TCL (Transaction Control Language)

****

In SQL, TCL stands for Transaction control language.

A single unit of work in a database is formed after the consecutive execution of commands is known as a transaction.

There are certain commands present in SQL known as TCL commands that help the user manage the transactions that take place in a database.

COMMIT. ROLLBACK and SAVEPOINT are the most commonly used TCL commands in SQL.

1.COMMIT Command:

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 42

Server version: 8.0.30 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dbsampl;

Query OK, 1 row affected (0.01 sec)

```
mysql> use dbsampl

Database changed

mysql> create table Employees(Emp_Id int, Emp_Name varchar(20), Emp_Salary int, Emp_Age
int, Emp_MobileNumber varchar(20));

Query OK, 0 rows affected (0.03 sec)


mysql> START TRANSACTION;

Query OK, 0 rows affected (0.00 sec)


mysql> insert into Employees values(103, "Keerthana", 1000, 25, "9876543210"),

    ->    (104, "Gayathri", 6000, 43, "9087654321"),

    ->    (105, "Aswitha", 5000, 36, "8765432109"),

    -> (106, "Vidhya", 4000, 21, "9854762213"),

    ->          (107, "Kalaivani", 8000, 47, "7890654321");

Query OK, 5 rows affected (0.00 sec)

Records: 5    Duplicates: 0    Warnings: 0


mysql>    SELECT *FROM Employees;

+--------+-----------+------------+---------+------------------+

| Emp_Id | Emp_Name    | Emp_Salary | Emp_Age | Emp_MobileNumber |

+--------+-----------+------------+---------+------------------+

|      103 | Keerthana |           1000 |          25 | 9876543210           |

|      104 | Gayathri    |           6000 |          43 | 9087654321           |

|      105 | Aswitha      |           5000 |          36 | 8765432109           |

|      106 | Vidhya       |           4000 |          21 | 9854762213           |

|      107 | Kalaivani |           8000 |          47 | 7890654321           |
```

```
+--------+-----------+------------+---------+------------------+
```

5 rows in set (0.00 sec)

```
mysql> COMMIT;
```

Query OK, 0 rows affected (0.01 sec)

```
mysql> SET autocommit = 0;
```

Query OK, 0 rows affected (0.00 sec)

```
mysql>
```

Rollback Command :

Enter password: ****

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbsam;

Query OK, 1 row affected (0.01 sec)


mysql> use dbsam

Database changed

mysql> create table Employees(Emp_Id int, Emp_Name varchar(20), Emp_Salary int, Emp_Age
int, Emp_MobileNumber varchar(20));

Query OK, 0 rows affected (0.05 sec)


mysql> insert into Employees values(103, "Keerthana", 1000, 25, "9876543210"),
    -> (104, "Gayathri", 6000, 43, "9087654321"),
    -> (105, "Aswitha", 5000, 36, "8765432109"),
    -> (106, "Vidhya", 4000, 21, "9854762213"),
    -> (107, "Kalaivani", 8000, 47, "7890654321");

Query OK, 5 rows affected (0.01 sec)

Records: 5  Duplicates: 0  Warnings: 0


mysql> select*from Employees;

+--------+-----------+------------+---------+------------------+

| Emp_Id | Emp_Name  | Emp_Salary | Emp_Age | Emp_MobileNumber |

+--------+-----------+------------+---------+------------------+

|    103 | Keerthana |       1000 |      25 | 9876543210       |

|    104 | Gayathri  |       6000 |      43 | 9087654321       |

|    105 | Aswitha   |       5000 |      36 | 8765432109       |

|    106 | Vidhya    |       4000 |      21 | 9854762213       |

|    107 | Kalaivani |       8000 |      47 | 7890654321       |
```

```
+--------+-----------+------------+---------+-----------------+
```

5 rows in set (0.00 sec)

```
mysql> START TRANSACTION;
```

Query OK, 0 rows affected (0.00 sec)

```
mysql>    SAVEPOINT Insertion;
```

Query OK, 0 rows affected (0.00 sec)

```
mysql> UPDATE Employees
    -> SET Emp_Salary = 3000
    -> where Emp_Id = 103;
```

Query OK, 1 row affected (0.00 sec)

Rows matched: 1 Changed: 1 Warnings: 0

```
mysql> select*from Employees;
+--------+-----------+------------+---------+-----------------+
| Emp_Id | Emp_Name  | Emp_Salary | Emp_Age | Emp_MobileNumber |
+--------+-----------+------------+---------+-----------------+
|    103 | Keerthana |       3000 |      25 | 9876543210      |
|    104 | Gayathri  |       6000 |      43 | 9087654321      |
|    105 | Aswitha   |       5000 |      36 | 8765432109      |
|    106 | Vidhya    |       4000 |      21 | 9854762213      |
|    107 | Kalaivani |       8000 |      47 | 7890654321      |
+--------+-----------+------------+---------+-----------------+
```

5 rows in set (0.00 sec)

mysql> SAVEPOINT Updation;

Query OK, 0 rows affected (0.00 sec)

mysql> ROLLBACK TO Insertion;

Query OK, 0 rows affected (0.01 sec)

mysql> SELECT *FROM Employees;

```
+--------+-----------+------------+---------+-----------------+
| Emp_Id | Emp_Name    | Emp_Salary | Emp_Age | Emp_MobileNumber |
+--------+-----------+------------+---------+-----------------+
|      103 | Keerthana |          1000 |         25 | 9876543210          |
|      104 | Gayathri    |          6000 |         43 | 9087654321          |
|      105 | Aswitha     |          5000 |         36 | 8765432109          |
|      106 | Vidhya      |          4000 |         21 | 9854762213          |
|      107 | Kalaivani |          8000 |         47 | 7890654321          |
+--------+-----------+------------+---------+-----------------+
```

5 rows in set (0.00 sec)

mysql>

String Functions

****

SQL String functions are the predefined functions that allow the database users for string manipulation. These functions only accept, process, and give results of the string data type.

Following are the most important string functions in Structured Query Language:

ASCII()

CHAR_LENGTH()

CHARACTER_LENGTH()

CONCAT()

CONCAT_WS()

FIND_IN_SET()

FORMAT()

INSERT()

INSTR()

LCASE()

LEFT()

LOCATE()

LOWER()

LPAD()

LTRIM()

MID()

POSITION()

REPEAT()

REPLACE()

REVERSE()

RIGHT()

RPAD()

RTRIM()

SPACE()

STRCMP()

SUBSTR()

SUBSTRING()

SUBSTRING_INDEX()

UCASE()

UPPER()

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 17

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dbsampled;

ERROR 1007 (HY000): Can't create database 'dbsampled'; database exists

mysql> create database dbsamplem;

Query OK, 1 row affected (0.01 sec)

mysql> use dbsamplem

Database changed

mysql> create table Students(S_Id varchar(10), S_Name varchar(20), S_Address varchar(20), S_Phone varchar(20), S_Age int);

Query OK, 0 rows affected (0.03 sec)

