Assignment 15: 16 Feb 2023

Q1. What is a database? Differentiate between SQL and NoSQL databases.
Q2. What is DDL? Explain why CREATE, DROP, ALTER, and TRUNCATE are used with an example.
Q3. What is DML? Explain INSERT, UPDATE, and DELETE with an example.
Q4. What is DQL? Explain SELECT with an example.
Q5. Explain Primary Key and Foreign Key.
Q6. Write a python code to connect MySQL to python. Explain the cursor() and execute() method.
Q7. Give the order of execution of SQL clauses in an SQL query

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

Ans: A database is an organized collection of structured information, or data, typically stored electronically in a computer system.

SQL	NOSQL
SQL databases are primarily called RDBMS or Relational Databases.	NoSQL databases are primarily called as Non-relational or distributed database.
SQL databases are table based databases.	NoSQL databases can be document based, key-value pairs, graph databases.
SQL databases have fixed databases.	NoSQL databases can be document based, key-value pairs, graph databases.
Vertically Scalable (scale-up with a larger server)	Horizontal (scale-out across commodity servers)
ACID (atomicity, consistency, isolation, durability) Transactions Supported	Follows CAP(consistency, availability, partition tolerance)
Joins required	Joins not required
These databases are best suited for complex queries	These databases are not so good for complex queries
A mix of open-source like Postgres & MySQL, and commercial like Oracle Database.	Open-source

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

Ans: A data definition language (DDL) is a computer language used to create and modify the structure of database objects in a database.
CREATE:- used to create a table, view, stored procedure, function etc. like below :

```
Create table tblEmployee(
                        EmpId int,
                        EmpName varchar(100)
);
```

DROP:- used to drop a sql object like below:

```
Drop table tblEmployee;
```

ALTER:- used to modify or alter the definition of a sql object like below:

```
Alter table tblEmployee(
                        EmpId int,
                        EmpName varchar(100),
                        EmpSalary int
);
```

TRUNCATE:- This command is used to delete all the rows from the table and free the space containing the table.

```
TRUNCATE TABLE tblEmployee;
```

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

Ans: DML is a Data Manipulation Language which is used to manipulate data itself.
INSERT:- Insert command is used to insert data into a table.
The syntax for insert command is as follows −
Syntax
Insert into <table_name> (column list) values (column values);
For example, if we want to insert multiple rows to the Employee table, we can use the following command −
Example
Insert into Employee(Emp_id, Emp_name) values (001, “ bhanu”);
Insert into Employee(Emp_id, Emp_name) values (002, “ hari”);
Insert into Employee(Emp_id, Emp_name) values (003, “ bob”);
DELETE:- Delete command is used to delete records from a database table.
The syntax for the delete command is as follows -
Syntax
Delete from <table_name>WHERE condition;
For example, if we want to delete an entire row of employee id 002, we can use the following command −
Example
DELETE from Employee WHERE Emp_id=002;
UPDATE:- Update command is used to update existing data within a table.
The syntax for the update command is as follows -
Syntax
UPDATE <table_name> SET column_number =value_number WHERE condition;
For example, if we want to update the name of the employee having the employee id 001, we can use the command given below −
Example
UPDATE Employee SET Emp_name= Ram WHERE Emp_id= 001;

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

Ans: DQL(Data Query Language) statements are used for performing queries on the data within schema objects.
SELECT:- The SELECT statement is used to select data from a database.
Syntax
SELECT column1, column2, ...
FROM table_name;
Eg-
SELECT CustomerName, City FROM Customers;

Q5. Explain Primary Key and Foreign Key.

Primary Key	Foreign Key
Primary key uniquely identify a record in the table.	Foreign key is a field in the table that is primary key in another table.
Primary Key can't accept null values.	Foreign key can accept multiple null value.
By default, Primary key is clustered index and data in the database table is physically organized in the sequence of clustered index.	Foreign key do not automatically create an index, clustered or non-clustered. You can manually create an index on foreign key.
We can have only one Primary key in a table.	We can have more than one foreign key in a table.

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

Ans:

```
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)
```

cursor():- A cursor is an object which helps to execute the query and fetch the records from the database.

Syntax:

cursor_object=connection_object.execute("sql query");

execute():- The execute () method helps us to execute the query and return records according to the query.

Syntax

execute (query, args = None)

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

Ans: Order of execution of SQL clauses

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.