Experiment No.5
Perform simple queries, string manipulation operations and aggregate functions.
Date of Performance:
Date of Submission:

Aim :- Write simple query to manipulate string operations and perform aggregate functions like (MIN, MAX, SUM, AVERAGE, COUNT).

Objective :- To apply aggregate functions and string manipulation functions to perform simple queries in the database system

Theory:

Simple Queries in SQL:

In SQL, a simple query is a request for data from a database table or tables. It allows users to retrieve specific information by specifying the columns they want to retrieve and any conditions for filtering rows based on certain criteria. Simple queries are the backbone of interacting with databases, enabling users to extract the data they need for analysis, reporting, or further processing.

String Manipulation Operations:

String manipulation operations in SQL involve modifying or transforming string values stored in database columns. These operations are crucial for tasks such as formatting data, combining strings, converting case, or extracting substrings. By using string functions and operators, users can manipulate text data to suit their requirements, whether it's for display purposes or for further analysis.

Aggregate Functions:

Aggregate functions in SQL are used to perform calculations on sets of values and return a single result. These functions allow users to summarize data across multiple rows, providing insights into the overall characteristics of the dataset. Common aggregate functions include calculating counts, sums, averages, minimums, and maximums of numerical values. They are essential tools for data analysis, enabling users to derive meaningful insights from large datasets.

Benefits of Understanding These Concepts:

- Data Retrieval: Simple queries allow users to fetch specific data from databases, facilitating data retrieval for various purposes.
- Data Transformation: String manipulation operations enable users to format and transform text data according to their needs, improving data consistency and readability.
- Data Analysis: Aggregate functions help users summarize and analyze large datasets, providing valuable insights into trends, patterns, and statistical measures.
- Data Reporting: By combining simple queries, string manipulation operations, and aggregate functions, users can generate reports and visualizations that communicate key findings effectively.

Implementation:

```sql
SELECT COUNT(*) AS total_customers
FROM customer;
SELECT SUM(amount) AS total_amount_paid
FROM payement;
SELECT AVG(amount) AS average_amount_paid
FROM payement;
SELECT MAX(amount) AS highest_payment_amount
FROM payement;
SELECT MIN(amount) AS lowest_payment_amount
FROM payement;
SELECT COUNT(*) AS total_rooms
FROM room;
```

Conclusion:

1. Write syntax and explanation for each of the five aggregate functions

Certainly! Here's the syntax and explanation for each of the aggregate functions mentioned:

1. **COUNT():**

Syntax:
```sql
SELECT COUNT(expression)
FROM table_name;
```

Explanation:

The COUNT() function returns the number of rows that match a specified condition. It can be used with an expression, column name, or wildcard (*) to count all rows in a table.

2. **SUM():**

Syntax:
```sql
SELECT SUM(expression)
FROM table_name;
```

Explanation:
The SUM() function calculates the sum of values in a numeric column. It adds up all the values in the specified column.

3. **AVG():**

Syntax:
```sql
SELECT AVG(expression)
FROM table_name;
```

Explanation:
The AVG() function calculates the average value of a numeric column. It adds up all the values in the specified column and divides the sum by the number of rows.

4. **MAX():**

Syntax:
```sql
SELECT MAX(expression)
FROM table_name;
```

Explanation:
The MAX() function returns the maximum value in a column. It retrieves the highest value from the specified column.

5. **MIN():**

Syntax:
```sql
SELECT MIN(expression)
FROM table_name;
```

Explanation:

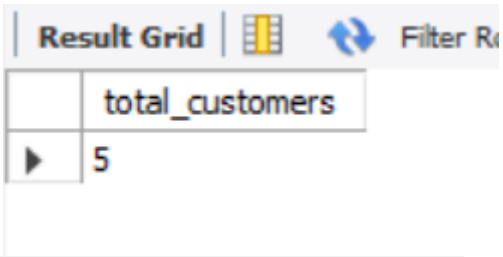
The MIN() function returns the minimum value in a column. It retrieves the lowest value from the specified column.

6. **Explanation for COUNT(*) specifically:**

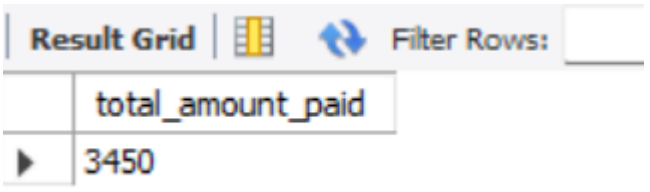
COUNT(*) counts all rows in the specified table, regardless of the values in any particular column. It's often used to simply count the total number of rows in a table.

These aggregate functions are commonly used in SQL queries to perform calculations on sets of data and retrieve summary information from database tables.

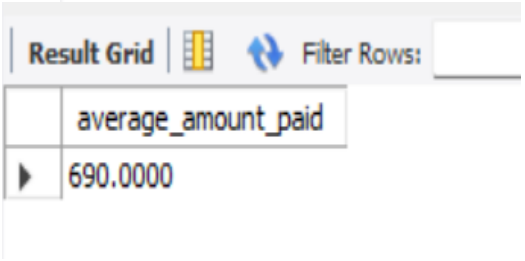
2. Show results of operations performed.


Result Grid | Filter R

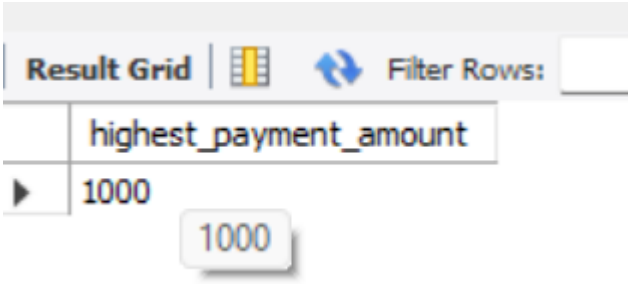
	total_customers
▶	5


Result Grid | Filter Rows:

	total_amount_paid
▶	3450

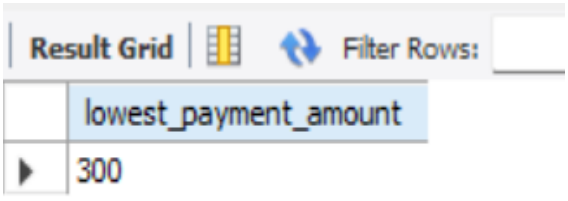

Result Grid | Filter Rows:

	average_amount_paid
▶	690.0000

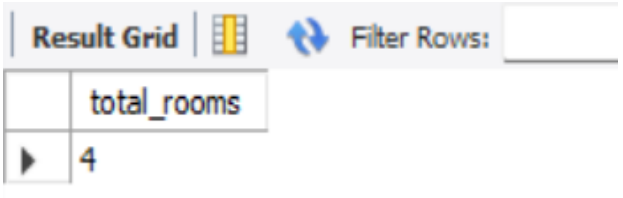

Result Grid | Filter Rows:

	highest_payment_amount
▶	1000

1000


Result Grid | Filter Rows:

	lowest_payment_amount
▶	300


Result Grid | Filter Rows:

	total_rooms
▶	4