Practical No. 3

Aim: To implement aggregate functions.

Theory:

Aggregate functions in MySQL are powerful tools for summarizing and analysing data in database tables. These functions allow you to perform calculations on sets of values and return a single result. Here's a brief overview of common aggregate functions:

- **COUNT()**: Counts the number of rows in a result set. Useful for determining the size of a dataset.
- **SUM()**: Calculates the sum of values in a numeric column, such as total sales or quantities.
- **AVG()**: Computes the average of values in a numeric column, providing insight into the typical value.
- **MIN() and MAX()**: Identify the minimum and maximum values in a column, helping to find extremes in the data.
- **GROUP BY**: Groups rows based on a specified column, allowing you to perform aggregate functions on subsets of data. Useful for creating summaries or reports.

Queries:

```
mysql> /*202203103510124*/
mysql> SELECT count(*) AS total;
+-------+
| total |
+-------+
|     1 |
+-------+
1 row in set (0.00 sec)

mysql> /*202203103510124*/
mysql> select sum(10+20+30) as sum;
+------+
| sum  |
+------+
|   60 |
+------+
1 row in set (0.00 sec)
```

```
mysql> /*202203103510124*/
mysql> select avg(price) as avg from product;
+------------+
| avg        |
+------------+
| 3383.333333 |
+------------+
1 row in set (0.00 sec)
```

```
mysql> select min(price) as min, max(price) as max from product;
+--------+----------+
| min    | max      |
+--------+----------+
| 700.00 | 15000.00 |
+--------+----------+
1 row in set (0.00 sec)
```

Conclusion:

In conclusion, the practical exploration of implementing aggregate functions in MySQL has provided valuable insights into the capabilities of these functions. Aggregate functions, such as COUNT, SUM, AVG, MIN, and MAX, empower us to summarize and analyse data effectively. They enable us to derive meaningful information from large datasets, such as calculating totals, averages, and identifying extreme values. Additionally, using the GROUP BY clause in combination with aggregate functions allows us to perform calculations on specific subsets of data, facilitating the creation of informative reports and summaries. Mastering these aggregate functions is essential for anyone working with databases, as they are fundamental tools for data analysis and decision-making.