

## EX. No. 1 – DDL Commands using CREATE, ALTER, TRUNCATE, and DROP

```
MySQL 8.0 Command Line Cli X + -
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.42 MySQL Community Server - GPL

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owners.

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

mysql> USE collegeDB;
Database changed
mysql> CREATE TABLE Student(
  -> RollNo INT,
  -> Name VARCHAR(50),
  -> Age INT
  -> );
Query OK, 0 rows affected (0.27 sec)

mysql> DESC STUDENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RollNo | int           | YES  |     | NULL    |       |
| Name   | varchar(50)   | YES  |     | NULL    |       |
| Age    | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.09 sec)

mysql> |

mysql> ALTER TABLE Student ADD EmailVARCHAR(100);
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 '(100)' at line 1
mysql> ALTER TABLE Student ADD Email VARCHAR(100);
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESC STUDENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RollNo | int           | YES  |     | NULL    |       |
| Name   | varchar(50)   | YES  |     | NULL    |       |
| Age    | int           | YES  |     | NULL    |       |
| Email  | varchar(100)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> TRUNCATE TABLE Student;
Query OK, 0 rows affected (0.04 sec)

mysql> DESC STUDENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RollNo | int           | YES  |     | NULL    |       |
| Name   | varchar(50)   | YES  |     | NULL    |       |
| Age    | int           | YES  |     | NULL    |       |
| Email  | varchar(100)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql>

4 rows in set (0.01 sec)

mysql> DROP TABLE Student;
Query OK, 0 rows affected (0.03 sec)

mysql> DESC STUDENT;
ERROR 1146 (42S02): Table 'collegedb.student' doesn't exist
mysql> |
```

## EX. No. 2 – DDL Commands with Constraints

```
MySQL 8.0 Command Line Cli X + v
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.42 MySQL Community Server - GPL

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owners.

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

mysql> USE CollegeDB;
Database changed
mysql> CREATE TABLE Department (
  -> DeptID INT PRIMARY KEY,
  -> DeptName VARCHAR(50)
  -> );
Query OK, 0 rows affected (0.04 sec)

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DeptID | int  | NO   | PRI | NULL    |       |
| DeptName | varchar(50) | YES |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql>
```

```
MySQL 8.0 Command Line Cli X + v

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DeptID | int  | NO   | PRI | NULL    |       |
| DeptName | varchar(50) | YES |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> CREATE TABLE Product (
  -> ProductID INT PRIMARY KEY,
  -> Price DECIMAL (10,2) CHECK (Price>0)
  -> );
Query OK, 0 rows affected (0.04 sec)

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DeptID | int  | NO   | PRI | NULL    |       |
| DeptName | varchar(50) | YES |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql> DESC PRODUCT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| ProductID | int | NO | PRI | NULL |       |
| Price | decimal(10,0) | YES |     | NULL |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

```
mysql> DESC ORDER;
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 'ORDER' at line 1
mysql> DESC ORDERS
-> DESC ORDERS;
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 'DESC ORDERS' at line 2
mysql> DESC ORDERS;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| OrderID | int           | NO   | PRI | NULL    |       |
| Status  | varchar(20)   | YES  |     | Pending |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> CREATE TABLE Course (
-> CourseID INT PRIMARY KEY,
-> CourseName VARCHAR(50) NOT NULL
-> );
Query OK, 0 rows affected (0.04 sec)

mysql> DESC COURSE;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CourseID | int           | NO   | PRI | NULL    |       |
| CourseName | varchar(50)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

*EX 3 DML Commands using INSERT and SELECT*

```
mysql> USE companydb;
Database changed
mysql> CREATE TABLE Department (
-> DeptID INT PRIMARY KEY,
-> DeptName VARCHAR(100)
-> );
ERROR 1050 (42S01): Table 'department' already exists
mysql> USE TABLE department;
ERROR 1049 (42000): Unknown database 'table'
mysql> USE department;
Database changed
mysql> INSERT INTO Department(DeptID,DeptName)
-> VALUES (1,'Computer Science');
ERROR 1146 (42S02): Table 'department.department' doesn't exist
mysql> CREATE TABLE department (
-> deptid INT PRIMARY KEY,
-> deptname VARCHAR (225)
-> );
Query OK, 0 rows affected (0.09 sec)

mysql> INSERT INTO department (deptid,deptname)
-> VALUES (1,'Computer Science');
Query OK, 1 row affected (0.01 sec)

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| deptid | int           | NO   | PRI | NULL    |       |
| deptname | varchar(225)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.04 sec)

mysql> |
```

```
MySQL 8.0 Command Line Cll X + v
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int       | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES |     | NULL    |       |
| deptid | int       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)

mysql> INSERT INTO Employee(EmpID,EmpNmae,deptid)
-> VALUES (101,'Alice',1);
Query OK, 1 row affected (0.00 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int       | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES |     | NULL    |       |
| deptid | int       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int       | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES |     | NULL    |       |
| deptid | int       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> |
```

```
MySQL 8.0 Command Line Cll X + v
+-----+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int       | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES |     | NULL    |       |
| deptid | int       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> SELECT * FROM Employee;
+-----+-----+-----+
| EmpID | EmpNmae | deptid |
+-----+-----+-----+
| 101 | Alice | 1 |
+-----+-----+-----+
1 row in set (0.01 sec)

mysql> SELECT EmpNmae,deptid FROM Employee;
+-----+-----+
| EmpNmae | deptid |
+-----+-----+
| Alice | 1 |
+-----+-----+
1 row in set (0.00 sec)

mysql> SELECT*FROM Employee
-> WHERE deptid=1;
+-----+-----+-----+
| EmpID | EmpNmae | deptid |
+-----+-----+-----+
| 101 | Alice | 1 |
+-----+-----+-----+
1 row in set (0.01 sec)

mysql> |
```

## EX. No. 4 – DML Commands using UPDATE and DELETE

```
MySQL 8.0 Command Line Cli X + v
+-----+
1 row in set (0.01 sec)

mysql> UPDATE Employee
  -> SET EmpNmae='Alicia'
  -> WHERE EmpID =101;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> DESC EMPLOYEE;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| EmpID | int           | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES  |     | NULL    |       |
| deptid | int           | YES  | MUL | NULL    |       |
+-----+
3 rows in set (0.01 sec)

mysql> DELETE FROM Employee
  -> WHERE EmpID =101;
Query OK, 1 row affected (0.01 sec)

mysql> DESC EMPLOYEE;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| EmpID | int           | NO   | PRI | NULL    |       |
| EmpNmae | varchar(100) | YES  |     | NULL    |       |
| deptid | int           | YES  | MUL | NULL    |       |
+-----+
3 rows in set (0.01 sec)

mysql> |
```

