

Task-4

Objective:

Learn to summarize and analyze tabular data by using SQL aggregate functions like `SUM`, `COUNT`, `AVG`, etc., along with **GROUP BY** and **HAVING** clauses.

Tools:

We can use:

- **DB Browser for SQLite**
- **MySQL Workbench**

These tools allow you to write and run SQL queries on sample or real databases.

What We'll Practice:

1. **Aggregate Functions:**
 - `SUM(column)` – total value
 - `COUNT(column)` – number of records
 - `AVG(column)` – average value
 - `MAX(column) / MIN(column)` – highest/lowest value
 2. **GROUP BY:**
 - Used to group rows that share a common value in one or more columns.
 3. **HAVING:**
 - Filters groups based on conditions (similar to `WHERE`, but used *after* `GROUP BY`).
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Examples:

1. Total Sales by Product

```
SELECT product_id, SUM(sale_amount) AS total_sales
FROM sales
GROUP BY product_id;
```

2. Number of Orders per Customer

```
SELECT customer_id, COUNT(order_id) AS total_orders  
FROM orders  
GROUP BY customer_id;
```

3. Average Salary per Department with Condition

```
SELECT department, AVG(salary) AS avg_salary  
FROM employees  
GROUP BY department  
HAVING AVG(salary) > 50000;
```

☒ Outcome

We will gain the ability to:

- **Summarize large datasets**
 - **Identify trends or patterns**
 - **Perform analytics** like "top-selling products" or "departments with high average salaries"
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