```
mysql> insert into Student values("S1", "Ram",    "Delhi", "9455123451", 18);
ERROR 1146 (42S02): Table 'dbsamplem.student' doesn't exist
mysql> insert into Students values("S1", "Ram", "Delhi", "9455123451", 18);
Query OK, 1 row affected (0.01 sec)
mysql> insert into Students values("S2", "Ramesh", "Mumbai" , "9652431543", 18);
Query OK, 1 row affected (0.01 sec)
mysql> insert into Students values("S3", "Sujith", "Chennai", "9156253131", 20);
Query OK, 1 row affected (0.01 sec)
mysql> insert into Students values("S4", "Suresh", "Delhi", "9156768971", 18);
Query OK, 1 row affected (0.01 sec)
mysql> insert into Students values("S5", "Sanjana", "Bangalore", "9094578932", 18);
Query OK, 1 row affected (0.01 sec)
mysql> select*from Students;
+------+---------+-----------+------------+-------+
| S_Id | S_Name    | S_Address | S_Phone        | S_Age |
+------+---------+-----------+------------+-------+
| S1      | Ram          | Delhi          | 9455123451 |        18 |
| S2      | Ramesh    | Mumbai        | 9652431543 |        18 |
| S3      | Sujith    | Chennai      | 9156253131 |        20 |
| S4      | Suresh    | Delhi          | 9156768971 |        18 |
| S5      | Sanjana | Bangalore | 9094578932 |        18 |
+------+---------+-----------+------------+-------+
5 rows in set (0.00 sec)
```

```
mysql> SELECT CHARACTER_LENGTH("Good Morning All");
+-----------------------------------+
| CHARACTER_LENGTH("Good Morning All") |
+-----------------------------------+
| 16 |
+-----------------------------------+
1 row in set (0.01 sec)



mysql> SELECT CONCAT("Good", "Morning", "Have", "a", "Nice", "Day.");
+-------------------------------------------------------+
| CONCAT("Good", "Morning", "Have", "a", "Nice", "Day.") |
+-------------------------------------------------------+
| GoodMorningHaveaNiceDay. |
+-------------------------------------------------------+
1 row in set (0.01 sec)
mysql> SELECT CONCAT_WS("+", "Good", "Morning", "Have", "a", "Nice", "Day.");
+-------------------------------------------------------------+
| CONCAT_WS("+", "Good", "Morning", "Have", "a", "Nice", "Day.") |
+-------------------------------------------------------------+
| Good+Morning+Have+a+Nice+Day. |
+-------------------------------------------------------------+
1 row in set (0.00 sec)


mysql>    SELECT FIND_IN_SET("Flowers", "are , sometimes,    known, as, a, bloom, or,
blossom");
```

```
+-----------------------------------------------------------------------------+
| FIND_IN_SET("Flowers", "are , sometimes,    known, as, a, bloom, or, blossom") |
+-----------------------------------------------------------------------------+
|                                                                           0 |
+-----------------------------------------------------------------------------+
1 row in set (0.01 sec)


mysql> SELECT FORMAT("0.925", "Percent");
+---------------------------+
| FORMAT("0.925", "Percent") |
+---------------------------+
| 1                         |
+---------------------------+
1 row in set, 1 warning (0.01 sec)
mysql> SELECT FORMAT("0.958", "Percent");
+---------------------------+
| FORMAT("0.958", "Percent") |
+---------------------------+
| 1                         |
+---------------------------+
1 row in set, 1 warning (0.00 sec)


mysql> SELECT INSERT('JavaExcel', 5, 6, 'Tpoint');
+-------------------------------------+
| INSERT('JavaExcel', 5, 6, 'Tpoint') |
```

```
+-----------------------------------+
| JavaTpoint                        |
+-----------------------------------+
1 row in set (0.01 sec)

mysql> SELECT INSTR('JavaTpoint', 'T');
+--------------------------+
| INSTR('JavaTpoint', 'T') |
+--------------------------+
|                        5 |
+--------------------------+
1 row in set (0.00 sec)

mysql> SELECT LCASE( 'The CAPITAL of INDIA is NEW DELHI');
+-------------------------------------------+
| LCASE( 'The CAPITAL of INDIA is NEW DELHI') |
+-------------------------------------------+
| the capital of india is new delhi         |
+-------------------------------------------+
1 row in set (0.01 sec)

mysql> SELECT LEFT( 'The CAPITAL of INDIA is NEW DELHI', 11);
+-----------------------------------------------+
| LEFT( 'The CAPITAL of INDIA is NEW DELHI', 11) |
+-----------------------------------------------+
```

```
| The CAPITAL                                          |
+------------------------------------------------+
1 row in set (0.00 sec)

mysql> SELECT LOCATE('INDIA','The CAPITAL of INDIA is NEW DELHI ', 1);
+-----------------------------------------------------------+
| LOCATE('INDIA','The CAPITAL of INDIA is NEW DELHI ', 1) |
+-----------------------------------------------------------+
| 16 |
+-----------------------------------------------------------+
1 row in set (0.01 sec)

mysql> SELECT LOWER( 'HELLO WORLD GOOD MORNING HAVE A GOOD DAY');
+-------------------------------------------------+
| LOWER( 'HELLO WORLD GOOD MORNING HAVE A GOOD DAY') |
+-------------------------------------------------+
| hello world good morning have a good day                    |
+-------------------------------------------------+
1 row in set (0.00 sec)

mysql> SELECT LPAD( 'NEW', 6, '#');
+---------------------+
| LPAD( 'NEW', 6, '#') |
+---------------------+
| ###NEW                          |
```

```
+----------------------+

1 row in set (0.01 sec)

mysql> SELECT LTRIM( 'NEW DELHI IS THE CAPITAL OF INDIA', 'NEW DELHI');

ERROR 1582 (42000): Incorrect parameter count in the call to native function 'LTRIM'

mysql> SELECT LTRIM( '                    JAVATPOINT                    ');

+-----------------------------------------------+

| LTRIM( '                    JAVATPOINT                    ') |

+-----------------------------------------------+

| JAVATPOINT                                                  |

+-----------------------------------------------+

1 row in set (0.01 sec)



mysql> SELECT MID( 'GOOD MORNING ALL HAVE A GOOD DAY', 5, 10);

+-------------------------------------------------+

| MID( 'GOOD MORNING ALL HAVE A GOOD DAY', 5, 10) |

+-------------------------------------------------+

|    MORNING A                                                |

+-------------------------------------------------+

1 row in set (0.00 sec)



mysql> SELECT POSITION( 'G' IN'GOOD MORNING ALL HAVE A GOOD DAY');

+---------------------------------------------------+
```

| POSITION('G' IN'GOOD MORNING ALL HAVE A GOOD DAY') |

+---+

| 1 |

+---+

1 row in set (0.01 sec)

mysql> SELECT POSITION('G' IN 'GOOD MORNING ALL HAVE A GOOD DAY');

+---+

| POSITION('G' IN 'GOOD MORNING ALL HAVE A GOOD DAY') |

+---+

| 1 |

+---+

1 row in set (0.00 sec)

mysql> SELECT POSITION('H' IN 'GOOD MORNING ALL HAVE A GOOD DAY');

+---+

| POSITION('H' IN 'GOOD MORNING ALL HAVE A GOOD DAY') |

+---+

| 18 |

+---+

1 row in set (0.00 sec)

```
mysql> SELECT REPEAT( 'Good Morning ' , 5);
+------------------------------------------------------------------+
| REPEAT( 'Good Morning ' , 5)                                     |
+------------------------------------------------------------------+
| Good Morning Good Morning Good Morning Good Morning Good Morning |
+------------------------------------------------------------------+
1 row in set (0.00 sec)
```

```
mysql> SELECT REPLACE( 'Good Morning All!!! Good', 'Good');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ')' at line 1
mysql> SELECT REPLACE( 'Good Morning All Good', 'Good');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ')' at line 1
mysql> SELECT REPLACE( 'javatpoint Indian IT company javatpoint', 'javatpoint');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ')' at line 1
mysql> SELECT REPLACE( 'HIJHKHJKL' , 'H');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ')' at line 1
mysql> SELECT REVERSE( 'GoodMorning');
+-------------------------+
| REVERSE( 'GoodMorning') |
+-------------------------+
| gninroMdooG             |
+-------------------------+
```

