**Name :** Harsh Tankariya

**E-mail :** [tankariyaharsh7@gmail.com](mailto:tankariyaharsh7@gmail.com)

**Mobile no :** 7990748717

**Subject :** Task 4

**Task 4:** Aggregate Functions and Grouping

**Objective** : Use aggregate functions and grouping to summarize data

**Tools** : DB Browser for SQLite / MySQL Workbench

**Deliverables** : SQL queries using SUM, COUNT, AVG, GROUP BY

**1.Apply aggregate functions on numeric columns**

I give my practical file in [github.com](https://github.com/harshtankariya/SQL-DEVELOPER-INTERNSHIP-ELEVATE-LABS)

**2.Use GROUP BY to categorize**

I give my practical file in [github.com](https://github.com/harshtankariya/SQL-DEVELOPER-INTERNSHIP-ELEVATE-LABS)

**3.Filter groups using HAVING**

I give my practical file in [github.com](https://github.com/harshtankariya/SQL-DEVELOPER-INTERNSHIP-ELEVATE-LABS)

Interview Questions

**1. What is GROUP BY?**

It groups rows that have the same value in one or more columns.

**Example :** SELECT HosID, COUNT(\*) FROM Patient GROUP BY HosID;

**2. Difference between WHERE and HAVING?**

| **Clause** | **Used for filtering...** | **Used with...** |
| --- | --- | --- |
| WHERE | Before grouping | Normal rows |
| HAVING | After grouping | Grouped data |

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

* COUNT(\*) → counts all rows
* COUNT(column) → counts non-NULL values in that column

**4. Can you group by multiple columns?**

Yes.

**Example :** SELECT HosID, Gender, COUNT(\*) FROM Patient GROUP BY HosID, Gender;

**5. What is ROUND() used for?**

It rounds numeric values to a specific number of decimal places.

**Example :** SELECT ROUND(AVG(Charge), 2) FROM Outdoor;

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

Use GROUP BY + MAX()

**Example :** SELECT Department, MAX(Salary) FROM Employee GROUP BY Department;

**7. What is the default behavior of GROUP BY?**

It groups in ascending order by default (like ORDER BY ASC).

**8. Explain AVG() and SUM()**

* AVG() → Calculates average value
* SUM() → Calculates total value

**9. How to count distinct values?**

Use COUNT(DISTINCT column)

**Example :** SELECT COUNT(DISTINCT HosID) FROM Doctor;

**10. What is an aggregate function?**

It returns a single result from a group of values.  
**Examples:** COUNT(), SUM(), AVG(), MAX(), MIN()

**Key Concepts: Aggregation, Grouping**

**1. Aggregation**

**Definition:**

Aggregation means using functions to summarize data, like counting, averaging, totaling, etc.

Common Aggregate Functions:

| **Function** | **Description** | **Example** |
| --- | --- | --- |
| **COUNT()** | **Counts rows** | **COUNT(\*)** |
| **SUM()** | **Adds up values** | **SUM(Charge)** |
| **AVG()** | **Calculates average** | **AVG(Charge)** |
| **MAX()** | **Finds highest value** | **MAX(Charge)** |
| **MIN()** | **Finds lowest value** | **MIN(Charge)** |

**Example:**

**-- Total number of patients**

SELECT COUNT(\*) AS TotalPatients FROM Patient;

**-- Average charge of outdoor patients**

SELECT AVG(Charge) AS AvgCharge FROM Outdoor;

**2. Grouping**

**Definition:**

Grouping is done using GROUP BY to organize rows into categories, and apply aggregation to each group.

**Example:**

**-- Count patients in each hospital**

SELECT HosID, COUNT(\*) AS PatientCount

FROM Patient

GROUP BY HosID;

**With HAVING:**

**-- Show hospitals with more than 1 patient**

SELECT HosID, COUNT(\*) AS PatientCount

FROM Patient

GROUP BY HosID

HAVING COUNT(\*) > 1;

**Aggregation + Grouping Combined**

**-- Total outdoor charges by each patient**

SELECT PatID, SUM(Charge) AS TotalCharge

FROM Outdoor

GROUP BY PatID;