Task 4: Aggregate Functions and Grouping

Objective:

Use SQL aggregate functions and GROUP BY clause to summarize and analyze tabular data.

Tools:

DB Browser for SQLite / MySQL Workbench

Hints / Mini Guide:

Aggregate Functions:

- SUM(column) - Total of all values in a column.

- COUNT(column) - Number of rows (non-NULL values).

- AVG(column) - Average of all values.

- MIN(column) / MAX(column) - Minimum / Maximum value.

GROUP BY:

- Groups rows sharing a column value.

- Used with aggregate functions to compute summaries per group.

HAVING:

- Filters groups after aggregation (like WHERE but for groups).

Example Table: sales

| id | region | salesperson | amount |

|----|--------|-------------|--------|

| 1 | East | Alice | 500 |

| 2 | East | Bob | 700 |

| 3 | West | Alice | 400 |

| 4 | North | Carol | 650 |

| 5 | East | Alice | 300 |

Sample Queries:

Total Sales Amount:

```
SELECT SUM(amount) AS total_sales FROM sales;
```

Sales by Region:

```
SELECT region, SUM(amount) AS total_sales
FROM sales
GROUP BY region;
```

Number of Sales per Salesperson:

```
SELECT salesperson, COUNT(*) AS total_transactions
FROM sales
GROUP BY salesperson;
```

Average Sales per Region:

```
SELECT region, AVG(amount) AS avg_sale
FROM sales
GROUP BY region;
```

Regions with Total Sales > 1000:

```
SELECT region, SUM(amount) AS total_sales
FROM sales
GROUP BY region
HAVING SUM(amount) > 1000;
```

Outcome:

Understand how to summarize data using aggregate functions.

Analyze grouped data effectively using GROUP BY and HAVING.