```
1 row in set (0.00 sec)


mysql> SELECT RIGHT( 'SQL is a standard language for storing, manipulating.', 11);
+-------------------------------------------------------------------+
| RIGHT( 'SQL is a standard language for storing, manipulating.', 11) |
+-------------------------------------------------------------------+
| nipulating.                                                       |
+-------------------------------------------------------------------+
1 row in set (0.00 sec)


mysql> SELECT RTRIM( '                    JAVATPOINT                    ');
+-----------------------------------------------+
| RTRIM( '                    JAVATPOINT                    ') |
+-----------------------------------------------+
|                     JAVATPOINT                                |
+-----------------------------------------------+
1 row in set (0.00 sec)


mysql> SELECT RTRIM( '                GOODMORNING                ');
+-------------------------------------------+
| RTRIM( '                GOODMORNING                ') |
+-------------------------------------------+
```

| GOODMORNING |

+---+

1 row in set (0.00 sec)

mysql> SELECT SPACE(10);

+------------+

| SPACE(10) |

+------------+

| |

+------------+

1 row in set (0.01 sec)

Nested Sub queries

****

Enter password: ****

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Your MySQL connection id is 17

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbqueries;
Query OK, 1 row affected (0.01 sec)

mysql> use dbqueries
Database changed
mysql> CREATE TABLE Employeesd(Id int,    Name varchar(20), Age int, Address varchar(20), Salary int);
Query OK, 0 rows affected (0.03 sec)

mysql> desc queries;
ERROR 1146 (42S02): Table 'dbqueries.queries' doesn't exist
mysql> desc Employeesd;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| Id      | int         | YES  |     | NULL    |       |
| Name    | varchar(20) | YES  |     | NULL    |       |
| Age     | int         | YES  |     | NULL    |       |
| Address | varchar(20) | YES  |     | NULL    |       |
| Salary  | int         | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
```

5 rows in set (0.00 sec)

mysql> insert into Employeesd values(1, "John", 20, "US", 2000);

Query OK, 1 row affected (0.03 sec)

mysql> insert into Employeesd values(2, "Stephan", 26, "Dubai",1500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Employeesd values(3, "David", 27, "Bangkok", 2000);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Employeesd values(4, "Alina", 29, "UK", 6500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Employeesd values(5, "Kathrin", 34, "Bangalore", 8500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Employeesd values(6, "Harry", 42, "China", 4500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Employeesd values(7, "Jackson", 25, "Mizoram", 10000);

Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM Employeesd WHERE Id IN (SELECT Id FROM Employeesd WHERE Salary > 4500);

+------+---------+------+-----------+--------+

| Id | Name | Age | Address | Salary |

+------+---------+------+-----------+--------+

| 4 | Alina | 29 | UK | 6500 |

| 5 | Kathrin | 34 | Bangalore | 8500 |

| 7 | Jackson | 25 | Mizoram | 10000 |

+------+---------+------+-----------+--------+

3 rows in set (0.00 sec)

mysql> UPDATE Employeesd SET Salary = Salary * 0.25 WHERE Age IN (SELECT Age FROM Employeesd WHERE Age >= 29);

ERROR 1093 (HY000): You can't specify target table 'Employeesd' for update in FROM clause

mysql> DELETE FROM Employeesd WHERE AGE IN (SELECT AGE FROM Employeesd WHERE Age >= 29);

ERROR 1093 (HY000): You can't specify target table 'Employeesd' for update in FROM clause

mysql>

Nested Queries

****

Enter password: ****

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbsamplev;

Query OK, 1 row affected (0.01 sec)

mysql> use dbsamplev

Database changed

mysql> Create Table Employes (Id int, Name varchar(20), Salary int, Role varchar(20));

Query OK, 0 rows affected (0.04 sec)

mysql> insert into Employes values (1, "Augustine", 10000, "Developer");

Query OK, 1 row affected (0.01 sec)

mysql> ^C

mysql> insert into Employes values (2, "Pooja", 10000, "Manager");

Query OK, 1 row affected (0.02 sec)

mysql> insert into Employes values (3, "Catherine" 30000, "Developer");

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '30000, "Developer")' at line 1

mysql> insert into Employes values (3, "Catherine", 30000, "Developer");
```

```
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employes values (4, "Gayathri", 40000, "Manager");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employes values (5, "Karthiga", 50000, "Developer");
Query OK, 1 row affected (0.01 sec)

mysql> select*from Employes;
+------+-----------+--------+-----------+
| Id   | Name      | Salary | Role      |
+------+-----------+--------+-----------+
|    1 | Augustine |  10000 | Developer |
|    2 | Pooja     |  10000 | Manager   |
|    3 | Catherine |  30000 | Developer |
|    4 | Gayathri  |  40000 | Manager   |
|    5 | Karthiga  |  50000 | Developer |
+------+-----------+--------+-----------+
5 rows in set (0.00 sec)

mysql> Create Table Awards(Id int, Employee_Id int, Award_Date date);
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO Awards VALUES(1, 1, "2022-04-01");
Query OK, 1 row affected (0.01 sec)
```

```
mysql> INSERT INTO Awards VALUES(2, 3, "2022-05-01");
Query OK, 1 row affected (0.01 sec)

mysql> select*from Awards;
+------+-------------+------------+
| Id     | Employee_Id | Award_Date |
+------+-------------+------------+
|       1 |                   1 | 2022-04-01 |
|       2 |                   3 | 2022-05-01 |
+------+-------------+------------+
2 rows in set (0.00 sec)

mysql> SELECT Id, Name FROM Employes
       -> WHERE Id IN (SELECT Employee_Id FROM Awards);
+------+-----------+
| Id     | Name          |
+------+-----------+
|       1 | Augustine |
|       3 | Catherine |
+------+-----------+
2 rows in set (0.00 sec)

mysql> SELECT Id, Name FROM Employes
       -> WHERE Id NOT IN (SELECT Employee_Id) FROM Awards);
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'FROM Awards)' at line 2

```
mysql> SELECT Id, Name FROM Employes
    -> WHERE Id NOT IN (SELECT Employee_Id FROM Awards);
+------+----------+
| Id   | Name     |
+------+----------+
|    2 | Pooja    |
|    4 | Gayathri |
|    5 | Karthiga |
+------+----------+
3 rows in set (0.01 sec)

mysql> SELECT * FROM Employes
    -> WHERE Role = "Developer"
    -> AND Salary > ALL (SELECT Salary FROM Employes WHERE Role = "Manager");
+------+----------+--------+-----------+
| Id   | Name     | Salary | Role      |
+------+----------+--------+-----------+
|    5 | Karthiga |  50000 | Developer |
+------+----------+--------+-----------+
1 row in set (0.01 sec)

mysql> SELECT * FROM Employes
    -> WHERE Role = "Developer"
    -> AND Salary > ANY (SELECT Salary FROM Employes WHERE Role = "Manager");
```

```
+------+-----------+--------+-----------+
| Id   | Name      | Salary | Role      |
+------+-----------+--------+-----------+
|    3 | Catherine |  30000 | Developer |
|    5 | Karthiga  |  50000 | Developer |
+------+-----------+--------+-----------+
2 rows in set (0.01 sec)

mysql> SELECT * FROM Employes emp1
    -> WHERE Salary > (SELECT AVG(Salary)
    -> FROM Employes emp2
    -> WHERE emp1.Role = emp2.Role);
+------+----------+--------+-----------+
| Id   | Name     | Salary | Role      |
+------+----------+--------+-----------+
|    4 | Gayathri |  40000 | Manager   |
|    5 | Karthiga |  50000 | Developer |
+------+----------+--------+-----------+
2 rows in set (0.01 sec)

mysql> SELECT Role, AVG(Salary)
    -> FROM Employes
    -> GROUP BY Role;
+-----------+-------------+
| Role      | AVG(Salary) |
```

+-----------+-------------+

| Developer | 30000.0000 |

| Manager | 25000.0000 |

+-----------+-------------+

2 rows in set (0.01 sec)

mysql>

Like Command in SQL

****

The LIKE operator is used in a WHERE clause to search for a specified pattern in a column.

