**PW SKILLS**

**MY SQL ASSIGNMENT**

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

- A database is a structured collection of data organized for efficient retrieval, storage, and manipulation.

- \*\*SQL (Structured Query Language) databases\*\*:

- SQL databases are relational databases that store data in tables with predefined schemas.

- Examples include MySQL, PostgreSQL, SQLite, and Oracle.

- SQL databases use structured query language (SQL) for querying and managing data.

- \*\*NoSQL databases\*\*:

- NoSQL databases are non-relational databases that store data in flexible, schema-less formats like JSON or BSON.

- Examples include MongoDB, Couchbase, Cassandra, and Redis.

- NoSQL databases offer flexibility, scalability, and better performance for certain use cases compared to SQL databases.

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

- DDL (Data Definition Language) is a subset of SQL used to define, modify, and delete database structures.

- \*\*CREATE\*\*: Used to create new database objects like tables, indexes, or views.

- \*\*DROP\*\*: Used to delete existing database objects.

- \*\*ALTER\*\*: Used to modify the structure of existing database objects.

- \*\*TRUNCATE\*\*: Used to remove all records from a table, but the table structure remains intact.

- Example:

```sql

CREATE TABLE students (

id INT PRIMARY KEY,

name VARCHAR(50),

age INT

);

ALTER TABLE students ADD COLUMN city VARCHAR(50);

DROP TABLE students;

TRUNCATE TABLE students;

```

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

- DML (Data Manipulation Language) is a subset of SQL used to manipulate data within database objects.

- \*\*INSERT\*\*: Used to add new records into a table.

- \*\*UPDATE\*\*: Used to modify existing records in a table.

- \*\*DELETE\*\*: Used to remove records from a table.

- Example:

```sql

INSERT INTO students (id, name, age) VALUES (1, 'John', 25);

UPDATE students SET age = 26 WHERE id = 1;

DELETE FROM students WHERE id = 1;

```

Q4. \*\*What is DQL? Explain SELECT with an example\*\*:

- DQL (Data Query Language) is a subset of SQL used to retrieve data from a database.

- \*\*SELECT\*\*: Used to fetch data from one or more tables based on specified criteria.

- Example:

```sql

SELECT \* FROM students;

SELECT name, age FROM students WHERE age > 18;

```

Q5. \*\*Explain Primary Key and Foreign Key\*\*:

- \*\*Primary Key\*\*: A primary key is a column or a set of columns that uniquely identifies each row in a table. It enforces entity integrity and ensures that each row in a table is uniquely identifiable.

- \*\*Foreign Key\*\*: A foreign key is a column or a set of columns in a table that establishes a relationship with the primary key of another table. It enforces referential integrity and maintains consistency between related tables.

Q6. \*\*Python code to connect MySQL to Python. Explain the cursor() and execute() method\*\*:

```python

import mysql.connector

# Connect to MySQL database

connection = mysql.connector.connect(

host="localhost",

user="username",

password="password",

database="database\_name"

)

# Create cursor object

cursor = connection.cursor()

# Execute SQL query

cursor.execute("SELECT \* FROM students")

# Fetch results

results = cursor.fetchall()

# Close cursor and connection

cursor.close()

connection.close()

```

- \*\*cursor() method\*\*: Creates a cursor object that allows executing SQL queries and fetching results from the database.

- \*\*execute() method\*\*: Executes an SQL query specified as its parameter.

Q7. \*\*Order of execution of SQL clauses in an SQL query\*\*:

- \*\*FROM\*\*: Specifies the tables from which to retrieve data.

- \*\*WHERE\*\*: Filters rows based on specified conditions.

- \*\*GROUP BY\*\*: Groups rows that have the same values into summary rows.

- \*\*HAVING\*\*: Filters groups based on specified conditions.

- \*\*SELECT\*\*: Specifies the columns to be retrieved.

- \*\*ORDER BY\*\*: Sorts the result set based on specified columns.

- \*\*LIMIT\*\*: Limits the number of rows returned by the query.