Worksheet 1.1

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Branch: CSE - AIML **Section/Group: 21AML - 9 - A**
Semester: 3rd
Subject Name: DataBase Management System **Subject Code: 21CSH - 243**

Aim/Overview of the practical:

To Understand the basic of DBMS, SQL.

What is DBMS?

A Database Management System (DBMS) is software for creating, manipulating, and managing databases.

What is SQL?

Structured Query Language (SQL) is a standard language for accessing and manipulating Databases.

What is RDBMS?

- RDMS stands for Relational Database Management System.
- Every table is broken up into smaller entities called fields. The fields in the Customers table consist of CustomerID, CustomerName, ContactName, Address, City, PostalCode, and Country. A field is a column in a table that is designed to maintain specific information about every record in the table.

What are SQL Commands?

SQL commands are instructions. It is used to communicate with the database. It is also used to perform specific tasks, functions, and queries of data

DDL (Data Definition Language):

- DDL changes the structure of the table. Like creating a table, deleting a table, altering a table, etc.
- All the commands of DDL are auto-committed which means it permanently saves all the changes in the database
- Here are some commands that come under the DDL:
    - CREATE
    - ALTER
    - DROP
    - ALTER

1. **CREATE: It is used to create a new table in the database.**

   Syntax: CREATE TABLE TABLE_NAME (COLUMN_NAME DATATYPES[,....]);

```
mysql> CREATE TABLE employee(
    -> Name VARCHAR(55),
    -> Email VARCHAR(150),
    -> DOB DATE
    -> );
Query OK, 0 rows affected (0.03 sec)
```

2. **ALTER:** It is used to alter the structure of the database. This change could either be to modify the characteristics of an existing attribute or add a new one.

   Syntax: ALTER TABLE table_name ADD column_name COLUMN-definition;

```
mysql> ALTER TABLE employee ADD(ADDRESS VARCHAR(20));
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

3. **TRUNCATE:** It is used to delete all the rows from the table and free the space containing the table.

   Syntax: TRUNCATE TABLE table_name;

```
mysql> SELECT * FROM employee;
+------+----------------------+------------+--------------+
| Name | Email                | DOB        | ADDRESS      |
+------+----------------------+------------+--------------+
| Garv | garvkhurana@gmail.com | 2003-06-18 | Ambala Cantt |
+------+----------------------+------------+--------------+
1 row in set (0.00 sec)

mysql> TRUNCATE TABLE employee;
Query OK, 0 rows affected (0.03 sec)

mysql> SELECT * FROM employee;
Empty set (0.00 sec)
```

4. **DROP:** It is used to delete both Structure and data stored in a table.

   Syntax: DROP TABLE EMPLOYEE;

```
    -> ^C
mysql> DROP TABLE employee;
Query OK, 0 rows affected (0.01 sec)
```

DML (Data Manipulation Language):

- DML commands are used to modify the database. It is responsible for all forms of changes in a database.
- The command of DML is not auto-committed which means it can't permanently save all the changes in the database. They can be rollback.

1. **INSERT:** It is used to insert data into a row of the SQL database.
   Syntax:
   INSERT INTO TABLE_NAME (col1, col2, col3,.... col N)

   VALUES (value1, value2, value3, ... valueN);

   Or

   INSERT INTO TABLE_NAME VALUES (value1, value2, value3, ... valueN);

```
mysql> INSERT INTO employee
    -> VALUES(
    -> 'Naruto Uzumaki',
    -> 'orangehokage@konohamail.com'
    -> , '1998-11-26',
    -> 'Village hidden in the leaf'
    -> );
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM employee;
+---------------+---------------------------+------------+---------------------------+
| Name          | Email                     | DOB        | Address                   |
+---------------+---------------------------+------------+---------------------------+
| Garv Khurana  | garvkhurana@gmail.com     | 2003-06-18 | Ambala Cantt              |
| Naruto Uzumaki | orangehokage@konohamail.com | 1998-11-26 | Village hidden in the leaf |
+---------------+---------------------------+------------+---------------------------+
```

2. **UPDATE:** This command is used to update the data of a column in the table.
   SYNTAX: UPDATE table_name SET [column_name1= value1,...column_nameN = valueN] [WHERE CONDITION]

```
mysql> UPDATE employee
    -> SET Email = '7thHokage@konohamail.com'
    -> WHERE Name = 'Naruto Uzumaki';
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM employee;
+---------------+---------------------------+------------+---------------------------+
| Name          | Email                     | DOB        | Address                   |
+---------------+---------------------------+------------+---------------------------+
| Garv Khurana  | garvkhurana@gmail.com     | 2003-06-18 | Ambala Cantt              |
| Naruto Uzumaki | 7thHokage@konohamail.com | 1998-11-26 | Village hidden in the leaf |
+---------------+---------------------------+------------+---------------------------+
2 rows in set (0.00 sec)
```

3. **DELETE:** It is used to delete a row from a table.
   Syntax: DELETE FROM table_name [WHERE condition];

```
mysql> DELETE FROM employee
    -> WHERE Name = 'Naruto Uzumaki';
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM employee;
+--------------+----------------------+------------+--------------+
| Name         | Email                | DOB        | Address      |
+--------------+----------------------+------------+--------------+
| Garv Khurana | garvkhurana@gmail.com | 2003-06-18 | Ambala Cantt |
+--------------+----------------------+------------+--------------+
```

TCL (Transaction Control Language):

- TCL commands can only be used with DML Commands.
- These operations are automatically committed in the database that's why they cannot be used while creating tables or dropping them.

1. **COMMIT:** It is used to save all the transactions to the database.
   Syntax: COMMIT;

2. **ROLLBACK:** rollback is used to undo transactions in a database.
   Syntax: ROLLBACK;

3. **SAVEPOINT:** It is used to roll the transactions back to a certain point without rolling back the entire transaction.
   Syntax: SAVEPOINT SAVEPOINT_NAME;

Learning Outcomes:

1. How to use SQL queries to create database tables to store data.
2. How to manipulate SQL databases.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			