1. What is GROUP BY?

GROUP BY is used to group rows that have the same values in one or more columns.
It allows you to apply aggregate functions (SUM, COUNT, AVG, etc.) on each group.

Example:

SELECT department, SUM(salary)

FROM employees

GROUP BY department;

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2. Difference between WHERE and HAVING?

Feature	**WHERE**	**HAVING**
Filters	Individual rows	Groups (after GROUP BY)
Used with aggregates	❌ No	✓ Yes
Executes	Before grouping	After grouping

Example:

WHERE salary > 50000 -- row filter

HAVING SUM(salary) > 100000 -- group filter

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3. How does COUNT(*) differ from COUNT(column)?

Function	**Meaning**
COUNT(*)	Counts **all rows**, including rows with NULL values
COUNT(column)	Counts only **non-NULL values** in that column

Example:

COUNT(*) → 10 rows

COUNT(department) → 8 rows (if 2 NULL)

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4. Can you group by multiple columns?

Yes.
You can group data using more than one column.

Example:

SELECT department, job_role, COUNT(*)

FROM employees

GROUP BY department, job_role;

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5. What is ROUND() used for?

ROUND() is used to round numeric values to a specified number of decimal places.

Example:

SELECT ROUND(123.4567, 2); -- Output: 123.46

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6. How do you find the highest salary by department?

SELECT department, MAX(salary) AS highest_salary

FROM employees

GROUP BY department;

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7. What is the default behavior of GROUP BY?

- GROUP BY groups the rows based on unique column values.
- It returns **one row per group**.
- By default, results are **not sorted** unless ORDER BY is used.

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8. Explain AVG and SUM.

SUM()

- Adds up all numeric values in a column.

Example:

SELECT SUM(salary) FROM employees;

AVG()

- Calculates the average (mean) value of a numeric column.

Example:

SELECT AVG(salary) FROM employees;

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9. How to count distinct values?

Use COUNT(DISTINCT column).

Example:

SELECT COUNT(DISTINCT department) FROM employees;

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10. What is an aggregate function?

Aggregate functions perform calculations on **a set of rows** and return **a single value**.

Common aggregate functions:

- SUM()
- AVG()
- COUNT()
- MIN()
- MAX()

They are mostly used with GROUP BY.