## EX. No. 5 – TCL Commands: COMMIT, SAVEPOINT, ROLLBACK

```
MySQL 8.0 Command Line Cli X + v

mysql> USE department;
Database changed
mysql> INSERT INTO department (deptid, deptname) VALUES (2,'Mechanical');
Query OK, 1 row affected (0.18 sec)

mysql> DESC DEPARTMENT;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| deptid | int           | NO   | PRI | NULL    |       |
| deptname | varchar(225) | YES  |     | NULL    |       |
+-----+
2 rows in set (0.04 sec)

mysql> COMMIT;
Query OK, 0 rows affected (0.01 sec)

mysql> DESC SEPARTMENT;
ERROR 1146 (42S02): Table 'department.separtment' doesn't exist
mysql> DESC DEPARTMENT;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| deptid | int           | NO   | PRI | NULL    |       |
| deptname | varchar(225) | YES  |     | NULL    |       |
+-----+
2 rows in set (0.00 sec)

mysql> SAVEPOINT spl;
Query OK, 0 rows affected (0.00 sec)

mysql> INSERT INTO department (deptid,deptname) VALUES(3,'Electrical');
Query OK, 1 row affected (0.01 sec)
```

```
MySQL 8.0 Command Line Cli X + v
2 rows in set (0.01 sec)

mysql> SELECT * FROM department;
+-----+-----+
| deptid | deptname |
+-----+-----+
| 1      | Computer Science |
| 2      | Mechanical      |
| 3      | Electrical      |
+-----+-----+
3 rows in set (0.00 sec)

mysql> ROLLBACK TO spl;
ERROR 1305 (42000): SAVEPOINT spl does not exist
mysql> BEGIN;
Query OK, 0 rows affected (0.00 sec)

mysql> SAVEPOINT spl;
Query OK, 0 rows affected (0.00 sec)

mysql> ROLLBACK TO spl;
Query OK, 0 rows affected (0.00 sec)

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| deptid | int | NO | PRI | NULL | |
| deptname | varchar(225) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT * FROMM department;
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 'FROMM department' at line 1
mysql> |
```

```
MySQL 8.0 Command Line Cli X + v

mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| deptid | int | NO | PRI | NULL | |
| deptname | varchar(225) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT * FROMM department;
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 'FROMM department' at line 1
mysql> SELECT * FROM department;
+-----+-----+
| deptid | deptname |
+-----+-----+
| 1      | Computer Science |
| 2      | Mechanical      |
| 3      | Electrical      |
+-----+-----+
3 rows in set (0.00 sec)

mysql> ROLLBACK;
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| deptid | deptname |
+-----+-----+
| 1      | Computer Science |
| 2      | Mechanical      |
| 3      | Electrical      |
+-----+-----+
3 rows in set (0.00 sec)

mysql>
```

## EX. No. 6 – DCL Commands: GRANT and REVOKE

```
MySQL 8.0 Command Line Cll X + v
mysql> CREATE DATABASE University;
Query OK, 1 row affected (0.02 sec)

mysql> USE University;
Database changed
mysql> CREATE TABLE department (
  -> deptid INT PRIMARY KEY;
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 2
mysql> CREATE TABLE Department (
  -> deptid INT PRIMARY KEY,
  -> deptname VARCHAR(100)
  -> );
Query OK, 0 rows affected (0.09 sec)

mysql> CREATE USER 'user1'@'localhost' IDENTIFIED BY 'password123';
Query OK, 0 rows affected (0.06 sec)

mysql> DESC DEPARTMENT;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| deptid | int           | NO   | PRI | NULL    |       |
| deptname | varchar(100) | YES  |     | NULL    |       |
+-----+
2 rows in set (0.01 sec)

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

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

```
MySQL 8.0 Command Line Cll X + v
ERROR 1146 (42502): Table 'university.university' doesn't exist
mysql> DESC UNIVERSITY;
ERROR 1146 (42502): Table 'university.university' doesn't exist
mysql> USE UNIVERSITY;
Database changed
mysql> DESC UNIVERSITY;
ERROR 1146 (42502): Table 'university.university' doesn't exist
mysql> DESC UNIVERSITY.DEPARTMENT;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| deptid | int           | NO   | PRI | NULL    |       |
| deptname | varchar(100) | YES  |     | NULL    |       |
+-----+
2 rows in set (0.00 sec)

mysql> SELECT * FROM UNIVERSITY.DEPARTMENT;
Empty set (0.00 sec)

mysql> SHOW GRANTS FOR 'user1'@'localhost';
+-----+
| Grants for user1@localhost |
+-----+
| GRANT USAGE ON *.* TO 'user1'@'localhost' |
| GRANT SELECT, INSERT ON 'university'.'department' TO 'user1'@'localhost' |
+-----+
2 rows in set (0.00 sec)

mysql> REVOKE INSERT ON UNIVERSITY.DEPARTMENT FROM 'user1'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> SHOW GRANT FOR 'user1'@'localhost';
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 'GRANT FOR '
user1'@'localhost'' at line 1
mysql> SHOW GRANTS FOR 'user1'@'localhost';
+-----+
| Grants for user1@localhost |
+-----+
| GRANT USAGE ON *.* TO 'user1'@'localhost' |
| GRANT SELECT ON 'university'.'department' TO 'user1'@'localhost' |
+-----+
2 rows in set (0.00 sec)

mysql>
```

## EX. No. 7 – SELECT with Various Clauses: WHERE, Pattern Matching

```
MySQL 8.0 Command Line Cli  X  +  v

Your MySQL connection id is 17
Server version: 8.0.42 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 FilterDemoDB;
Query OK, 1 row affected (0.11 sec)

mysql> USE FilterDemoDB;
Database changed
mysql> CREATE TABLE Employee (
  -> EmpID INT PRIMARY KEY,
  -> EmpName VARCHAR(100),
  -> DeptID INT
  -> );
Query OK, 0 rows affected (0.15 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int           | NO   | PRI | NULL    |       |
| EmpName | varchar(100) | YES  |     | NULL    |       |
| DeptID | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.06 sec)

mysql> |
```

```
MySQL 8.0 Command Line Cli  X  +  v

+-----+-----+-----+-----+-----+-----+
| DeptID | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> SELECT * FROM EMPLOYEE;
+-----+-----+-----+
| EmpID | EmpName | DeptID |
+-----+-----+-----+
| 101   | Alice   | 1       |
| 102   | bob     | 2       |
| 103   | Anil    | 1       |
| 104   | catherine | 3       |
| 105   | Amit    | 2       |
| 106   | David   | 1       |
+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> SELECT column1, column2 FROM table_name
  -> WHERE condition;
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 'condition' at line 2
mysql> SELECT EmpName FROM Employee
  -> WHERE DeptID = 1;
+-----+
| EmpName |
+-----+
| Alice   |
| Anil    |
| David   |
+-----+
3 rows in set (0.00 sec)

