# DBMS LAB WORK

## (CO-202)

### EXPERIMENT - 3



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# SQL Commands

1. 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.
2. SQL can perform various tasks like create a table, add data to tables, drop the table, modify the table, set permission for users.

## 1. Data Definition Language (DDL)

● 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 DDL:

- CREATE
- ALTER
- DROP
- TRUNCATE

## 2. Data Manipulation Language

● DML commands are used to modify the database. It is responsible for all forms of changes in the 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 rolled back.Here are some commands that come under DML:

● INSERT

● UPDATE

● DELETE

# SQL COMMANDS

● **CREATE DATABASE**

```
mysql> CREATE DATABASE COMPANY;
Query OK, 1 row affected (0.01 sec)
```

● **USE DATABASE**

```
mysql> USE COMPANY;
Database changed
```

## ● CREATE TABLE

```
mysql> CREATE TABLE EMP
    -> (empno int(5) PRIMARY KEY, ename varchar(30) not null, job varchar(20),hiredate date, sal decimal,comm decimal, deptno integer);
Query OK, 0 rows affected, 1 warning (0.04 sec)
```

## ● INSERT VALUES INTO TABLE

```
mysql> INSERT INTO EMP VALUES(1111,"SMITH","CLERK",18/12/1990,8000.0,NULL,20);
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO EMP VALUES(1112,"ANYA","SALESMAN",20/02/1991,16000.0,300.0,30);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO EMP VALUES(1113,"SETH","SALESMAN",22/02/1991,12500.0,500.0,30);
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO EMP VALUES(1114,"MAHADEVAN","MANAGER",02/04/1991,12500.0,NULL,20);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO EMP VALUES(1115,"SCOTT","ANALYST",09/12/1992,30000.0,NULL,10);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM EMP;
+--------+-----------+----------+------------+-------+------+--------+
| empno  | ename     | job      | hiredate   | sal   | comm | deptno |
+--------+-----------+----------+------------+-------+------+--------+
|  1111  | SMITH     | CLERK    | 0000-00-00 |  8000 | NULL |    20  |
|  1112  | ANYA      | SALESMAN | 0000-00-00 | 16000 |  300 |    30  |
|  1113  | SETH      | SALESMAN | 0000-00-00 | 12500 |  500 |    30  |
|  1114  | MAHADEVAN | MANAGER  | 0000-00-00 | 12500 | NULL |    20  |
|  1115  | SCOTT     | ANALYST  | 0000-00-00 | 30000 | NULL |    10  |
+--------+-----------+----------+------------+-------+------+--------+
5 rows in set (0.00 sec)
```

## ● SELECT STATEMENT

### SELECT ALL DATA

```
mysql> SELECT * FROM EMP;
+--------+-----------+----------+------------+-------+------+--------+
| empno  | ename     | job      | hiredate   | sal   | comm | deptno |
+--------+-----------+----------+------------+-------+------+--------+
|  1111  | SMITH     | CLERK    | 0000-00-00 |  8000 | NULL |    20  |
|  1112  | ANYA      | SALESMAN | 0000-00-00 | 16000 |  300 |    30  |
|  1113  | SETH      | SALESMAN | 0000-00-00 | 12500 |  500 |    30  |
|  1114  | MAHADEVAN | MANAGER  | 0000-00-00 | 12500 | NULL |    20  |
|  1115  | SCOTT     | ANALYST  | 0000-00-00 | 30000 | NULL |    10  |
+--------+-----------+----------+------------+-------+------+--------+
5 rows in set (0.00 sec)
```

## SELECTING PARTICULAR ROWS

```
mysql> SELECT * FROM EMP WHERE JOB="SALESMAN";
+--------+-------+----------+------------+-------+------+--------+
| empno  | ename | job      | hiredate   | sal   | comm | deptno |
+--------+-------+----------+------------+-------+------+--------+
|   1112 | ANYA  | SALESMAN | 0000-00-00 | 16000 |  300 |     30 |
|   1113 | SETH  | SALESMAN | 0000-00-00 | 12500 |  500 |     30 |
+--------+-------+----------+------------+-------+------+--------+
2 rows in set (0.00 sec)

mysql> SELECT ename FROM EMP WHERE SAL = 12500;
+-----------+
| ename     |
+-----------+
| SETH      |
| MAHADEVAN |
+-----------+
2 rows in set (0.00 sec)
```