There are two wildcards often used in conjunction with the LIKE operator:

The percent sign (%) represents zero, one, or multiple characters

The underscore sign (_) represents one, single character.

Note: MS Access uses an asterisk (*) instead of the percent sign (%), and a question mark (?) instead of the underscore (_).

The percent sign and the underscore can also be used in combinations!

Enter password: ****

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbsamplec;

Query OK, 1 row affected (0.01 sec)

mysql>    use dbsamplec

Database changed

mysql> create table Studentss(S_Id varchar(10), S_Name varchar(20), S_Address varchar(20),
S_Phone varchar(20), S_Age int);

Query OK, 0 rows affected (0.04 sec)

mysql> insert into Studentss values("S1", "Ram", "Delhi", "9455123451", 18);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Studentss values("S2", "Ramesh", "Mumbai" , "9652431543", 18);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Studentss values("S3", "Sujith", "Chennai", "9156253131", 20);

Query OK, 1 row affected (0.02 sec)

mysql> insert into Studentss values("S4", "Suresh", "Delhi", "9156768971", 18);

Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into Studentss values("S5", "Sanjana", "Bangalore", "9094578932", 18);
Query OK, 1 row affected (0.01 sec)

mysql> select*from Studentss;
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S1   | Ram     | Delhi     | 9455123451 |    18 |
| S2   | Ramesh  | Mumbai    | 9652431543 |    18 |
| S3   | Sujith  | Chennai   | 9156253131 |    20 |
| S4   | Suresh  | Delhi     | 9156768971 |    18 |
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
5 rows in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE 'Sa%';
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
1 row in set (0.00 sec)
```

```
mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%R';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%Ra';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%Su';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%a';
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
1 row in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%m';
+------+--------+-----------+------------+-------+
| S_Id | S_Name | S_Address | S_Phone    | S_Age |
```

```
+------+--------+-----------+------------+-------+
| S1   | Ram    | Delhi     | 9455123451 |    18 |
+------+--------+-----------+------------+-------+
1 row in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%or%';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '%th%';
+------+--------+-----------+------------+-------+
| S_Id | S_Name | S_Address | S_Phone    | S_Age |
+------+--------+-----------+------------+-------+
| S3   | Sujith | Chennai   | 9156253131 |    20 |
+------+--------+-----------+------------+-------+
1 row in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '_s%';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '_t%';
Empty set (0.00 sec)
```

```
mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE '_a%';
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S1   | Ram     | Delhi     | 9455123451 |    18 |
| S2   | Ramesh  | Mumbai    | 9652431543 |    18 |
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
3 rows in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE 'a__%';
Empty set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE 'S__%';
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S3   | Sujith  | Chennai   | 9156253131 |    20 |
| S4   | Suresh  | Delhi     | 9156768971 |    18 |
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
```

3 rows in set (0.00 sec)

```
mysql> SELECT * FROM Studentss
    -> WHERE S_Name LIKE 'S%h';
+------+--------+-----------+------------+-------+
| S_Id | S_Name | S_Address | S_Phone    | S_Age |
+------+--------+-----------+------------+-------+
| S3   | Sujith | Chennai   | 9156253131 |    20 |
| S4   | Suresh | Delhi     | 9156768971 |    18 |
+------+--------+-----------+------------+-------+
2 rows in set (0.00 sec)

mysql> SELECT * FROM Studentss
    -> WHERE S_Name NOT LIKE 'a%';
+------+---------+-----------+------------+-------+
| S_Id | S_Name  | S_Address | S_Phone    | S_Age |
+------+---------+-----------+------------+-------+
| S1   | Ram     | Delhi     | 9455123451 |    18 |
| S2   | Ramesh  | Mumbai    | 9652431543 |    18 |
| S3   | Sujith  | Chennai   | 9156253131 |    20 |
| S4   | Suresh  | Delhi     | 9156768971 |    18 |
| S5   | Sanjana | Bangalore | 9094578932 |    18 |
+------+---------+-----------+------------+-------+
5 rows in set (0.00 sec)
```

mysql>

JOINS

****

Definition:

The SQL Joins clause is used to combine records from two or more tables in a database.

Types of JOINS in SQL Server

SQL Server mainly supports four types of JOINS, and each join type defines how two tables are related in a query. The following are types of join supports in SQL Server:

INNER JOIN

SELF JOIN

CROSS JOIN

OUTER JOIN

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 9

Server version: 8.0.30 MySQL Community Server - GPL

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dbtrees;

Query OK, 1 row affected (0.01 sec)

mysql> use dbtrees

Database changed

mysql> Create table Student_Details (Stu_Id int, Admission_No int, First_Name varchar(20), Last_Name varchar(20), Age int, Location varchar(25));

Query OK, 0 rows affected (0.03 sec)

mysql> insert into Student_Details values(1, 354, "Bhavani", "Lakshmi", 13, "Chennai");

Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(2, 135, "Peter", "Paul", 15, "Mumbai");

Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(3, 321, "Pooja", "Kumar", 14, "Bangalore");

Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(4, 213, "Kaviya", "Arun", 17, "Kerala");

Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(5, 112, "Sandhiya", "Priya", 16, "Singapore");

Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(6, 113, "Arun", "Kumar", 15, "Malaysia");

Query OK, 1 row affected (0.01 sec)

```
mysql> insert into Student_Details values(7, 555, "Divya", "Dharshini", 14, "Kerala");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Student_Details values(8, 345, "Sangeetha", "Srinivasan", 13, "Bangalore");
Query OK, 1 row affected (0.01 sec)

mysql> select*from Student_Details;
+--------+--------------+------------+------------+------+-----------+
| Stu_Id | Admission_No | First_Name | Last_Name  | Age  | Location  |
+--------+--------------+------------+------------+------+-----------+
|      1 |          354 | Bhavani    | Lakshmi    |   13 | Chennai   |
|      2 |          135 | Peter      | Paul       |   15 | Mumbai    |
|      3 |          321 | Pooja      | Kumar      |   14 | Bangalore |
|      4 |          213 | Kaviya     | Arun       |   17 | Kerala    |
|      5 |          112 | Sandhiya   | Priya      |   16 | Singapore |
|      6 |          113 | Arun       | Kumar      |   15 | Malaysia  |
|      7 |          555 | Divya      | Dharshini  |   14 | Kerala    |
|      8 |          345 | Sangeetha  | Srinivasan |   13 | Bangalore |
+--------+--------------+------------+------------+------+-----------+
8 rows in set (0.01 sec)

mysql> create table Fees(Admission_No int, Course varchar(20), Amount_Paid int);
Query OK, 0 rows affected (0.03 sec)

mysql> insert into Fees values(354,"Java", 20000);
```

```
Query OK, 1 row affected (0.01 sec)

mysql> insert into Fees values(555, "Android", 22000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Fees values(321, "Python", 18000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Fees values(345, "SQL", 15000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Fees values(112, "Machine Learning", 30000);
Query OK, 1 row affected (0.02 sec)

mysql> select*from Fees;
+--------------+-----------------+-------------+
| Admission_No | Course          | Amount_Paid |
+--------------+-----------------+-------------+
|          354 | Java            |       20000 |
|          555 | Android         |       22000 |
|          321 | Python          |       18000 |
|          345 | SQL             |       15000 |
|          112 | Machine Learning|       30000 |
+--------------+-----------------+-------------+
5 rows in set (0.00 sec)
```

