Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2024-25

Class:	SE	Semester:	IV
Course Code:	CSL402	Course Name:	Database Management System Lab

Name of Student:	Shruti Gauchandra
Roll No. :	16
Experiment No.:	5
Title of the Experiment:	Perform simple queries, string manipulation operations and aggregate functions.
Date of Performance:	30/01/25
Date of Submission:	06/02/25

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Performance	5	
Understanding	5	
Journal work and timely submission	10	
Total	20	

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Performance	4-5	2-3	1
Understanding	4-5	2-3	1
Journal work and timely submission	8-10	5-8	1-4

Checked by

Name of Faculty : Ms. Neha Raut

Signature :

Date:

Experiment No 5

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:

For MIN:

Code:

SELECT MIN(DOB) AS Earliest_Birth_Date

FROM Customer;

Output:

For MAX:

Code :

SELECT MAX(DOB) AS Latest_Birth_Date

FROM Customer;

Output:

For SUM:

Code:

SELECT SUM(Ticket_Price) AS Total_Ticket_Sales FROM Ticket;

Output:

For AVERAGE :

Code:

SELECT AVG(Ticket_Price) AS Average_Ticket_Price FROM Ticket;

Output:

For COUNT :

Code:

SELECT COUNT(Ticket_Price) AS Total_Tickets_Sold FROM Ticket;

Output:

Conclusion:

Performing simple queries, string manipulation operations, and using aggregate functions are fundamental skills in SQL that enable effective data retrieval and analysis. Simple queries allow you to select and filter data based on specific conditions. String manipulation functions help transform and format textual data to meet various requirements. Aggregate functions like SUM(), COUNT(), AVG(), MAX(), and MIN() enable summarizing and deriving meaningful insights from large datasets.

1. Write syntax and explanation for each of the five aggregate functions.
   Ans. **Aggregate functions in SQL perform calculations on multiple rows and return a single summarized value. These functions are commonly used in SELECT statements, often with GROUP BY to group the results based on specific columns.**

1) **COUNT() - Counting Rows**

SELECT COUNT(column_name) FROM table_name WHERE condition;

Explanation:

- **Counts the number of non-NULL values in the specified column.**

- **If * is used (COUNT(*)), it counts all rows, including NULL values.**

2) **SUM() - Summing Values**

Syntax:

SELECT SUM(column_name) FROM table_name WHERE condition;

Explanation:

- **Adds up all the values in the specified column.**

- **Only works on numeric columns (e.g., prices, quantities, salaries).**

3) **AVG() - Calculating Average**

Syntax:
SELECT AVG(column_name) FROM table_name WHERE condition;

Explanation:

- **Returns the average (mean) of the values in the specified column.**

- **Ignores NULL values.**

4) **MAX() - Finding Maximum Value**

Syntax:
SELECT MAX(column_name) FROM table_name WHERE condition;

Explanation:

- **Returns the highest value in the specified column.**

- **Works on both numeric and date columns.**

5) **MIN() - Finding Minimum Value**

Syntax:
SELECT MIN(column_name) FROM table_name WHERE condition;

Explanation:

- **Returns the lowest value in the specified column.**

- **Works on both numeric and date columns.**

Usage with GROUP BY:

To apply aggregate functions on grouped data:

SELECT column_name, COUNT(*) FROM table_name GROUP BY column_name;

This groups data based on column_name and counts occurrences in each group.

2. Show results of operations performed.

Ans.

Earliest_Birth_Date
1985-02-28

Latest_Birth_Date
2000-09-30

Total_Ticket_Sales
1375.00

Average_Ticket_Price
275.000000

Total_Tickets_Sold
5