mysql> |
```





```
MySQL 8.0 Command Line Cll X + v
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 ' 'Marker', 80)' at line 7
mysql> INSERT INTO Product VALUES
-> (1, 'Pen', 20),
-> (2, 'Pencil', 10),
-> (3, 'Notebook', 55),
-> (4, 'Bag', 200),
-> (5, 'Eraser', 5),
-> (6, 'Marker', 80);
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 ' 'Marker', 80)' at line 7
mysql> INSERT INTO Product VALUES
-> (1,'Pen',20),
-> (2,'Pencil',10),
-> (3,'NoteBook',55),
-> (4,'Bag',200),
-> (5,'Eraser',5),
-> (6,'Marker',80);
Query OK, 6 rows affected (0.01 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM PRODUCT;
+-----+-----+-----+
| ProductID | ProductName | Price |
+-----+-----+-----+
| 1 | Pen | 20.00 |
| 2 | Pencil | 10.00 |
| 3 | NoteBook | 55.00 |
| 4 | Bag | 200.00 |
| 5 | Eraser | 5.00 |
| 6 | Marker | 80.00 |
+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> |
```

```
MySQL 8.0 Command Line Cll X + v
mysql> SELECT * FROM PRODUCT;
+-----+-----+-----+
| ProductID | ProductName | Price |
+-----+-----+-----+
| 1 | Pen | 20.00 |
| 2 | Pencil | 10.00 |
| 3 | NoteBook | 55.00 |
| 4 | Bag | 200.00 |
| 5 | Eraser | 5.00 |
| 6 | Marker | 80.00 |
+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> INSERT INTO Employee VALUES
-> (101,'Alice',1,30000),
-> (102,'Bob',2,28000),
-> (103,'Charlie',3,25000),
-> (104,'David',1,35000),
-> (105,'Eve',2,32000);
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM EMPLOYEE;
+-----+-----+-----+-----+
| EmpID | EmpName | DeptID | Salary |
+-----+-----+-----+-----+
| 101 | Alice | 1 | 30000.00 |
| 102 | Bob | 2 | 28000.00 |
| 103 | Charlie | 3 | 25000.00 |
| 104 | David | 1 | 35000.00 |
| 105 | Eve | 2 | 32000.00 |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line Cli X + v
mysql> SELECT ProductName, Price
-> FROM Product
-> WHERE Price BETWEEN 10 AND 100;
+-----+-----+
| ProductName | Price |
+-----+-----+
| Pen         | 20.00 |
| Pencil      | 10.00 |
| NoteBook    | 55.00 |
| Marker      | 80.00 |
+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT EmpName, DeptID
-> FROM Employee
-> WHERE DeptID IN (1,2);
+-----+-----+
| EmpName | DeptID |
+-----+-----+
| Alice   | 1      |
| Bob     | 2      |
| David   | 1      |
| Eve     | 2      |
+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT AVG(Price) AS AveragePrice FROM Product;
+-----+
| AveragePrice |
+-----+
| 61.666667    |
+-----+
1 row in set (0.01 sec)

mysql>
```

```
mysql> SELECT SUM(Salary) AS TotalSalary FROM Employee;
+-----+
| TotalSalary |
+-----+
| 150000.00   |
+-----+
1 row in set (0.00 sec)

mysql> SELECT MAX(Price) AS MaxPrice FROM Product;
+-----+
| MaxPrice |
+-----+
| 200.00   |
+-----+
1 row in set (0.01 sec)

mysql> |
```

*EX. No. 9 – SELECT with Various Clauses: GROUP BY, HAVING, ORDER BY*

```
MySQL 8.0 Command Line C# X + v

mysql> CREATE DATABASE CompanyDB;
Query OK, 1 row affected (0.07 sec)

mysql> USE CompanyDB;
Database changed
mysql> CREATE TABLE Employee (
  -> EmpID INT PRIMARY KEY,
  -> EmpName VARCHAR(1000),
  -> DeptID INT,
  -> Salary DECIMAL(10,2)
  -> );
Query OK, 0 rows affected (0.06 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int  | NO   | PRI | NULL    |       |
| EmpName | varchar(1000) | YES |     | NULL    |       |
| DeptID | int  | YES  |     | NULL    |       |
| Salary | decimal(10,2) | YES |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> INSERT INTO Employee VALUES
  -> (101,'Alice',1,30000),
  -> (102,'Bob',2,28000),
  -> (103,'Charlie',1,25000),
  -> (104,'David',3,22000),
  -> (105,'Eve',2,32000),
  -> (106,'Frank',1,26000),
  -> (107,'Grace',3,24000);
Query OK, 7 rows affected (0.02 sec)
Records: 7 Duplicates: 0 Warnings: 0
```

```
MySQL 8.0 Command Line C# X + v

+-----+-----+-----+-----+
| EmpID | EmpName | DeptID | Salary |
+-----+-----+-----+-----+
| 101 | Alice | 1 | 30000.00 |
| 102 | Bob | 2 | 28000.00 |
| 103 | Charlie | 1 | 25000.00 |
| 104 | David | 3 | 22000.00 |
| 105 | Eve | 2 | 32000.00 |
| 106 | Frank | 1 | 26000.00 |
| 107 | Grace | 3 | 24000.00 |
+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql> SELECT DeptID, COUNT(*) AS EmployeeCount
  -> FROM Employee
  -> GROUP BY DeptID;
+-----+-----+
| DeptID | EmployeeCount |
+-----+-----+
| 1 | 3 |
| 2 | 2 |
| 3 | 2 |
+-----+-----+
3 rows in set (0.01 sec)

mysql> SELECT DeptID, COUNT(*) AS EmployeeCount
  -> FROM Employee
  -> GROUP BY DeptID
  -> HAVING COUNT(*) > 2;
+-----+-----+
| DeptID | EmployeeCount |
+-----+-----+
| 1 | 3 |
+-----+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT EmpName, Salary
-> FROM Employee
-> ORDER BY Salary DESC;

+-----+-----+
| EmpName | Salary |
+-----+-----+
| Eve      | 32000.00 |
| Alice    | 30000.00 |
| Bob      | 28000.00 |
| Frank    | 26000.00 |
| Charlie  | 25000.00 |
| Grace    | 24000.00 |
| David    | 22000.00 |
+-----+-----+
7 rows in set (0.00 sec)

mysql> |
```

## EX. No. 10 – Query with Subquery and Correlated Query

```
mysql> USE UniversityDB;
Database changed
mysql> CREATE TABLE Department (
-> DeptID INT PRIMARY KEY,
-> DeptName VARCHAR(100)
-> );
Query OK, 0 rows affected (0.03 sec)

mysql> CREATE TABLE Employee (
-> EmpID INT PRIMARY KEY,
-> EmpName VARCHAR (50),
-> DeptID INT,
-> FOREIGN KEY (DeptID) REFERENCES Department(DeptID)
-> );
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO Department VALUES
-> (1,'Computer Science'),
-> (2,'Mechanical'),
-> (3,'Civil'),
-> (4,'Electrical');
Query OK, 4 rows affected (0.01 sec)
Records: 4 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM DEPARTMENT;