```
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fee.Amount_Paid
    -> FROM Student_Details
    -> INNER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
ERROR 1054 (42S22): Unknown column 'Fee.Amount_Paid' in 'field list'
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fee.Amount_Paid
    -> FROM Student_Details
    -> INNER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
ERROR 1054 (42S22): Unknown column 'Fee.Amount_Paid' in 'field list'
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fees.Amount_Paid
    -> FROM Student_Details
    -> INNER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
+--------------+------------+------------+-----------------+-------------+
| Admission_No | First_Name | Last_Name  | Course          | Amount_Paid |
+--------------+------------+------------+-----------------+-------------+
|          354 | Bhavani    | Lakshmi    | Java            |       20000 |
|          321 | Pooja      | Kumar      | Python          |       18000 |
|          112 | Sandhiya   | Priya      | Machine Learning |       30000 |
|          555 | Divya      | Dharshini  | Android         |       22000 |
|          345 | Sangeetha  | Srinivasan | SQL             |       15000 |
+--------------+------------+------------+-----------------+-------------+
```

5 rows in set (0.01 sec)

```
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fees.Amount_Paid
    -> FROM Student_Details
    -> LEFT OUTER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
+--------------+------------+------------+-----------------+-------------+
| Admission_No | First_Name | Last_Name  | Course          | Amount_Paid |
+--------------+------------+------------+-----------------+-------------+
|          354 | Bhavani    | Lakshmi    | Java            |       20000 |
|          135 | Peter      | Paul       | NULL            |        NULL |
|          321 | Pooja      | Kumar      | Python          |       18000 |
|          213 | Kaviya     | Arun       | NULL            |        NULL |
|          112 | Sandhiya   | Priya      | Machine Learning |      30000 |
|          113 | Arun       | Kumar      | NULL            |        NULL |
|          555 | Divya      | Dharshini  | Android         |       22000 |
|          345 | Sangeetha  | Srinivasan | SQL             |       15000 |
+--------------+------------+------------+-----------------+-------------+
```

8 rows in set (0.01 sec)

```
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fees.Amount_Paid
    -> FROM Student_Details
    -> RIGHT OUTER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
```

```
+--------------+------------+------------+-----------------+-------------+
| Admission_No | First_Name | Last_Name  | Course          | Amount_Paid |
+--------------+------------+------------+-----------------+-------------+
|          354 | Bhavani    | Lakshmi    | Java            |       20000 |
|          555 | Divya      | Dharshini  | Android         |       22000 |
|          321 | Pooja      | Kumar      | Python          |       18000 |
|          345 | Sangeetha  | Srinivasan | SQL             |       15000 |
|          112 | Sandhiya   | Priya      | Machine Learning |       30000 |
+--------------+------------+------------+-----------------+-------------+
5 rows in set (0.00 sec)

mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fees.Amount_Paid
    -> FROM Student_Details
    -> FULL OUTER JOIN Fees
    -> ON Student_Details.Admission_No = Fees.Admission_No;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds
to your MySQL server version for the right syntax to use near 'OUTER JOIN Fees
ON Student_Details.Admission_No = Fees.Admission_No' at line 3
mysql> SELECT Student_Details.Admission_No, Student_Details.First_Name,
Student_Details.Last_Name, Fees.Course, Fees.Amount_Paid
    -> FROM Student_Details
    -> CROSS JOIN Fees
    -> WHERE Student_Details.Admission_No = Fees.Admission_No;
+--------------+------------+------------+-----------------+-------------+
| Admission_No | First_Name | Last_Name  | Course          | Amount_Paid |
+--------------+------------+------------+-----------------+-------------+
```

```
|          354 | Bhavani   | Lakshmi   | Java             |        20000 |
|          321 | Pooja     | Kumar     | Python           |        18000 |
|          112 | Sandhiya  | Priya     | Machine Learning |        30000 |
|          555 | Divya     | Dharshini | Android          |        22000 |
|          345 | Sangeetha | Srinivasan | SQL             |        15000 |
+-------------+-----------+-----------+------------------+-------------+
5 rows in set (0.00 sec)

mysql> SELECT S1.First_Name, S2.Last_Name, S2.Location
    -> FROM Student_Details S1, Student_Details S2
    -> WHERE S1.Id <> S2.Id AND S1.Location = S2.Location
    -> ORDER BY S2.Location;
ERROR 1054 (42S22): Unknown column 'S1.Id' in 'where clause'
mysql> SELECT S1.First_Name, S2.Last_Name, S2.Location
    -> FROM Student_Details S1, Student_Details S2
    -> WHERE S1.Stu_Id <> S2.Stu_Id AND S1.Location = S2.Location
    -> ORDER BY S2.Location;
+------------+------------+-----------+
| First_Name | Last_Name  | Location  |
+------------+------------+-----------+
| Sangeetha  | Kumar      | Bangalore |
| Pooja      | Srinivasan | Bangalore |
| Divya      | Arun       | Kerala    |
| Kaviya     | Dharshini  | Kerala    |
+------------+------------+-----------+
```

4 rows in set (0.01 sec)

mysql>

Expressions

****

*An SQL expression is a combination of one or more values, operators and SQL functions that are all evaluated to a value.

*These SQL EXPRESSIONs are like formulae and they are written in query language. You can also use them to query the database for a specific set of data.

*Expressions are used in WHERE clause of an SQL query.

*As you might have already known, a WHERE clause specifies a condition that needs to be satisfied for the purpose of filtering records from a database table.

*This condition is comprised of either single or multiple expressions.

*These expressions are further classified into three types:

Boolean Expressions

Numeric Expressions

Date and time Expressions

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 68

Server version: 8.0.30 MySQL Community Server - GPL

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql>    create database dbsimples;

Query OK, 1 row affected (0.01 sec)

mysql>    use dbsimples

Database changed

mysql> create table Customers(Cust_Id int, Cust_Name varchar(20),    Cust_Age int,
Cust_Address varchar(30),    Cust_Salary int);

Query OK, 0 rows affected (0.05 sec)

mysql> insert into Customers values(01, "Ramesh", 32, "Ahmedabad", 2000);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(02, "Khilan", 25, "Delhi", 1500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(03, "kaushik", 23, "Kota",    2000);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(04, "Chaitali, 25, "Mumbai", 6500);

       "> insert into Customers values(04, "Chaitali, 25, "Mumbai", 6500);
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'Mumbai", 6500);

insert into Customers values(04, "Chaitali, 25, "Mumbai", 6500)' at line 1

mysql> insert into Customers values(04, "Chaitali", 25, "Mumbai", 6500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(05, "Hardik", 27, "Bhopal", 8500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(06, "Komal", 22, "MP", 4500);

Query OK, 1 row affected (0.01 sec)

mysql> insert into Customers values(07, "Muffy", 24, "Indore", 10000);

Query OK, 1 row affected (0.01 sec)

mysql> select*from Customers;

+---------+-----------+----------+--------------+-------------+

| Cust_Id | Cust_Name | Cust_Age | Cust_Address | Cust_Salary |

+---------+-----------+----------+--------------+-------------+

| 1 | Ramesh | 32 | Ahmedabad | 2000 |

| 2 | Khilan | 25 | Delhi | 1500 |

| 3 | kaushik | 23 | Kota | 2000 |

| 4 | Chaitali | 25 | Mumbai | 6500 |

| 5 | Hardik | 27 | Bhopal | 8500 |

| 6 | Komal | 22 | MP | 4500 |

| 7 | Muffy | 24 | Indore | 10000 |

