DATABASE ASSIGNMENT

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

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)](https://www.oracle.com/in/database/what-is-database/#WhatIsDBMS)

**NoSQL databases**

A [NoSQL](https://www.oracle.com/in/database/nosql/), or nonrelational database, allows unstructured and semistructured data to be stored and manipulated (in contrast to a relational database, which defines how all data inserted into the database must be composed). NoSQL databases grew popular as web applications became more common and more complex.

**SQL**

SQL is a programming language used by nearly all [relational databases](https://www.oracle.com/in/database/what-is-database/#relational) to query, manipulate, and define data, and to provide access control.

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

The DDL Commands in Structured Query Language are used to create and modify the schema of the database and its objects. The syntax of DDL commands is predefined for describing the data.

CREATE: CREATE is a DDL command used to create databases, tables

**CREATE** **TABLE** Student

(

Roll\_No. **Int** ,

First\_Name **Varchar** (20) ,

Last\_Name **Varchar** (20) ,

Age **Int** ,

Marks **Int**

) ;

DROP: DROP is a DDL command used to delete/remove the database objects from the SQL database

**DROP** **TABLE** Student;

ALTER: ALTER is a DDL command which changes or modifies the existing structure of the database, and it also changes the schema of database objects.

**ALTER** **TABLE** Student **ADD** Father's\_Name **Varchar**(60);

TRUNCATE: TRUNCATE is another DDL command which deletes or removes all the records from the table.

**TRUNCATE** **TABLE** Student;

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

DML is an abbreviation of **Data Manipulation Language**.The DML commands in Structured Query Language change the data present in the SQL database

INSERT is another most important data manipulation command in Structured Query Language, which allows users to insert data in database tables.

**INSERT** **INTO** Student (Stu\_id, Stu\_Name, Stu\_Marks, Stu\_Age) **VALUES** (104, Anmol, 89, 19);

UPDATE is another most important data manipulation command in Structured Query Language, which allows users to update or modify the existing data in database tables.

**UPDATE** Student **SET** Stu\_Marks = 80, Stu\_Age = 21 **WHERE** Stu\_Id = 103 AND Stu\_Id = 202;

DELETE is a DML command which allows SQL users to remove single or multiple existing records from the database tables.

**DELETE** **FROM** Student **WHERE** Stu\_Marks > 70 ;

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

The full form of DQL is **Data Query Language**.

The SELECT statement is used to select data from a database.

**SELECT** \* **FROM** Student;

5. Explain Primary Key and Foreign Key.

The PRIMARY KEY constraint uniquely identifies each record in a table.Primary keys must contain UNIQUE values, and cannot contain NULL values.

The FOREIGN KEY constraint is used to prevent actions that would destroy links between tables.

A FOREIGN KEY is a field (or collection of fields) in one table, that refers to the [PRIMARY KEY](https://www.w3schools.com/sql/sql_primarykey.asp) in another table.

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

import mysql.connector

mydb = mysql.connector.connect(

host="localhost",

user="abc",

password="password"

)

print(mydb)

mycursor = mydb.cursor()

mycursor.execute("SHOW DATABASES")

for x in mycursor:

print(x)

**execute()**

This method accepts a MySQL query as a parameter and executes the given query.

**Cursor()**

It is an object that is used to make the connection for executing SQL queries.

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

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.