INTRODUCTION (SQL & Classification of SQL statements)

SQL

The Structured Query Language (SQL) is a language that enables you to create and operate on relational databases, which are sets of related information stored in tables.

CLASSIFICATION OF SQL STATEMENTS

SQL commands can be mainly divided into following categories:

1. **Data Definition Language(DDL) Commands**
   Commands that allow you to perform task, related to data definition e.g;
   - Creating, altering and dropping.
   - Granting and revoking privileges and roles.
   - Maintenance commands.

2. **Data Manipulation Language(DML) Commands**
   Commands that allow you to perform data manipulation e.g., retrieval, insertion, deletion and modification of data stored in a database.

3. **Transaction Control Language(TCL) Commands**
   Commands that allow you to manage and control the transactions e.g.,
   - Making changes to database, permanent – COMMIT COMMAND
   - Undoing changes to database, permanent – ROLLBACK COMMAND
   - Creating save points.
   - Setting properties for current transactions.

PRACTICAL-14 (Creation, Insertion, Deletion & Pattern Matching)

Table: STUDENT

Admission_no	Name	Stream	Class	Section	Marks
5243	Karan	Medical	12	B	75
9087	Divakar	Commerce	11	C	96
6745	Divya	Commerce	12	C	54
7843	Arun	Humanities	12	C	72
3245	Sabina	Nonmedical	11	A	65
7658	John	Medical	12	B	64
3214	Robert	Humanities	11	A	88
8765	Rubina	Nonmedical	12	A	91
4352	Vikas	Nonmedical	12	A	52
2785	Mohan	Commerce	12	C	46

Write the commands in SQL for the following questions with reference to the above table:

1. Write the command to create the table STUDENT.
2. Write the command to insert the values in the table STUDENT.
3. Write the command to select distinct Streams in the table STUDENT.
4. Write the command to display details of all students whose name starts with D.
5. Write the command to display details of all students that have second character 'i' in their name.
6. **Write the OUTPUT of following commands with reference to the above tables:**
    i. SELECT COUNT(DISTINCT Stream) FROM STUDENT;
    ii. SELECT NAME,STREAM FROM STUDENT WHERE CLASS IN(12);
    iii. SELECT ADMISSION_NO,NAME FROM STUDENT WHERE NAME NOT LIKE "%a";
    iv. SELECT NAME,STREAM FROM STUDENT ORDER BY MARKS DESC;

PRACTICAL-15 (Alter, Update, Delete & Sorting)

Table: STUDENT

Admission_no	Name	Stream	Class	Section	Marks
5243	Karan	Medical	12	B	75
9087	Divakar	Commerce	11	C	96
6745	Divya	Commerce	12	C	54
7843	Arun	Humanities	12	C	72
3245	Sabina	Nonmedical	11	A	65
7658	John	Medical	12	B	64
3214	Robert	Humanities	11	A	88
8765	Rubina	Nonmedical	12	A	91
4352	Vikas	Nonmedical	12	A	52
2785	Mohan	Commerce	12	C	46

Write the commands in SQL for the following questions with reference to the above table:

1. Write a command to add a new column Grade in the table STUDENT.
2. Write a command to update marks of student having admission number 8765 to 76.
3. Write a command to view structure of the table STUDENT.
4. Write a command to display details of all students whose marks is between 80 and 100.
5. Write a command to display Name and Stream of all students who have Nonmedical stream.
6. Write a command to display Name, Stream and Marks of all students in descending order of Marks.
7. Write a command to delete the data of students who have Medical Stream.

PRACTICAL-16 (Aggregate Functions)

Table: STUDENT

Admission_no	Name	Stream	Class	Section	Marks
5243	Karan	Medical	12	B	75
9087	Divakar	Commerce	11	C	96
6745	Divya	Commerce	12	C	54
7843	Arun	Humanities	12	C	72
3245	Sabina	Nonmedical	11	A	65
7658	John	Medical	12	B	64
3214	Robert	Humanities	11	A	88
8765	Rubina	Nonmedical	12	A	91
4352	Vikas	Nonmedical	12	A	52
2785	Mohan	Commerce	12	C	46

Write the commands in SQL for the following questions with reference to the above table:

1. Write a command to compute sum of marks of all students in STUDENT table.
2. Write a command to display maximum Marks in STUDENT table.
3. Write a command to display minimum Marks in STUDENT table.
4. Write a command to display average of Marks in STUDENT table.
5. Write a command to display the total number of students in STUDENT table.
6. **Write the OUTPUT of following commands with reference to the above tables:**

   - SELECT Stream, COUNT (Marks) FROM STUDENT GROUP BY Stream;
   - SELECT SUM(MARKS) FROM STUDENT WHERE Marks>=60;
   - SELECT COUNT(Stream) FROM STUDENT;
   - SELECT AVG(Marks) FROM STUDENT WHERE Name LIKE '%O%';

PRACTICAL-17 (Joins)

Table: PRODUCT

P_ID	ProductName	Manufacturer	Price
TP01	Talcom Powder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table: CLIENT

C_ID	ClientName	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Bangalore	TP01

Write the commands in SQL for the following questions with reference to the above tables:

1. To display the details of Products whose Price is in the range of 50 to 100.
2. To display the ClientName, City from table Client, and ProductName and Price from table Product, with their corresponding matching P_ID.
3. To increase the price of all Products by 10.
4. Display the Product ID, Product name ,ClientName of those products whose client is in Delhi.
5. Perform the Cartesian product/Unrestricted join on the two tables and write its Output. How many rows and column will be there in the final table?
6. Which column is PRIMARY KEY in table PRODUCT, and which column is foreign key in table CLIENT?
7. **Write the OUTPUT of following commands with reference to the above tables:**
   - SELECT PRODUCT.* ,CITY FROM PRODUCT,CLIENT
     WHERE PRODUCT.P_ID=CLIENT.P_ID AND CITY=”Mumbai”;
   - SELECT PRODUCT.P_ID,PRICE, CITY FROM PRODUCT,CLIENT;