+-----+-----+
| DeptID | DeptName |
+-----+-----+
| 1      | Computer Science |
| 2      | Mechanical |
| 3      | Civil |
| 4      | Electrical |
+-----+-----+
4 rows in set (0.00 sec)
```

```
MySQL 8.0 Command Line Cl...
mysql> INSERT INTO Employee VALUES
  -> (101,'Alice',1),
  -> (102,'Bob',2),
  -> (103,'Charlie',1),
  -> (104,'David',3),
  -> (105,'Eve',2),
  -> (106,'Frank',4);
Query OK, 6 rows affected (0.01 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM EMPLOYEE
  -> ;
+-----+-----+-----+
| EmpID | EmpName | DeptID |
+-----+-----+-----+
| 101   | Alice   | 1      |
| 102   | Bob     | 2      |
| 103   | Charlie | 1      |
| 104   | David   | 3      |
| 105   | Eve     | 2      |
| 106   | Frank   | 4      |
+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> SELECT EmpName
  -> FROM Employee
  -> WHERE DeptID IN (
  -> SELECT DeptID
  -> FROM Department
  -> WHERE DeptName = 'Computer science'
  -> );
+-----+
| EmpName |
+-----+
| Alice   |
+-----+

mysql> SELECT EmpName
  -> FROM Employee
  -> WHERE DeptID IN (
  -> SELECT DeptID
  -> FROM Department
  -> WHERE DeptName = 'Computer science'
  -> );
+-----+
| EmpName |
+-----+
| Alice   |
| Charlie |
+-----+
2 rows in set (0.01 sec)

mysql> SELECT EmpName
  -> FROM Employee e
  -> WHERE DeptID = (
  -> SELECT DeptID
  -> FROM Department d
  -> WHERE d. DeptName = 'Electrical'
  -> );
+-----+
| EmpName |
+-----+
| Frank   |
+-----+
1 row in set (0.01 sec)

mysql> |
```

## EX. No. 11 – Query with Joins: EquiJoin, InnerJoin, OuterJoin

```
MySQL 8.0 Command Line Cli X + v

mysql> USE CompanyDB;
Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_companydb |
+-----+
| employee             |
+-----+
1 row in set (0.03 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EmpID | int           | NO   | PRI | NULL    |       |
| EmpName | varchar(1000) | YES  |     | NULL    |       |
| DeptID | int           | YES  |     | NULL    |       |
| Salary | decimal(10,2) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> CREATE TABLE Department (
  -> DeptID INT PRIMARY KEY,
  -> DeptName VARCHAR(50)
  -> );
Query OK, 0 rows affected (0.04 sec)

mysql> SELECT * FROM EMPLOYEE;
+-----+-----+-----+-----+
| EmpID | EmpName | DeptID | Salary |
+-----+-----+-----+-----+
| 101   | Alice   | 1      | 30000.00 |
| 102   | Bob     | 2      | 28000.00 |
| 103   | Charlie | 1      | 25000.00 |
+-----+-----+-----+-----+
```

```
MySQL 8.0 Command Line Cli X + v

mysql> SELECT * FROM EMPLOYEE;
+-----+-----+-----+-----+
| EmpID | EmpName | DeptID | Salary |
+-----+-----+-----+-----+
| 101   | Alice   | 1      | 30000.00 |
| 102   | Bob     | 2      | 28000.00 |
| 103   | Charlie | 1      | 25000.00 |
| 104   | David   | 3      | 22000.00 |
| 105   | Eve     | 2      | 32000.00 |
| 106   | Frank   | 1      | 26000.00 |
| 107   | Grace   | 3      | 24000.00 |
+-----+-----+-----+-----+
7 rows in set (0.01 sec)

mysql> INSERT INTO Department ( DeptID,DeptName ) VALUES
  -> (10,'HR'),
  -> (20,'IT'),
  -> (40,'Marketing');
ERROR 1054 (42S22): Unknown column 'DeptID' in 'field list'
mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DeptID | int           | NO   | PRI | NULL    |       |
| DeptName | varchar(50)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.04 sec)

mysql> INSERT INTO Department ( DeptID,DeptName ) VALUES
  -> (10,'HR'),
  -> (20,'IT'),
  -> (40,'Marketing');
Query OK, 3 rows affected (0.03 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

```
MySQL 8.0 Command Line C# X + v
mysql> INSERT INTO Department ( DeptID, DeptName) VALUES
  -> (1,'HR'),
  -> (2,'IT'),
  -> (3,'Marketing');
Query OK, 3 rows affected (0.07 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DeptID | DeptName |
+-----+-----+
|      1 | HR       |
|      2 | IT       |
|      3 | Marketing|
|     10 | HR       |
|     20 | IT       |
|     40 | Marketing|
+-----+-----+
6 rows in set (0.00 sec)

mysql> SELECT Employee.EmpName,Department.DeptName
  -> FROM Employee,Department
  -> WHERE Employee.DeptID =Department.DeptID;
+-----+-----+
| EmpName | DeptName |
+-----+-----+
| Alice   | HR       |
| Bob     | IT       |
| Charlie | HR       |
| David   | Marketing|
| Eve     | IT       |
| Frank   | HR       |
| Grace   | Marketing|
+-----+-----+
7 rows in set (0.01 sec)

7 rows in set (0.01 sec)

mysql> SELECT Employee.EmpName,Department.DeptName
  -> FROM Employee
  -> INNER JOIN Department ON Employee.DeptID = Department.DeptID;
+-----+-----+
| EmpName | DeptName |
+-----+-----+
| Alice   | HR       |
| Bob     | IT       |
| Charlie | HR       |
| David   | Marketing|
| Eve     | IT       |
| Frank   | HR       |
| Grace   | Marketing|
+-----+-----+
7 rows in set (0.01 sec)
```