```
+---------+-----------+----------+--------------+-------------+
7 rows in set (0.00 sec)

mysql> SELECT * FROM Customers WHERE Cust_Salary = 10000;
+---------+-----------+----------+--------------+-------------+
| Cust_Id | Cust_Name | Cust_Age | Cust_Address | Cust_Salary |
+---------+-----------+----------+--------------+-------------+
|       7 | Muffy     |       24 | Indore       |       10000 |
+---------+-----------+----------+--------------+-------------+
1 row in set (0.01 sec)

mysql> SELECT (15 + 6) AS ADDITION
    -> from Customers
    -> Where (15 + 6);
+----------+
| ADDITION |
+----------+
|       21 |
|       21 |
|       21 |
|       21 |
|       21 |
|       21 |
|       21 |
+----------+
```

7 rows in set (0.01 sec)

mysql> ALTER TABLE Customers

-> ADD Current_Timestamp date;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'Current_Timestamp date' at line 2

mysql> ALTER TABLE Customers

-> ADD column Current_Timestamp date;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'Current_Timestamp date' at line 2

mysql> ADD column Current_Timestamp date;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'ADD column Current_Timestamp date' at line 1

mysql> SELECT COUNT(*) AS "RECORDS" FROM Customers;

+---------+

| RECORDS |

+---------+

| 7 |

+---------+

1 row in set (0.00 sec)

mysql> SELECT CURRENT_TIMESTAMP;

+---------------------+

| CURRENT_TIMESTAMP |

+---------------------+

| 2023-06-28 11:26:45 |

```
+---------------------+

1 row in set (0.01 sec)


mysql> SELECT (15 + 6) AS ADDITION

    -> SELECT (15 + 6) AS ADDITION;

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'SELECT (15 + 6) AS ADDITION' at line 2

mysql> SELECT (15 + 6) AS ADDITION;

+----------+

| ADDITION |

+----------+

|       21 |

+----------+

1 row in set (0.00 sec)


mysql>
```

DML (Data Manipulation Language)

****

DML is an abbreviation for Data Manipulation Language. Represents a collection of programming languages explicitly used to make changes to the database, such as: CRUD operations to create, read, update and delete data. Using INSERT, SELECT, UPDATE and DELETE commands.

Following are the four main DML commands in SQL:

SELECT Command

INSERT Command

UPDATE Command

DELETE Command

```
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 37
Server version: 8.0.30 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dbsample;
Query OK, 1 row affected (0.02 sec)

mysql> use dbsample
Database changed
mysql> create table Employee(Emp_Id int, Emp_Name varchar(20), Emp_salary int);
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> desc sample;
ERROR 1146 (42S02): Table 'dbsample.sample' doesn't exist
mysql> desc Employee;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Emp_Id     | int         | YES  |     | NULL    |       |
| Emp_Name   | varchar(20) | YES  |     | NULL    |       |
| Emp_salary | int         | YES  |     | NULL    |       |
+------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql> select*from Employee;
Empty set (0.00 sec)

mysql> insert into Employee(101, "Pooja", 2000);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '101, "Pooja", 2000)' at line 1
mysql> insert into Employee values(101, "Pooja", 2000);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values(102, "Kavya", 3000);
Query OK, 1 row affected (0.01 sec)
// Inserting Multiple Rows//
mysql> insert into Employee values(103, "Keerthana", 1000),
    -> (104, "Gayathri", 3000);
```

```
Query OK, 2 rows affected (0.01 sec)
Records: 2  Duplicates: 0  Warnings: 0

mysql> select*from Employee;
+--------+-----------+------------+
| Emp_Id | Emp_Name  | Emp_salary |
+--------+-----------+------------+
|    101 | Pooja     |       2000 |
|    102 | Kavya     |       3000 |
|    103 | Keerthana |       1000 |
|    104 | Gayathri  |       3000 |
+--------+-----------+------------+
4 rows in set (0.00 sec)

//Updating Single Rows//
mysql> update Employee
    -> set Emp_salaey = 5000
    -> where Emp_Id = 104;
ERROR 1054 (42S22): Unknown column 'Emp_salaey' in 'field list'
mysql> update Employee
    -> set Emp_salary = 5000
    -> where Emp_Id = 104;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select*from Employee;
+--------+-----------+------------+
| Emp_Id | Emp_Name    | Emp_salary |
+--------+-----------+------------+
|      101 | Pooja          |            2000 |
|      102 | Kavya          |            3000 |
|      103 | Keerthana |            1000 |
|      104 | Gayathri    |            5000 |
+--------+-----------+------------+
4 rows in set (0.00 sec)

//Updating Multiple Rows//
mysql> update Employee
    -> set Emp_Name = "Keerthana", Emp_salary = 6000
    -> where Emp_Id = 103;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1    Changed: 1    Warnings: 0

mysql> select*from Employee;
+--------+-----------+------------+
| Emp_Id | Emp_Name    | Emp_salary |
+--------+-----------+------------+
|      101 | Pooja          |            2000 |
|      102 | Kavya          |            3000 |
```

```
|       103 | Keerthana |            6000 |
|       104 | Gayathri  |            5000 |
+--------+-----------+------------+
4 rows in set (0.00 sec)
//Updating Multiple Rows//
mysql> update Employee
    -> set Emp_salary = 5000
    -> where Emp_Id = 103;
Query OK, 1 row affected (0.06 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select*from Employee;
+--------+-----------+------------+
| Emp_Id | Emp_Name  | Emp_salary |
+--------+-----------+------------+
|       101 | Pooja        |            2000 |
|       102 | Kavya        |            3000 |
|       103 | Keerthana |            5000 |
|       104 | Gayathri  |            5000 |
+--------+-----------+------------+
4 rows in set (0.00 sec)

mysql> update Employee
    -> set Emp_salary = 8000
    -> set Emp_salary = 8000;
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'set Emp_salary = 8000' at line 3

```
mysql> update Employee
    -> set Emp_salary = 8000;
Query OK, 4 rows affected (0.01 sec)
Rows matched: 4  Changed: 4  Warnings: 0

mysql> select*from Employee;
+--------+-----------+------------+
| Emp_Id | Emp_Name  | Emp_salary |
+--------+-----------+------------+
|    101 | Pooja     |       8000 |
|    102 | Kavya     |       8000 |
|    103 | Keerthana |       8000 |
|    104 | Gayathri  |       8000 |
+--------+-----------+------------+
4 rows in set (0.00 sec)
```

//Deleting Single Row//

```
mysql> delete from Employee
    -> where Emp_Id = 103;
Query OK, 1 row affected (0.01 sec)

mysql> select*from Employee;
+--------+----------+------------+
| Emp_Id | Emp_Name | Emp_salary |
```

```
+--------+----------+------------+
|      101 | Pooja      |           8000 |
|      102 | Kavya      |           8000 |
|      104 | Gayathri |           8000 |
+--------+----------+------------+
```

3 rows in set (0.00 sec)

//Deleting the who table values //

mysql> delete from Employee;

Query OK, 3 rows affected (0.01 sec)

mysql> select*from Employee;

Empty set (0.00 sec)

//Truncate the Tables//

mysql> truncate table Employee;

Query OK, 0 rows affected (0.04 sec)

mysql> select*from Employee;

Empty set (0.00 sec)

Data Definition Language(DDL)

****

DDL is an abbreviation of Data Definition Language.

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. The commands of Data Definition Language deal with how the data should exist in the database.