## SELECTING PARTICULAR COLUMNS

```
mysql> SELECT ename FROM EMP WHERE SAL = 12500;
+-----------+
| ename     |
+-----------+
| SETH      |
| MAHADEVAN |
+-----------+
2 rows in set (0.00 sec)

mysql> SELECT JOB FROM EMP WHERE COMM IS NOT NULL;
+----------+
| JOB      |
+----------+
| SALESMAN |
| SALESMAN |
+----------+
2 rows in set (0.00 sec)
```

## SEARCHING FOR NULL

```
mysql> SELECT JOB FROM EMP WHERE COMM IS NOT NULL;
+----------+
| JOB      |
+----------+
| SALESMAN |
| SALESMAN |
+----------+
2 rows in set (0.00 sec)
```

## CONDITION BASED ON PATTERN MATCHES

```
mysql> SELECT EMPNO,JOB FROM EMP WHERE ename LIKE 'S%';
+-------+----------+
| EMPNO | JOB      |
+-------+----------+
|  1111 | CLERK    |
|  1113 | SALESMAN |
|  1115 | ANALYST  |
+-------+----------+
3 rows in set (0.00 sec)
```

## SORTING RESULTS — ORDER BY

```
mysql> SELECT * FROM EMP ORDER BY ename;
+--------+-----------+----------+------------+-------+------+--------+
| empno  | ename     | job      | hiredate   | sal   | comm | deptno |
+--------+-----------+----------+------------+-------+------+--------+
|   1112 | ANYA      | SALESMAN | 0000-00-00 | 16000 |  300 |     30 |
|   1114 | MAHADEVAN | MANAGER  | 0000-00-00 | 12500 | NULL |     20 |
|   1115 | SCOTT     | ANALYST  | 0000-00-00 | 30000 | NULL |     10 |
|   1113 | SETH      | SALESMAN | 0000-00-00 | 12500 |  500 |     30 |
|   1111 | SMITH     | CLERK    | 0000-00-00 |  8000 | NULL |     20 |
+--------+-----------+----------+------------+-------+------+--------+
5 rows in set (0.00 sec)
```

## ● UPDATE STATEMENT

```
mysql> UPDATE EMP SET hiredate = 08/02/1992 WHERE sal = 12500;
Query OK, 0 rows affected (0.00 sec)
Rows matched: 2  Changed: 0  Warnings: 0

mysql> SELECT * FROM EMP;
+--------+-----------+----------+------------+-------+------+--------+
| empno  | ename     | job      | hiredate   | sal   | comm | deptno |
+--------+-----------+----------+------------+-------+------+--------+
|   1111 | SMITH     | CLERK    | 0000-00-00 |  8000 | NULL |     20 |
|   1112 | ANYA      | SALESMAN | 0000-00-00 | 16000 |  300 |     30 |
|   1113 | SETH      | SALESMAN | 0000-00-00 | 12500 |  500 |     30 |
|   1114 | MAHADEVAN | MANAGER  | 0000-00-00 | 12500 | NULL |     20 |
|   1115 | SCOTT     | ANALYST  | 0000-00-00 | 30000 | NULL |     10 |
+--------+-----------+----------+------------+-------+------+--------+
5 rows in set (0.00 sec)

mysql> UPDATE EMP SET sal = sal * 0.2 WHERE deptno = 30;
Query OK, 2 rows affected (0.01 sec)
Rows matched: 2  Changed: 2  Warnings: 0

mysql> SELECT * FROM EMP;
+--------+-----------+----------+------------+-------+------+--------+
| empno  | ename     | job      | hiredate   | sal   | comm | deptno |
+--------+-----------+----------+------------+-------+------+--------+
|   1111 | SMITH     | CLERK    | 0000-00-00 |  8000 | NULL |     20 |
|   1112 | ANYA      | SALESMAN | 0000-00-00 |  3200 |  300 |     30 |
|   1113 | SETH      | SALESMAN | 0000-00-00 |  2500 |  500 |     30 |
|   1114 | MAHADEVAN | MANAGER  | 0000-00-00 | 12500 | NULL |     20 |
|   1115 | SCOTT     | ANALYST  | 0000-00-00 | 30000 | NULL |     10 |
+--------+-----------+----------+------------+-------+------+--------+
5 rows in set (0.00 sec)
```

