SQL task 4 :- Aggregate Functions and Grouping

1. Apply aggregate functions on numeric columns

2. Use GROUP by to categorize

3. Filter Groups using HAVING

=>

1. Apply Aggregate functions on numeric columns(salary, experience)
2. Use GROUP BY to categorize by department
3. Use having to filter departments with average salary greater than 50000

SELECT

Department,

COUNT(\*) AS total\_employees;

AVG(salary) AS average\_salary,

SUM(experience ) AS total\_experience

FROM

Employees

GROUP BY

Department

HAVING

AVG(salary)> 50000;

#################################### Interview Quetions ######################

1.WHAT is GROUP BY?

=> The GROUP BY clause in SQL is used to group rows that have the same values into summary

rows. It is typically used with aggregate functions to perform calculations on each group of data.

* Key Points:

Groups data based on one or more columns.

It is used to summarize data.

Always used after the WHERE clause and before the ORDER BY clause.

Commonly used with aggregate functions like:

COUNT() – Counts the number of rows.

SUM() – Calculates the total sum.

AVG() – Calculates the average value.

MAX() – Returns the maximum value.

MIN() – Returns the minimum value.

* Syntax:-

SELECT column\_name, aggregate\_function(column\_name)

FROM table\_name

WHERE condition

GROUP BY column\_name;

2. Difference between WHERE and HAVING?

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|  |  |
| --- | --- |
| WHERE | HAVING |
| 1.Where Clause is used to filter the records based on specified condition. | 1. Having clause used to filter the records from Group based on specified Condition |
| 2. Where Clause can not have Aggregate Function | 2. Having Clause can operate an aggregate Function |
| 3.Where Clause implemented on Rows | 3. Having Clause is Implemented on Columns |
| 4.Where Clause individual rows | 4. Groups Created by GROUP BY |
| 5.eg. WHERE salary > 5000 | 5. HAVING AVG(salary)>5000 |

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3. How Does COUNT(\*) differ from COUNT(column)?

=> count(\*) counts all rosws, including those with NULLs.

COUNT(column) Counts only non-NULL values in that column.

Example:

SELECT COUNT(\*), COUNT(manager\_id)

FROM employees;

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1. Can you Group by Multiple Columns?

=> yes, You Can group by two or more columns.

Example:

SELECT department, job\_role, COUNT(\*)

FROM employees

GROUP BY department, job\_role;

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1. What is ROUND() used for?

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

Example:

SELECT ROUND(AVG(Salary),2) From employees;

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

=> Use GROUP BY with max()

Example:

SELECT department, MAX(salary)

FROM employees

GROUP BY department;

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1. What is the default behavior of Group BY?

=> It groups rows with the same value(s) in the specified column(s),and returns one row per group. You Should only select grouped columns or use them with aggregate functions.

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1. Explain AVG and SUM.

=> AVG() calculates the average of numeric values.

SUM() calculate the total sum.

Example:

SELECT AVG(salary), SUM(salary)

From employees;

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1. How to count distinct values?

=>Use COUN(DISTICT column\_name).

Example:

SELECT COUNT(DISTINCT department)

FROM employees;

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1. What is an aggregate Function?

=> Aggregate Functions perform a calculation on set values and return a single value(eg, SUM, AVG, COUNT).

Common aggregate functions:

* COUNT()
* SUM()
* AVG()
* MAX()
* MIN()

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