Following are the five DDL commands in SQL:

CREATE Command

DROP Command

ALTER Command

TRUNCATE Command

RENAME Command

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 15

Server version: 8.0.30 MySQL Community Server - GPL

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dbparrot;

Query OK, 1 row affected (0.01 sec)

mysql> use dbparrot

Database changed

mysql> CREATE TABLE Employeews(Emp_Name varchar(20), DOB date, Mobile int(10), Email varchar(20));

Query OK, 0 rows affected, 1 warning (0.06 sec)

```
mysql> select*from Employeews;
Empty set (0.00 sec)

mysql>    desc Employeews;
+----------+-------------+------+-----+---------+-------+
| Field        | Type               | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| Emp_Name | varchar(20) | YES    |         | NULL       |             |
| DOB           | date               | YES    |         | NULL       |             |
| Mobile      | int                | YES    |         | NULL       |             |
| Email        | varchar(20) | YES    |         | NULL       |             |
+----------+-------------+------+-----+---------+-------+
4 rows in set (0.03 sec)

mysql> DROP DATABASE dbparrot;
Query OK, 1 row affected (0.02 sec)

mysql> DROP TABLE Employeews;
ERROR 1046 (3D000): No database selected

Enter password: ****
Welcome to the MySQL monitor.    Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.30 MySQL Community Server - GPL
```

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbpigeon;
Query OK, 1 row affected (0.01 sec)

mysql> use dbpigeon
Database changed
mysql> CREATE TABLE Studentees(Roll_No int , First_Name varchar(20), Last_Name varchar(20), Age int, Marks int);
Query OK, 0 rows affected (0.05 sec)

mysql> desc Studentees;
+------------+-------------+------+-----+---------+-------+
| Field      | Type        | Null | Key | Default | Extra |
+------------+-------------+------+-----+---------+-------+
| Roll_No    | int         | YES  |     | NULL    |       |
| First_Name | varchar(20) | YES  |     | NULL    |       |
| Last_Name  | varchar(20) | YES  |     | NULL    |       |
| Age        | int         | YES  |     | NULL    |       |
| Marks      | int         | YES  |     | NULL    |       |
```

```
+------------+-------------+------+-----+---------+-------+
```

5 rows in set (0.00 sec)

```
mysql> ALTER TABLE Studentees ADD Fathers_Name varchar(20);
```

Query OK, 0 rows affected (0.03 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> desc Studentees;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| Roll_No      | int         | YES  |     | NULL    |       |
| First_Name   | varchar(20) | YES  |     | NULL    |       |
| Last_Name    | varchar(20) | YES  |     | NULL    |       |
| Age          | int         | YES  |     | NULL    |       |
| Marks        | int         | YES  |     | NULL    |       |
| Fathers_Name | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
```

6 rows in set (0.00 sec)

```
mysql> RENAME TABLE Studentees TO Studentees_Details ;
```

Query OK, 0 rows affected (0.06 sec)

```
mysql>  ALTER TABLE Studentees DROP Age;
```

ERROR 1146 (42S02): Table 'dbpigeon.studentees' doesn't exist

mysql> TRUNCATE TABLE Studentees;

ERROR 1146 (42S02): Table 'dbpigeon.studentees' doesn't exist

mysql>

Clauses and Aggregate Functions

****

SQL Aggregate Functions:

SQL aggregation function is used to perform the calculations on multiple rows of a single column of a table. It returns a single value.

It is also used to summarize the data.

Types of SQL Aggregation Function:

1. COUNT FUNCTION

2. SUM Function

3. AVG function

4. MAX Function

5. MIN Function

Enter password: ****

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 62

Server version: 8.0.30 MySQL Community Server - GPL

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> create database dbsae;

Query OK, 1 row affected (0.01 sec)

mysql>    use dbsae

Database changed

mysql> (Emp_Id int, Emp_Name varchar(20), Emp_Salary int, Emp_City varchar(20),
Emp_Designation varchar(20), Emp_Age int);

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds
to your MySQL server version for the right syntax to use near 'Emp_Id int, Emp_Name
varchar(20), Emp_Salary int, Emp_City varchar(20), Emp_Desi' at line 1

mysql> create table Employee(Emp_Id int, Emp_Name varchar(20), Emp_Salary int, Emp_City
varchar(20), Emp_Designation varchar(20), Emp_Age int);

Query OK, 0 rows affected (0.04 sec)

mysql> insert into Employee values(1, "Sakshi" , 50000, "Mumbai",    "Project Manager",24);

Query OK, 1 row affected (0.01 sec)

mysql>    insert into Employee values(2,"Tejaswini", 75000, "Delhi", "System Engineer", 23);

Query OK, 1 row affected (0.01 sec)

mysql>    insert into Employee values(3, "Anuja ", 40000, "Jaipur", "Manager", 26);
```

```
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values(4, "Anushka", 90000, "Mumbai", "Software Tester", 24);
Query OK, 1 row affected (0.01 sec)

mysql>    insert into Employee values(5, "Rucha", 45000, "Bangalore", "Project Manager", 23);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values(6, "Rutuja", 60000, "Bangalore", "Manager", 26);
Query OK, 1 row affected (0.01 sec)

mysql> insert into Employee values(7, "Swara", 55000, "Jaipur", "System Engineer", 24);
Query OK, 1 row affected (0.01 sec)

mysql>    insert into Employee values(8, "Sana", 45000, "Pune", "Software Engineer", 26);
Query OK, 1 row affected (0.01 sec)

mysql> select*from Employee;
+--------+-----------+------------+-----------+-------------------+---------+
| Emp_Id | Emp_Name    | Emp_Salary | Emp_City    | Emp_Designation      | Emp_Age |
+--------+-----------+------------+-----------+-------------------+---------+
|          1 | Sakshi       |          50000 | Mumbai       | Project Manager      |          24 |
|          2 | Tejaswini |          75000 | Delhi         | System Engineer      |          23 |
|          3 | Anuja         |          40000 | Jaipur       | Manager                 |          26 |
|          4 | Anushka     |          90000 | Mumbai       | Software Tester      |          24 |
```

```
|        5 | Rucha      |        45000 | Bangalore | Project Manager    |         23 |
|        6 | Rutuja     |        60000 | Bangalore | Manager            |         26 |
|        7 | Swara      |        55000 | Jaipur    | System Engineer    |         24 |
|        8 | Sana       |        45000 | Pune      | Software Engineer  |         26 |
+----------+------------+--------------+-----------+--------------------+------------+
8 rows in set (0.00 sec)

mysql> SELECT * FROM Employee WHERE Emp_Salary > 50000;
+----------+------------+--------------+-----------+--------------------+------------+
| Emp_Id | Emp_Name   | Emp_Salary | Emp_City  | Emp_Designation | Emp_Age |
+----------+------------+--------------+-----------+--------------------+------------+
|        2 | Tejaswini  |        75000 | Delhi     | System Engineer    |         23 |
|        4 | Anushka    |        90000 | Mumbai    | Software Tester    |         24 |
|        6 | Rutuja     |        60000 | Bangalore | Manager            |         26 |
|        7 | Swara      |        55000 | Jaipur    | System Engineer    |         24 |
+----------+------------+--------------+-----------+--------------------+------------+
4 rows in set (0.00 sec)

mysql> UPDATE Employee SET Emp_Name = "Harshada Sharma" WHERE Emp_City = "Jaipur";
Query OK, 2 rows affected (0.01 sec)
Rows matched: 2  Changed: 2  Warnings: 0

mysql> SELECT * FROM Employee;
+----------+-----------------+--------------+-----------+--------------------+------------+
| Emp_Id | Emp_Name        | Emp_Salary | Emp_City  | Emp_Designation    | Emp_Age |
```