## ● ALTERING TABLE

### ADD STATEMENT

```
mysql> ALTER TABLE EMP ADD(telephoneno integer);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC EMP;
+-------------+---------------+------+-----+---------+-------+
| Field       | Type          | Null | Key | Default | Extra |
+-------------+---------------+------+-----+---------+-------+
| empno       | int           | NO   | PRI | NULL    |       |
| ename       | varchar(30)   | NO   |     | NULL    |       |
| job         | varchar(20)   | YES  |     | NULL    |       |
| hiredate    | date          | YES  |     | NULL    |       |
| sal         | decimal(10,0) | YES  |     | NULL    |       |
| comm        | decimal(10,0) | YES  |     | NULL    |       |
| deptno      | int           | YES  |     | NULL    |       |
| telephoneno | int           | YES  |     | NULL    |       |
+-------------+---------------+------+-----+---------+-------+
8 rows in set (0.01 sec)
```

### CHANGE STATEMENT

```
mysql> ALTER TABLE EMP CHANGE job job_title VARCHAR(20);
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM EMP;
+-------+----------+-----------+------------+-------+------+--------+-------------+
| empno | ename    | job_title | hiredate   | sal   | comm | deptno | telephoneno |
+-------+----------+-----------+------------+-------+------+--------+-------------+
|  1111 | SMITH    | CLERK     | 0000-00-00 |  8000 | NULL |     20 |        NULL |
|  1112 | ANYA     | SALESMAN  | 0000-00-00 |  3200 |  300 |     30 |        NULL |
|  1113 | SETH     | SALESMAN  | 0000-00-00 |  2500 |  500 |     30 |        NULL |
|  1114 | MAHADEVAN| MANAGER   | 0000-00-00 | 12500 | NULL |     20 |        NULL |
|  1115 | SCOTT    | ANALYST   | 0000-00-00 | 30000 | NULL |     10 |        NULL |
+-------+----------+-----------+------------+-------+------+--------+-------------+
5 rows in set (0.00 sec)
```

## DROP STATEMENT

```
mysql> ALTER TABLE EMP DROP COLUMN hiredate;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM EMP;
+-------+-----------+-----------+-------+------+--------+-------------+
| empno | ename     | job_title | sal   | comm | deptno | telephoneno |
+-------+-----------+-----------+-------+------+--------+-------------+
|  1111 | SMITH     | CLERK     |  8000 | NULL |     20 |        NULL |
|  1112 | ANYA      | SALESMAN  |  3200 |  300 |     30 |        NULL |
|  1113 | SETH      | SALESMAN  |  2500 |  500 |     30 |        NULL |
|  1114 | MAHADEVAN | MANAGER   | 12500 | NULL |     20 |        NULL |
|  1115 | SCOTT     | ANALYST   | 30000 | NULL |     10 |        NULL |
+-------+-----------+-----------+-------+------+--------+-------------+
5 rows in set (0.00 sec)
```

## ● DELETING DATA FROM TABLES

```
mysql> DELETE FROM EMP WHERE deptno = 20;
Query OK, 2 rows affected (0.01 sec)

mysql> SELECT * FROM EMP;
+-------+-------+-----------+-------+------+--------+-------------+
| empno | ename | job_title | sal   | comm | deptno | telephoneno |
+-------+-------+-----------+-------+------+--------+-------------+
|  1112 | ANYA  | SALESMAN  |  3200 |  300 |     30 |        NULL |
|  1113 | SETH  | SALESMAN  |  2500 |  500 |     30 |        NULL |
|  1115 | SCOTT | ANALYST   | 30000 | NULL |     10 |        NULL |
+-------+-------+-----------+-------+------+--------+-------------+
3 rows in set (0.00 sec)

mysql> DELETE FROM EMP WHERE sal > 10000;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM EMP;
+-------+-------+-----------+-------+------+--------+-------------+
| empno | ename | job_title | sal   | comm | deptno | telephoneno |
+-------+-------+-----------+-------+------+--------+-------------+
|  1112 | ANYA  | SALESMAN  |  3200 |  300 |     30 |        NULL |
|  1113 | SETH  | SALESMAN  |  2500 |  500 |     30 |        NULL |
+-------+-------+-----------+-------+------+--------+-------------+
2 rows in set (0.00 sec)
```