### EX. No. 12 - Query with VIEW and INDEX

```
MySQL 8.0 Command Line Client X
```

```
+-----+
| Frank | HR      |
+-----+
| Grace | Marketing |
+-----+
```

```
7 rows in set (0.01 sec)
```

```
mysql> SELECT Employee.EmpName, Department.DeptName
-> FROM Employee
-> LEFT OUTER JOIN Department ON Employee.DeptID = Department.DeptID;
ERROR 1054 (42S22): Unknown column 'Department.DeptID' in 'on clause'
```

```
mysql> CREATE VIEW EmpDept AS
-> SELECT EmpName, DeptName
-> FROM Employee
-> INNER JOIN Department ON Employee.DeptID = Department.DeptID;
```

```
Query OK, 0 rows affected (0.26 sec)
```

```
mysql> SELECT * FROM EmpDept;
```

```
+-----+
| EmpName | DeptName |
+-----+
| Alice   | HR       |
| Bob     | IT       |
| Charlie | HR       |
| David   | Marketing |
| Eve     | IT       |
| Frank   | HR       |
| Grace   | Marketing |
+-----+
```

```
7 rows in set (0.06 sec)
```

```
mysql> CREATE INDEX idx_deptid ON Employee(DeptID);
Query OK, 0 rows affected (0.19 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> CREATE INDEX idx_deptid ON Employee(DeptID);
Query OK, 0 rows affected (0.19 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> SHOW INDEX FROM Employee;
```

```
+-----+
| Table | Non_unique | Key_name | Seq_in_index | Column_name | Collation | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index |
+-----+
| employee | YES | PRIMARY | 1 | EmpID | A | 7 | NULL | NULL | NULL | BTREE | | |
| employee | YES | idx_deptid | 1 | DeptID | A | 3 | NULL | NULL | YES | BTREE | | |
+-----+
```

```
2 rows in set (0.06 sec)
```

```
mysql>
```

## EX. No. 13 – Query with AUTO\_INCREMENT SEQUENCES

```
MySQL 8.0 Command Line Cli X + v
mysql> CREATE DATABASE Mycompany;
Query OK, 1 row affected (0.03 sec)

mysql> USE Mycompany;
Database changed
mysql> CREATE TABLE EMPLOYEE;
ERROR 4028 (HY000): A table must have at least one visible column.
mysql> CREATE TABLE EMPLOYEE (
  -> EmpID IN AUTO_INCREMENT,
  -> EmpName VARCHAR(50),
  -> DeptID INT,
  -> PRIMARY KEY (EmpID)
  -> );
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 'IN AUTO_INCREMENT,
EmpName VARCHAR(50),
DeptID INT,
PRIMARY KEY (EmpID)
)' at line 2
mysql> CREATE TABLE EMPLOYEE (
  -> EmpID INT AUTO_INCREMENT,
  -> EmpName VARCHAR(50),
  -> DeptID INT,
  -> PRIMARY KEY (EmpID)
  -> );
Query OK, 0 rows affected (0.12 sec)

mysql> DESC EMPLOYEE;
+-----+
| Field | Type          | Null | Key | Default | Extra          |
+-----+
| EmpID | int           | NO   | PRI | NULL    | auto_increment |
| EmpName | varchar(50)  | YES  |     | NULL    |                |
| DeptID | int          | YES  |     | NULL    |                |
+-----+
```

```
MySQL 8.0 Command Line Cli X + v
  -> EmpID INT AUTO_INCREMENT,
  -> EmpName VARCHAR(50),
  -> DeptID INT,
  -> PRIMARY KEY (EmpID)
  -> );
Query OK, 0 rows affected (0.12 sec)

mysql> DESC EMPLOYEE;
+-----+
| Field | Type          | Null | Key | Default | Extra          |
+-----+
| EmpID | int           | NO   | PRI | NULL    | auto_increment |
| EmpName | varchar(50)  | YES  |     | NULL    |                |
| DeptID | int          | YES  |     | NULL    |                |
+-----+
3 rows in set (0.08 sec)

mysql> INSERT INTO EMPLOYEE (EmpName, DeptID) VALUES ('Alice',10);
Query OK, 1 row affected (0.03 sec)

mysql> INSERT INTO EMPLOYEE (EmpName, DeptID) VALUES ('Bob',20),
  -> INSERT INTO EMPLOYEE (EmpName, DeptID) VALUES ('Charlie',30),
  -> INSERT INTO EMPLOYEE (EmpName, DeptID) VALUES ('David',NULL);
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 'INSERT INTO EMPLOYEE (EmpName, DeptID) VALUES ('Charlie',30),
INSERT INTO EMPLOY' at line 2
mysql> SELECT * FROM EMPLOYEE;
+-----+
| EmpID | EmpName | DeptID |
+-----+
| 1     | Alice   | 10     |
+-----+
1 row in set (0.00 sec)

mysql>
```

## EX. No. 14 – Simple Programming using REPEAT and WHILE

```
MySQL 8.0 Command Line Cll X + v
mysql> DROP DATABASE companydb;
Query OK, 3 rows affected (0.36 sec)

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

mysql> USE Companydb;
Database changed
mysql> CREATE TABLE Employee (
  -> EmpID INT AUTO_INCREMENT PRIMARY KEY,
  -> EmpName VAECHAR(50),
  -> DeptID 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 'VAECHAR(50),
DeptID INT
)' at line 3
mysql> CREATE TABLE Employee (
  -> EmpID INT AUTO_INCREMENT PRIMARY KEY,
  -> EmpName VARCHAR(50),
  -> DeptID INT
  -> );
Query OK, 0 rows affected (0.07 sec)

mysql> DESC EMPLOYEE;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| EmpID | int           | NO   | PRI | NULL    | auto_increment |
| EmpName | varchar(50)  | YES  |     | NULL    |                |
| DeptID | int          | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+
3 rows in set (0.08 sec)

mysql> |
```

## EX. No. 15 – Simple Programming using CASE and LOOP

```
MySQL 8.0 Command Line Cll X + v
Oracle is a registered trademark of Oracle Corporation and/or its
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 Stall;
Query OK, 1 row affected (0.03 sec)

mysql> USE Stall;
Database changed
mysql> CREATE TABLE Employee (
  -> EmpID INT AUTO_INCREMENT PRIMARY KEY,
  -> EmpName VARCHAR (50),
  -> DeptID INT,
  -> Salary INT
  -> );
Query OK, 0 rows affected (0.06 sec)

mysql> CREATE PROCEDURE Loop_insert ()
  -> BEGIN
  -> DECLARE counter INT DEFAULT 1;
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 3
mysql> INSERT INTO Employee (EmpName, DeptID,Salary) VALUES
  -> ('Employee1' , 3, 1000),
  -> ('Employee2' , 3, 2000),
  -> ('Employee3' , 3, 3000),
  -> ('Employee4' , 3, 4000),
  -> ('Employee5' , 3, 5000);
Query OK, 5 rows affected (0.17 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql>
```

```
MySQL 8.0 Command Line Cll X + v
+-----+
| 1 | Employee1 | 3 | 1000 |
| 2 | Employee2 | 3 | 2000 |
| 3 | Employee3 | 3 | 3000 |
| 4 | Employee4 | 3 | 4000 |
| 5 | Employee5 | 3 | 5000 |
+-----+
5 rows in set (0.08 sec)

mysql> SELECT EmpName,
-> CASE
-> WHEN Salary >5000 THEN 'High'
-> WHEN Salary BETWEEN 3000 AND 5000 THEN 'Medium'
-> ELSE 'Low'
-> END AS Salary_Level
-> FROM Employee;
+-----+
| EmpName | Salary_Level |
+-----+
| Employee1 | Low
| Employee2 | Low
| Employee3 | Medium
| Employee4 | Medium
| Employee5 | Medium
+-----+
5 rows in set (0.01 sec)

mysql> SET @counter = 1;
Query OK, 0 rows affected (0.01 sec)

mysql> LOOP
-> INSERT INTO Employee (EmpName,DeptID) VALUES ('Employee' + @counter,3);
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 'LOOP
INSERT INTO Employee (EmpName,DeptID) VALUES ('Employee' + @counter,3)' at line 1
mysql>
```

