Assignment

Q1. What is a database? Differentiate between SQL and NoSQL databases.

Ans - A database is an organized collection of data

Differentiate between SQL and NoSQL database

SQL	NoSQL
1. SQL databases are primarily called as Relational Databases (RDBMS)	1. NoSQL database are primarily called as non-relational or distributed database
2. These databases have fixed or static or predefined schema	2. They have dynamic schema
3. These databases are best suited for complex queries	3. These databases are not so good for complex queries
4. Vertically Scalable	4. Horizontally scalable
5. Examples: MySQL, PostgreSQL, Oracle, MS-SQL Server, etc	6. Examples: MongoDB, GraphQL, HBase, Neo4j, Cassandra, etc

Q2. What is DDL? Explain why CREATE, DROP, ALTER, and TRUNCATE are used with an example.

Ans - DDL is a computer language used to create and modify the structure of database objects in a database.

CREATE :
This command is used to create a new table in SQL. The user has to give information like table name, column names, and their datatypes.

Example –
We need to create a table for storing Student information of a particular College. Create syntax would be as below.

```
CREATE TABLE Student_info
(
College_Id number(2),
College_name varchar(30),
Branch varchar(10));
```

DROP:
This command is used to remove an existing table along with its structure from the Database.

Example –
If the College Authority wants to change their Database by deleting the Student_info Table.

```
DROP TABLE Student_info;
```

ALTER
This command is used to add, delete or change columns in the existing table. The user needs to know the existing table name and can do add, delete or modify tasks easily.
Example –
In our Student_info table, we want to add a new column for CGPA. The syntax would be as below as follows.
ALTER TABLE Student_info

ADD CGPA number;

TRUNCATE
This command is used to remove all rows from the table, but the structure of the table still exists.
Example –
The College Authority wants to remove the details of all students for new batches but wants to keep the table structure. The command they can use is as follows.

TRUNCATE TABLE Student_info;

Q3. What is DML? Explain INSERT, UPDATE, and DELETE with an example.

Ans - The data manipulation language statements are used to retrieve, add, delete, and modify the data that is stored in the objects of database.

- INSERT statement is used to insert a new row in the database that is adding data to a table.
- SELECT statement is used to retrieve record from one or more tables.
- UPDATE statement is used to update the data or row in the table.

Q4. What is DQL? Explain SELECT with an example.

Ans - DQL or data query language is to perform the query on the data inside the schema or object (ie table, index, view, function, etc). With the help of a DQL query, we can get the data from the database to perform actions or operations like analyzing the data.

Q5. Explain Primary Key and Foreign Key.

Ans - The primary key is a unique or non-null key that uniquely identifies every record in a table or relation. Each database needs a unique identifier for every row of a table, and the primary key plays a vital role in identifying rows in the table uniquely. The primary key column can't store duplicate values. It is also called a minimal super key; therefore, we cannot specify more than one primary key in any relationship.

The foreign key is a group of one or more columns in a database to uniquely identify another database record in some other table to maintain the referential integrity. It is also known as the referencing key that establishes a relationship between two different tables in a database.

Q6. Write a python code to connect MySQL to python. Explain the cursor() and execute() method.

Ans - The MySQLCursor of mysql-connector-python (and similar libraries) is used to execute statements to communicate with the MySQL database.

exec() function is used for the dynamic execution of Python programs which can either be a string or object code.

Q7. Give the order of execution of SQL clauses in an SQL query.

1. Ans - FROM/JOIN: The FROM and/or JOIN clauses are executed first to determine the data of interest.
2. WHERE: The WHERE clause is executed to filter out records that do not meet the constraints.
3. GROUP BY: The GROUP BY clause is executed to group the data based on the values in one or more columns.