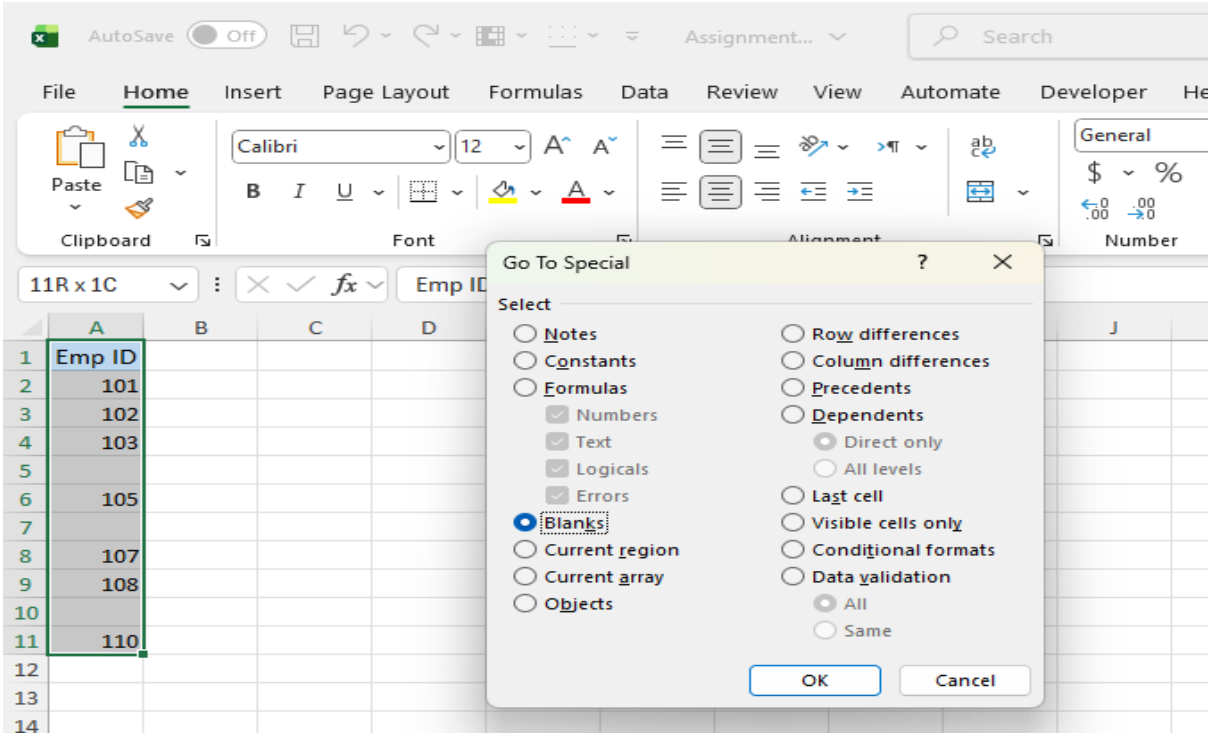
1. Select the entire dataset
2. Press **Ctrl + G** → Click **Special**
3. Choose **Blanks** → Click **OK**

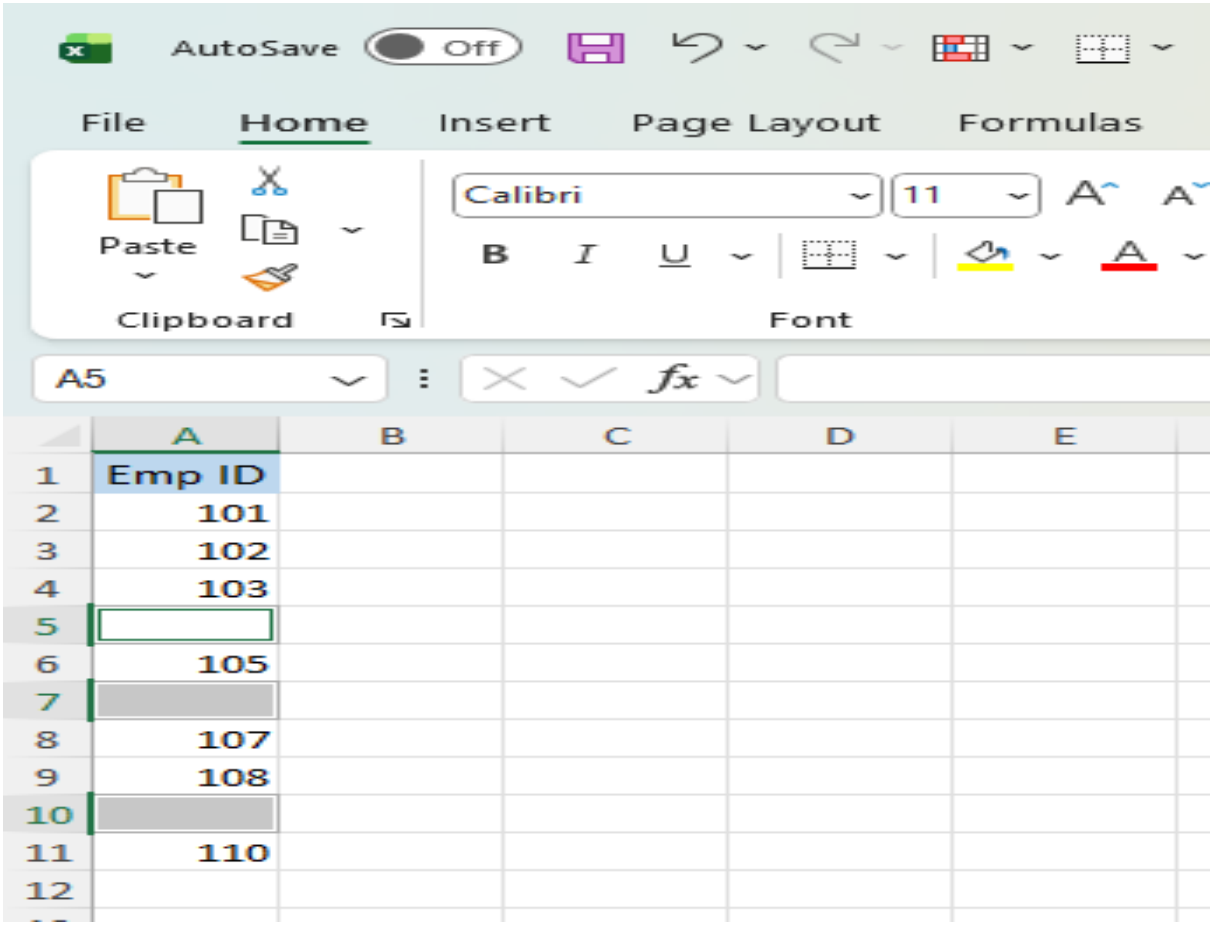
Use case:

All blank cells get selected at once, making it easy to:

- Highlight missing values
- Delete rows/columns
- Enter a default value (e.g., 0 or "Not Available")

Screenshot –





- ISBLANK Function

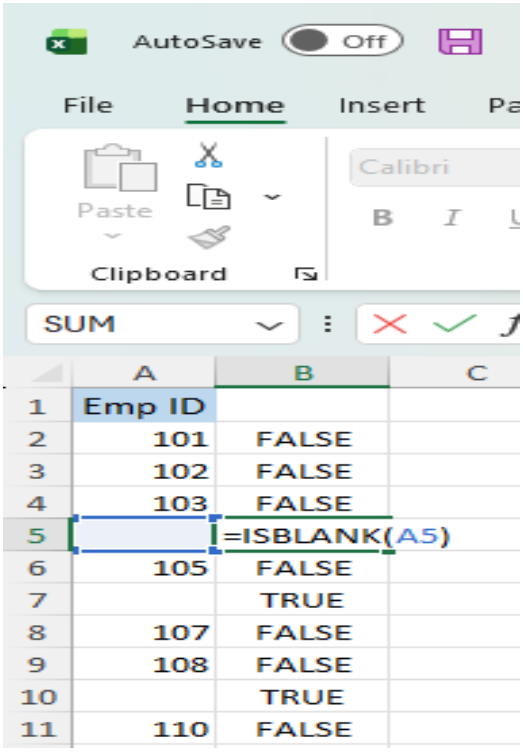
  Purpose: Check whether a specific cell is empty.

Syntax: =ISBLANK(A2)

Output:

- TRUE → Cell is blank
- FALSE → Cell contains data

Screenshot -



	A	B	C
1	Emp ID		
2	101	FALSE	
3	102	FALSE	
4	103	FALSE	
5		=ISBLANK(A5)	
6	105	FALSE	
7		TRUE	
8	107	FALSE	
9	108	FALSE	
10		TRUE	
11	110	FALSE	

- COUNTBLANK Function

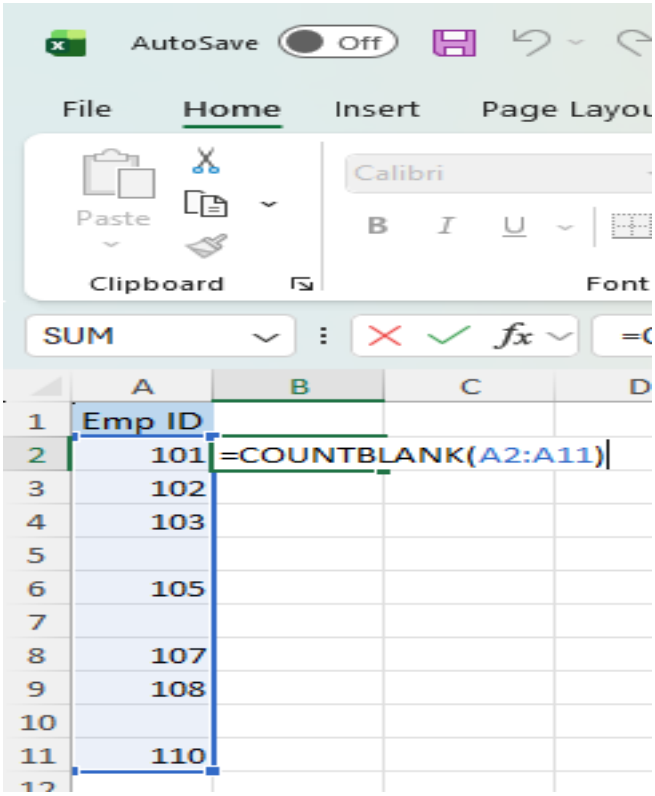
Purpose: Count how many blank cells exist in a range.

Syntax : =COUNTBLANK(B2:B10)

Use case:
Helps quantify missing data before deciding whether to:

- Remove rows
- Replace values
- Ignore the column entirely

Screenshot -



ii) Handling Missing Data

Once detected, I may:

- **Remove** rows/columns if missing data is minimal
- **Impute values** (mean/median for numerical data, mode for categorical data)
- **Flag missing data** using helper columns for further analysis