## EX. No. 16 – High-Level Programming Extensions – Procedures

```
MySQL 8.0 Command Line Cll X + v
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.42 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 CompanyDB;
Query OK, 1 row affected (0.03 sec)

mysql> USE CompanyDB;
Database changed
mysql> CREATE TABLE Employee (
-> EmpID INT PRIMARY KEY,
-> EmpName VARCHAR (50),
-> DeptID INT
-> );
Query OK, 0 rows affected (0.19 sec)

mysql> DESC EMPLOYEE;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| EmpID | int | NO | PRI | NULL |
| EmpName | varchar(50) | YES | | NULL |
| DeptID | int | YES | | NULL |
+-----+
3 rows in set (0.12 sec)
```

## EX. No. 17 – High-Level Programming Extensions – Function

```
MySQL 8.0 Command Line Cli X + v
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 406
Server version: 8.0.42 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> USE COMPANY;
Database changed
mysql> DROP COMPANY;
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 'COMPANY' at line 1
mysql> DROP DATABASE COMPANY;
Query OK, 1 row affected (0.09 sec)

mysql> CREATE DATABASE CompanyDB;
ERROR 1007 (HY000): Can't create database 'companydb'; database exists
mysql> USE Companydb;
Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_companydb |
+-----+
| employee             |
+-----+
1 row in set (0.06 sec)

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

```
MySQL 8.0 Command Line Cli X + v
+-----+
| EmpID | int | NO | PRI | NULL |
| EmpName | varchar(50) | YES | | NULL |
| DeptID | int | YES | | NULL |
+-----+
3 rows in set (0.01 sec)

mysql> DROP TABLE Employee;
Query OK, 0 rows affected (0.03 sec)

mysql> CREATE TABLE Employee (
  -> EmpID INT PRIMARY KEY,
  -> EmpName VARCHAR(50),
  -> Salary INT
  -> );
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO Employee (EmpID, EmpName, Salary) VALUES
  -> (1, 'John Doe', 50000),
  -> (2, 'Jane Smith', 60000),
  -> (3, 'Alice Johnson', 70000);
Query OK, 3 rows affected (0.02 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM Employee;
+-----+
| EmpID | EmpName | Salary |
+-----+
| 1 | John Doe | 50000 |
| 2 | Jane Smith | 60000 |
| 3 | Alice Johnson | 70000 |
+-----+
3 rows in set (0.00 sec)

mysql> \q
```

```
MySQL 8.0 Command Line Cll X + v
mysql> DELIMITER //
mysql>
mysql> CREATE FUNCTION CalculateSalary(emp_id INT)
-> RETURNS INT
-> DETERMINISTIC
-> BEGIN
-> DECLARE salary INT;
-> SELECT Salary INTO salary FROM Employee WHERE EmpID = emp_id;
-> RETURN salary;
-> END //
Query OK, 0 rows affected (0.02 sec)

mysql> DELIMITER ;
mysql> SELECT CalculateSalary(1) AS Salary;
+-----+
| Salary |
+-----+
| NULL   |
+-----+
1 row in set (0.02 sec)

mysql> SELECT CalculateSalary(1) AS Salary;
+-----+
| Salary |
+-----+
| NULL   |
+-----+
1 row in set (0.00 sec)

mysql> SELECT CalculateSalary(2) AS Salary;
+-----+
| Salary |
+-----+
| NULL   |
+-----+
```

## EX. No. 18 – High-Level Programming Extensions – Cursors

```
MySQL 8.0 Command Line Cll X + v
mysql> DELIMITER //
mysql>
mysql> CREATE FUNCTION CalculateSalary(emp_id INT)
-> RETURNS INT
-> DETERMINISTIC
-> BEGIN
-> DECLARE salary INT;
-> SELECT Salary INTO salary FROM Employee WHERE EmpID = emp_id;
-> RETURN salary;
-> END //
ERROR 1304 (42000): FUNCTION CalculateSalary already exists
mysql>
mysql> DELIMITER ;
mysql> DELIMITER //
mysql>
mysql> CREATE PROCEDURE ShowAllEmployeeNames()
-> BEGIN
-> DECLARE done INT DEFAULT 0;
-> DECLARE emp_name VARCHAR(50);
-> DECLARE employee_cursor CURSOR FOR SELECT EmpName FROM Employee;
-> DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = 1;
->
-> OPEN employee_cursor;
->
-> read_loop: LOOP
-> FETCH employee_cursor INTO emp_name;
-> IF done THEN
-> LEAVE read_loop;
-> END IF;
-> SELECT emp_name AS EmployeeName;
-> END LOOP;
->
-> CLOSE employee_cursor;
-> END //
```

```
MySQL 8.0 Command Line C... X + -
->      END IF;
->      SELECT emp_name AS EmployeeName;
->      END LOOP;
->
->      CLOSE employee_cursor;
-> END //
Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> DELIMITER ;
mysql> CALL ShowAllEmployeeNames();
+-----+
| EmployeeName |
+-----+
| John Doe     |
+-----+
1 row in set (0.01 sec)

+-----+
| EmployeeName |
+-----+
| Jane Smith   |
+-----+
1 row in set (0.01 sec)

+-----+
| EmployeeName |
+-----+
| Alice Johnson |
+-----+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

mysql> |
```

## EX. No. 19 – High-Level Programming Extensions – Triggers

```
MySQL 8.0 Command Line C... X + -
-> BEGIN
->   INSERT INTO AuditLog (Action, EmpID, Date)
->   VALUES ('INSERT', NEW.EmpID, NOW());
-> END //
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> INSERT INTO Employee (EmpID, EmpName, Salary)
-> VALUES (101, 'David Miller', 55000);
-> );
-> DELIMITER ;
-> VALUES (101, 'David Miller', 55000);
-> END //
Query OK, 1 row affected (0.02 sec)

