Assignment

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

Answer.

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS).

SQL Databases: SQL database or relational database is a collection of highly structured tables, wherein each row reflects a data entity, and every column defines a specific information field. Relational databases are built using the structured query language (SQL) to create, store, update, and retrieve data.

No SQL Databases: NoSQL databases (aka "not only SQL") are non-tabular databases and store data differently than relational tables. NoSQL databases come in a variety of types based on their data model. The main types are document, key-value, wide-column, and graph.

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

Answer:

Data Definition Language (DDL) is a subset of SQL and a part of DBMS(Database Management System). DDL consist of Commands to commands like CREATE, ALTER, TRUNCATE and DROP. These commands are used to create or modify the tables in SQL.

1.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.

Syntax -

```
CREATE TABLE table_name
(
column_1 datatype,
column_2 datatype,
column_3 datatype,
....
);
```

2.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.

Syntax -

Syntax to add a column to an existing table.

```
ALTER TABLE table_name
ADD column_name datatype;
```

3.TRUNCATE: This command is used to remove all rows from the table, but the structure of the table still exists.

Syntax -

```
TRUNCATE TABLE table_name;
```

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

Syntax - DROP TABLE table_name;

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

Answer: A DML (data manipulation language) refers to a computer programming language that allows you to add (insert), delete (delete), and alter (update) data in a database.

*__INSERT__ - Insert data into a table.

*__UPDATE__ - Update existing data within a table.

*__DELETE__ - Delete records from a database table.

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

Answer: Data Query Language (DQL) - The Data Query Language is the sublanguage responsible for reading, or querying, data from a database.

The SELECT statement is used to select data from a database. The data returned is stored in a result table, called the result-set.

SYNTAX:

```
SELECT column1, column2, ...

FROM table_name;
```

EXAMPLE:

```
SELECT CustomerName, City FROM Customers;
```

Q5. Explain Primary Key and Foreign Key.

Answer: Primary Key: A primary key is the column or columns that contain values that uniquely identify each row in a table. A database table must have a primary key for Optim to insert, update, restore, or delete data from a database table.

Foreign Key: A foreign key (FK) is a column or combination of columns that is used to establish and enforce a link between the data in two tables to control the data that can be stored in the foreign key table.

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

Answer:

```
import mysql.connector

# import mysql.connector

#create user 'user'@'%' identified by 'password'

mydb = mysql.connector.connect(

  host="localhost",

  user="abc",

  password="password"

)

print(mydb)

mycursor = mydb.cursor()

mycursor.execute("SELECT c1,c5 FROM test1.test_table")
```

- **cursor():** A cursor in SQL Server is a database object that allows us to retrieve each row at a time and manipulate its data. A cursor is nothing more than a pointer to a row. It's always used in conjunction with a SELECT statement.
- **execute():**The Execute method executes the query, SQL statement or procedure specified in the CommandText property of the Command object.

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

Answer:

SQL queries adhere to a specific order when evaluating clauses, From the eyes of the user, queries begin from the first clause and end at the last clause. However, queries aren't read from top to bottom when carried out.

The order in which the clauses in queries are executed is as follows:

1. 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.

4. HAVING: The HAVING clause is executed to remove the created grouped records that don't meet the constraints.

5. SELECT: The SELECT clause is executed to derive all desired columns and expressions.

6. ORDER BY: The ORDER BY clause is executed to sort the derived values in ascending or descending order.

7. LIMIT/OFFSET: Finally, the LIMIT and/or OFFSET clauses are executed to keep or skip a specified number of rows.