## ● DROPPING TABLES

```
mysql> DROP TABLE EMP;
Query OK, 0 rows affected (0.04 sec)
```

## ● STRING FUNCTIONS

### CHAR( )

```
mysql> SELECT CHAR(70,65,67,69);
+-------------------------------+
| CHAR(70,65,67,69)             |
+-------------------------------+
| 0x46414345                    |
+-------------------------------+
1 row in set (0.00 sec)
```

### SUBSTRING( )

```
mysql> SELECT SUBSTR('ABCDEFG',3,4);
+-----------------------+
| SUBSTR('ABCDEFG',3,4) |
+-----------------------+
| CDEF                  |
+-----------------------+
1 row in set (0.00 sec)
```

### UPPERCASE

```
mysql> SELECT UPPER('Large')"Uppercase";
+-----------+
| Uppercase |
+-----------+
| LARGE     |
+-----------+
1 row in set (0.00 sec)
```

## LOWERCASE

```
mysql> SELECT LCASE('SMALL')"Lowercase";
+-----------+
| Lowercase |
+-----------+
| small     |
+-----------+
1 row in set (0.00 sec)
```

## TRIM( )

```
mysql> SELECT TRIM('      BAR ONE        ');
+-------------------------------+
| TRIM('      BAR ONE        ') |
+-------------------------------+
| BAR ONE                       |
+-------------------------------+
1 row in set (0.00 sec)
```

## INSTR( )

```
mysql> SELECT INSTR('CORPORATE FLOOR','OR') AS Instring;
+----------+
| Instring |
+----------+
|        2 |
+----------+
1 row in set (0.00 sec)
```

## LENGTH( )

```
mysql> SELECT LENGTH('CANDIDE') "Length in characters";
+---------------------+
| Length in characters |
+---------------------+
|                   7 |
+---------------------+
1 row in set (0.00 sec)
```

## LEFT( )

```
mysql> SELECT LEFT('USS/23/67/09',3);
+------------------------+
| LEFT('USS/23/67/09',3) |
+------------------------+
| USS                    |
+------------------------+
1 row in set (0.00 sec)
```

## RIGHT( )

```
mysql> SELECT RIGHT('USS/23/67/09',2);
+-------------------------+
| RIGHT('USS/23/67/09',2) |
+-------------------------+
| 09                      |
+-------------------------+
1 row in set (0.00 sec)
```

## ● NUMERIC FUNCTIONS

### MOD( )

```
mysql> SELECT MOD(11,4) "Modulus";
+---------+
| Modulus |
+---------+
|       3 |
+---------+
1 row in set (0.00 sec)
```

### POWER( )

```
mysql> SELECT POWER(3,2) "Raised";
+--------+
| Raised |
+--------+
|      9 |
+--------+
1 row in set (0.00 sec)
```

### ROUND( )

```
mysql> SELECT ROUND(15.193,1) "Round";
+-------+
| Round |
+-------+
|  15.2 |
+-------+
1 row in set (0.00 sec)
```

**SIGN( )**

```
mysql> SELECT SIGN(-15) "Sign";
+------+
| Sign |
+------+
|   -1 |
+------+
1 row in set (0.00 sec)
```

**SQRT( )**

```
mysql> SELECT SQRT(24) "Square Root";
+-------------------+
| Square Root       |
+-------------------+
| 4.898979485566356 |
+-------------------+
1 row in set (0.00 sec)
```

**TRUNCATE( )**

```
mysql> SELECT TRUNCATE(15.79,1)"Truncate";
+----------+
| Truncate |
+----------+
|     15.7 |
+----------+
1 row in set (0.00 sec)
```

## ● DATE AND TIME FUNCTIONS

```
mysql> SELECT CURDATE();
+------------+
| CURDATE()  |
+------------+
| 2022-02-07 |
+------------+
1 row in set (0.00 sec)

mysql> SELECT NOW();
+---------------------+
| NOW()               |
+---------------------+
| 2022-02-07 15:22:03 |
+---------------------+
1 row in set (0.00 sec)
```