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 ');
DELIMITER ;VALUES (101, 'David Miller', 55000);
END' at line 1
mysql> DELIMITER ;
mysql> INSERT INTO Employee (EmpID, EmpName, Salary)
-> VALUES (101, 'David Miller', 55000);
ERROR 1062 (23000): Duplicate entry '101' for key 'employee.PRIMARY'
mysql> INSERT INTO Employee (EmpID, EmpName, Salary)
-> VALUES (101, 'David Miller', 55000);
ERROR 1062 (23000): Duplicate entry '101' for key 'employee.PRIMARY'
mysql> SELECT * FROM AuditLog;
+-----+-----+-----+-----+
| LogID | Action | EmpID | Date           |
+-----+-----+-----+-----+
| 1     | INSERT | 101   | 2025-07-01 11:44:35 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> |
```

```
MySQL 8.0 Command Line Cll X + v
mysql> CREATE TABLE AuditLog (
  ->   LogID INT AUTO_INCREMENT PRIMARY KEY,
  ->   Action VARCHAR(10),
  ->   EmpID INT,
  ->   Date DATETIME
  -> );
Query OK, 0 rows affected (0.05 sec)

mysql> DESC AUDITLOG;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| LogID | int           | NO   | PRI | NULL    | auto_increment |
| Action | varchar(10)   | YES  |     | NULL    |                |
| EmpID | int           | YES  |     | NULL    |                |
| Date  | datetime      | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> DELIMITER //
mysql>
mysql> CREATE TRIGGER EmployeeInsert
  -> AFTER INSERT ON Employee
  -> FOR EACH ROW
  -> BEGIN
  ->   INSERT INTO AuditLog (Action, EmpID, Date)
  ->   VALUES ('INSERT', NEW.EmpID, NOW());
  -> END //
Query OK, 0 rows affected (0.02 sec)

mysql>
mysql> INSERT INTO Employee (EmpID, EmpName, Salary)
  -> VALUES (101, 'David Miller', 55000);
  -> );
```

*EX. No. 20 – MySQL String Functions – REPLACE, REPEAT, REVERSE, RIGHT, LEFT, RPAD, LPAD*



```
MySQL 8.0 Command Line C# X + v
mysql> CREATE DATABASE IF NOT EXISTS StringDemoDB;
Query OK, 1 row affected (0.01 sec)

mysql> USE StringDemoDB;
Database changed
mysql> CREATE TABLE DemoStrings (
  ->   SampleText VARCHAR(100)
  -> );
Query OK, 0 rows affected (0.04 sec)

mysql>
mysql> INSERT INTO DemoStrings (SampleText)
  -> VALUES ('Hello World'), ('MySQL Programming'), ('String Functions');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> DESC DemoStrings;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| SampleText | varchar(100) | YES  |     | NULL    |      |
+-----+
1 row in set (0.00 sec)

mysql> SELECT * FROM DemoStrings;
+-----+
| SampleText |
+-----+
| Hello World |
| MySQL Programming |
| String Functions |
+-----+
3 rows in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line C# X + v
+-----+
3 rows in set (0.00 sec)

mysql> SELECT REPLACE('Hello World', 'World', 'MySQL') AS Result;
+-----+
| Result |
+-----+
| Hello MySQL |
+-----+
1 row in set (0.00 sec)

mysql> SELECT REPEAT('Hello ', 3) AS Result;
+-----+
| Result |
+-----+
| Hello Hello Hello |
+-----+
1 row in set (0.00 sec)

mysql> SELECT REVERSE('MySQL') AS Result;
+-----+
| Result |
+-----+
| LQSyM |
+-----+
1 row in set (0.00 sec)

mysql> SELECT RIGHT('Hello World', 5) AS Result;
+-----+
| Result |
+-----+
| World |
+-----+
1 row in set (0.00 sec)
```

```
MySQL 8.0 Command Line Cli X + -
3 rows in set (0.00 sec)

mysql> SELECT REPLACE('Hello World', 'World', 'MySQL') AS Result;
+-----+
| Result |
+-----+
| Hello MySQL |
+-----+
1 row in set (0.00 sec)

mysql> SELECT REPEAT('Hello ', 3) AS Result;
+-----+
| Result |
+-----+
| Hello Hello Hello |
+-----+
1 row in set (0.00 sec)

mysql> SELECT REVERSE('MySQL') AS Result;
+-----+
| Result |
+-----+
| LQSyM |
+-----+
1 row in set (0.00 sec)

mysql> SELECT RIGHT('Hello World', 5) AS Result;
+-----+
| Result |
+-----+
| World |
+-----+
1 row in set (0.00 sec)
```

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

```
mysql> SELECT REPLACE('Hello World', 'World', 'MySQL') AS Result;
```

```
+-----+  
| Result |  
+-----+  
| Hello MySQL |  
+-----+
```

```
1 row in set (0.00 sec)
```

```
mysql> SELECT REPEAT('Hello ', 3) AS Result;
```

```
+-----+  
| Result |  
+-----+  
| Hello Hello Hello |  
+-----+
```

```
1 row in set (0.00 sec)
```

```
mysql> SELECT REVERSE('MySQL') AS Result;
```

```
+-----+  
| Result |  
+-----+  
| LQSyM |  
+-----+
```

```
1 row in set (0.00 sec)
```

```
mysql> SELECT RIGHT('Hello World', 5) AS Result;
```

```
+-----+  
| Result |  
+-----+  
| World |  
+-----+
```

```
1 row in set (0.00 sec)
```



EX. No. 21 – MySQL String Functions – SPACE, SUBSTR, UPPER, LOWER,  
TRIM, LENGTH

```
MySQL 8.0 Command Line C# X + v
Database changed
mysql> CREATE TABLE text_samples (
->   id INT AUTO_INCREMENT PRIMARY KEY,
->   input_text VARCHAR(255)
-> );
Query OK, 0 rows affected (0.08 sec)

mysql> INSERT INTO text_samples (input_text) VALUES
-> (' Hello World '),
-> ('mysql STRING Function'),
-> (' DataBase ');
Query OK, 3 rows affected (0.02 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM text_samples;
+----+-----+
| id | input_text |
+----+-----+
| 1  | Hello World |
| 2  | mysql STRING Function |
| 3  | DataBase |
+----+-----+
3 rows in set (0.00 sec)

mysql> SELECT id, CONCAT('X', SPACE(5), 'Y') AS spaced_text FROM text_samples;
+----+-----+
| id | spaced_text |
+----+-----+
| 1  | X      Y |
| 2  | X      Y |
| 3  | X      Y |
+----+-----+
3 rows in set (0.01 sec)

mysql> SELECT id, SUBSTR(input_text, 1, 5) AS first_5_chars FROM text_samples;
+----+-----+
| id | first_5_chars |
+----+-----+
| 1  | Hel |
| 2  | mysql |
| 3  | D |
+----+-----+
3 rows in set (0.00 sec)