```
+--------+-----------------+------------+-----------+-------------------+---------+
|      1 | Sakshi          |      50000 | Mumbai    | Project Manager   |      24 |
|      2 | Tejaswini       |      75000 | Delhi     | System Engineer   |      23 |
|      3 | Harshada Sharma |      40000 | Jaipur    | Manager           |      26 |
|      4 | Anushka         |      90000 | Mumbai    | Software Tester   |      24 |
|      5 | Rucha           |      45000 | Bangalore | Project Manager   |      23 |
|      6 | Rutuja          |      60000 | Bangalore | Manager           |      26 |
|      7 | Harshada Sharma |      55000 | Jaipur    | System Engineer   |      24 |
|      8 | Sana            |      45000 | Pune      | Software Engineer |      26 |
+--------+-----------------+------------+-----------+-------------------+---------+
8 rows in set (0.00 sec)

mysql> SELECT *FROM Employee WHERE Designation = "Software Engineer" AND Emp_City = "Jaipur";
ERROR 1054 (42S22): Unknown column 'Designation' in 'where clause'
mysql> SELECT *FROM Employee WHERE Emp_Designation = "Software Engineer" AND Emp_City = "Jaipur";
Empty set (0.00 sec)

mysql> SELECT *FROM Employee WHERE Emp_Designation = "Software Engineer" AND Emp_Salary = 45000;
+--------+----------+------------+----------+-------------------+---------+
| Emp_Id | Emp_Name | Emp_Salary | Emp_City | Emp_Designation   | Emp_Age |
+--------+----------+------------+----------+-------------------+---------+
|      8 | Sana     |      45000 | Pune     | Software Engineer |      26 |
+--------+----------+------------+----------+-------------------+---------+
1 row in set (0.00 sec)
```

```
mysql> SELECT *FROM Employee WHERE Emp_Designation = "Software Engineer" AND
Emp_Salary = 45000;

+--------+----------+------------+----------+------------------+---------+

| Emp_Id | Emp_Name | Emp_Salary | Emp_City | Emp_Designation      | Emp_Age |

+--------+----------+------------+----------+------------------+---------+

|          8 | Sana         |          45000 | Pune         | Software Engineer |          26 |

+--------+----------+------------+----------+------------------+---------+

1 row in set (0.00 sec)


mysql> SELECT *FROM Employee WHERE Emp_Designation = "Project Manager" OR Emp_City =
"Bangalore";

+--------+----------+------------+-----------+-----------------+---------+

| Emp_Id | Emp_Name | Emp_Salary | Emp_City    | Emp_Designation | Emp_Age |

+--------+----------+------------+-----------+-----------------+---------+

|          1 | Sakshi     |          50000 | Mumbai       | Project Manager |          24 |

|          5 | Rucha       |          45000 | Bangalore | Project Manager |          23 |

|          6 | Rutuja     |          60000 | Bangalore | Manager               |          26 |

+--------+----------+------------+-----------+-----------------+---------+

3 rows in set (0.00 sec)


mysql> SELECT Emp_Id AS Emp_id, Emp_Name    As Emp_name FROM Employee;

+--------+-----------------+

| Emp_id | Emp_name              |

+--------+-----------------+

|          1 | Sakshi                 |
```

| 2 | Tejaswini |

| 3 | Harshada Sharma |

| 4 | Anushka |

| 5 | Rucha |

| 6 | Rutuja |

| 7 | Harshada Sharma |

| 8 | Sana |

+--------+----------------+

8 rows in set (0.00 sec)

mysql> SELECT SUM(Emp_Salary), Emp_City FROM Employee GROUP BY Emp_City;

+-----------------+-----------+

| SUM(Emp_Salary) | Emp_City |

+-----------------+-----------+

| 140000 | Mumbai |

| 75000 | Delhi |

| 95000 | Jaipur |

| 105000 | Bangalore |

| 45000 | Pune |

+-----------------+-----------+

5 rows in set (0.00 sec)

mysql> SELECT SUM(Emp_Salary), Emp_City FROM Employee GROUP BY Emp_City HAVING SUM(Emp_Salary)>40000;

+-----------------+-----------+

| SUM(Emp_Salary) | Emp_City |

```
+-----------------+-----------+
|          140000 | Mumbai    |
|           75000 | Delhi     |
|           95000 | Jaipur    |
|          105000 | Bangalore |
|           45000 | Pune      |
+-----------------+-----------+
5 rows in set (0.01 sec)

mysql> SELECT Emp_Name, Emp_Salary FROM Employee  ORDER BY  Emp_Age  ASC;
+-----------------+------------+
| Emp_Name        | Emp_Salary |
+-----------------+------------+
| Tejaswini       |      75000 |
| Rucha           |      45000 |
| Sakshi          |      50000 |
| Anushka         |      90000 |
| Harshada Sharma |      55000 |
| Harshada Sharma |      40000 |
| Rutuja          |      60000 |
| Sana            |      45000 |
+-----------------+------------+
8 rows in set (0.00 sec)

mysql> SELECT Emp_Name, Emp_Salary FROM Employee  ORDER BY Emp_Age DESC;
```

```
+-----------------+------------+
| Emp_Name        | Emp_Salary |
+-----------------+------------+
| Harshada Sharma |      40000 |
| Rutuja          |      60000 |
| Sana            |      45000 |
| Sakshi          |      50000 |
| Anushka         |      90000 |
| Harshada Sharma |      55000 |
| Tejaswini       |      75000 |
| Rucha           |      45000 |
+-----------------+------------+
8 rows in set (0.00 sec)

mysql> SELECT Emp_Name, Emp_Salary FROM Employee    ORDER BY Emp_Age;
+-----------------+------------+
| Emp_Name        | Emp_Salary |
+-----------------+------------+
| Tejaswini       |      75000 |
| Rucha           |      45000 |
| Sakshi          |      50000 |
| Anushka         |      90000 |
| Harshada Sharma |      55000 |
| Harshada Sharma |      40000 |
| Rutuja          |      60000 |
```

```
| Sana                 |          45000 |
+----------------+------------+
8 rows in set (0.00 sec)

mysql> SELECT COUNT(*)
    -> FROM Employee;
+----------+
| COUNT(*) |
+----------+
|              8 |
+----------+
1 row in set (0.01 sec)

mysql> SELECT COUNT(*)
    -> FROM Employee
    -> WHERE Emp_Salary>=45000;
+----------+
| COUNT(*) |
+----------+
|              7 |
+----------+
1 row in set (0.00 sec)

mysql> SELECT SUM(Emp_Salary)
    -> FROM Employee;
```

```
+-----------------+
| SUM(Emp_Salary) |
+-----------------+
|          460000 |
+-----------------+
1 row in set (0.00 sec)

mysql> SELECT SUM(Emp_Salary)
    -> FROM Employee
    -> WHERE Emp_Age>24;
+-----------------+
| SUM(Emp_Salary) |
+-----------------+
|          145000 |
+-----------------+
1 row in set (0.00 sec)

mysql> SELECT SUM(Emp_Salary)
    -> FROM Employee
    -> WHERE Emp_Age>24
    -> GROUP BY Emp_Id;
+-----------------+
| SUM(Emp_Salary) |
+-----------------+
|           40000 |
```

```
|                 60000 |
|                 45000 |
+-----------------+
3 rows in set (0.00 sec)

mysql> SELECT AVG(Emp_Salary)
    -> FROM Employee;
+-----------------+
| AVG(Emp_Salary) |
+-----------------+
|      57500.0000 |
+-----------------+
1 row in set (0.00 sec)

mysql> SELECT MAX(Emp_Salary)
    -> FROM Employee;
+-----------------+
| MAX(Emp_Salary) |
+-----------------+
|                 90000 |
+-----------------+
1 row in set (0.01 sec)

mysql> SELECT MIN(Emp_Salary)
    -> FROM Employee;
```

```
+-----------------+
| MIN(Emp_Salary) |
+-----------------+
|           40000 |
+-----------------+
1 row in set (0.00 sec)

mysql>
```