mysql> SELECT id, UPPER(input_text) AS uppercase_text FROM text_samples;
+----+-----+
| id | uppercase_text |
+----+-----+
| 1  | HELLO WORLD |
| 2  | MYSQL STRING FUNCTION |
| 3  | DATABASE |
+----+-----+
3 rows in set (0.00 sec)

mysql> SELECT id, LOWER(input_text) AS lowercase_text FROM text_samples;
+----+-----+
| id | lowercase_text |
+----+-----+
| 1  | hello world |
| 2  | mysql string function |
| 3  | database |
+----+-----+
3 rows in set (0.01 sec)

mysql> SELECT id, TRIM(input_text) AS trimmed_text FROM text_samples;
+----+-----+
| id | trimmed_text |
+----+-----+
| 1  | Hello World |
| 2  | mysql STRING Function |
| 3  | DataBase |
+----+-----+
3 rows in set (0.00 sec)

mysql> SELECT id, LENGTH(input_text) AS text_length FROM text_samples;
+----+-----+
| id | text_length |
+----+-----+
| 1  | 15 |
| 2  | 21 |
| 3  | 15 |
+----+-----+
3 rows in set (0.00 sec)
```

## EX. No. 22 – Database Connectivity Using PHP and MySQL

```
mysql> SELECT * FROM STUDENT
```

id	name	grade
1	Alice	A
2	Bob	B
3	Charlie	A

3 rows in set (0.01 sec)

## EX. No. 23 – Case Scenario: MySQL Queries Implementation for Train Ticket Reservation System to Receive Tickets through Social Network

```
MySQL 8.0 Command Line Cll
```

Query OK, 1 row affected (0.01 sec)

```
mysql> USE TrainReservationDB;
Database changed
mysql> CREATE TABLE TicketReservation (
  -> TicketID INT AUTO_INCREMENT PRIMARY KEY,
  -> CustomerName VARCHAR(100),
  -> TrainNumber VARCHAR(50),
  -> DateOfJourney DATE,
  -> SocialNetwork VARCHAR(100),
  -> TicketStatus VARCHAR(50)
  -> );
Query OK, 0 rows affected (0.06 sec)
```

```
mysql> INSERT INTO TicketReservation
  -> (CustomerName, TrainNumber, DateOfJourney, SocialNetwork, TicketStatus)
  -> VALUES
  -> ('John Doe', '101', '2025-05-01', 'Facebook', 'Booked'),
  -> ('Alice Smith', '102A', '2025-05-03', 'Instagram', 'Booked'),
  -> ('Robert Lee', '103B', '2025-05-05', 'Twitter', 'Cancelled');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> SELECT * FROM TicketReservation;
```

TicketID	CustomerName	TrainNumber	DateOfJourney	SocialNetwork	TicketStatus
1	John Doe	101	2025-05-01	Facebook	Booked
2	Alice Smith	102A	2025-05-03	Instagram	Booked
3	Robert Lee	103B	2025-05-05	Twitter	Cancelled

3 rows in set (0.00 sec)

```
mysql>
```

## EX. No. 24 – Case Scenario: MySQL Queries Implementation for College Admission Form

```

MySQL 8.0 Command Line Cli X + v
-> Email VARCHAR(100),
-> AdmissionStatus VARCHAR(50)
-> );
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO AdmissionForm
-> (StudentName, Gender, DateOfBirth, CourseApplied, Email, AdmissionStatus)
-> VALUES
-> ('Riya Sharma', 'Female', '2004-07-15', 'B.Sc Computer Science', 'riya@example.com', 'Applied'),
-> ('Amit Verma', 'Male', '2003-11-22', 'BBA', 'amitv@example.com', 'Approved'),
-> ('Sneha Patel', 'Female', '2005-01-10', 'B.Com', 'sneha.p@example.com', 'Rejected');
Query OK, 3 rows affected (0.02 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> INSERT INTO AdmissionForm
-> (StudentName, Gender, DateOfBirth, CourseApplied, Email, AdmissionStatus)
-> VALUES
-> ('Riya Sharma', 'Female', '2004-07-15', 'B.Sc Computer Science', 'riya@example.com', 'Applied'),
-> ('Amit Verma', 'Male', '2003-11-22', 'BBA', 'amitv@example.com', 'Approved'),
-> ('Sneha Patel', 'Female', '2005-01-10', 'B.Com', 'sneha.p@example.com', 'Rejected');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM AdmissionForm;
+-----+-----+-----+-----+-----+-----+-----+
| StudentID | StudentName | Gender | DateOfBirth | CourseApplied | Email | AdmissionStatus |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Riya Sharma | Female | 2004-07-15 | B.Sc Computer Science | riya@example.com | Applied |
| 2 | Amit Verma | Male | 2003-11-22 | BBA | amitv@example.com | Approved |
| 3 | Sneha Patel | Female | 2005-01-10 | B.Com | sneha.p@example.com | Rejected |
| 4 | Riya Sharma | Female | 2004-07-15 | B.Sc Computer Science | riya@example.com | Applied |
| 5 | Amit Verma | Male | 2003-11-22 | BBA | amitv@example.com | Approved |
| 6 | Sneha Patel | Female | 2005-01-10 | B.Com | sneha.p@example.com | Rejected |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

```

## EX. No. 25 – Case Scenario: MySQL Queries Implementation for QR Enabled Automatic Bus Ticket Booking System

```

MySQL 8.0 Command Line Cli X + v
Query OK, 1 row affected (0.01 sec)

mysql> USE BusTicketSystemDB;
Database changed

mysql> CREATE TABLE BusTicketBooking (
-> BookingID INT AUTO_INCREMENT PRIMARY KEY,
-> PassengerName VARCHAR(100),
-> BusNumber VARCHAR(50),
-> TravelDate DATE,
-> QRCode VARCHAR(255),
-> Status VARCHAR(50)
-> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO BusTicketBooking
-> (PassengerName, BusNumber, TravelDate, QRCode, Status)
-> VALUES
-> ('Arjun Mehta', 'BUS-101', '2025-07-20', 'QR123XYZ789', 'Booked'),
-> ('Priya Nair', 'BUS-205', '2025-07-22', 'QR456ABC321', 'Cancelled'),
-> ('Karan Singh', 'BUS-303', '2025-07-25', 'QR789LMN654', 'Booked');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM BusTicketBooking;
+-----+-----+-----+-----+-----+-----+
| BookingID | PassengerName | BusNumber | TravelDate | QRCode | Status |
+-----+-----+-----+-----+-----+-----+
| 1 | Arjun Mehta | BUS-101 | 2025-07-20 | QR123XYZ789 | Booked |
| 2 | Priya Nair | BUS-205 | 2025-07-22 | QR456ABC321 | Cancelled |
| 3 | Karan Singh | BUS-303 | 2025-07-25 | QR789LMN654 | Booked |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

```

