

DDL Commands-

```
Database changed
mysql> CREATE TABLE Department (
    -> DeptName VARCHAR(50),
    -> DeptID INT PRIMARY KEY,
    -> DeptSubject VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.17 sec)

mysql> INSERT INTO Department VALUES
    -> ('CSE',1001,'PYTHON'),
    -> ('CSE',1004,'JAVA'),
    -> ('ECE',1007,'FSD');
Query OK, 3 rows affected (0.04 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM Department
    -> SELECT * FROM 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 'SELECT * FROM Department' at line 2
mysql> SELECT * FROM Department;
+-----+-----+-----+
| DeptName | DeptID | DeptSubject |
+-----+-----+-----+
| CSE     |    1001 | PYTHON      |
| CSE     |    1004 | JAVA        |
| ECE     |    1007 | FSD         |
+-----+-----+-----+
3 rows in set (0.01 sec)
```

```

mysql> CREATE TABLE Student (
-> RollNo INT PRIMARY KEY,
-> Name VARCHAR(50),
-> DeptID INT
-> );
ERROR 1050 (42S01): Table 'student' already exists
mysql> SELECT * FROM Student;
+-----+-----+-----+-----+-----+
| RollNo | Name  | Age   | Address | Email           |
+-----+-----+-----+-----+-----+
|     1  | ARUN  |    20 | Chennai | arun@gmail.com |
|     3  | KUMAR |    21 | Banglore | kumarvar@gmail.com |
|     4  | PREM  |    25 | Tirchy  | prem@gmail.com  |
|     5  | GURU  |    21 | Candigarh | guru@gmail.com |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

```

mysql> USE student;
Database changed
mysql> CREATE TABLE employees ( emp_id INT PRIMARY KEY, age INT, name
R(50));
Query OK, 0 rows affected (0.28 sec)

mysql> ALTER TABLE employees ADD email VARCHAR(20);
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DROP TABLE employees;
Query OK, 0 rows affected (0.07 sec)

mysql> TRUNCATE TABLE employees;
ERROR 1146 (42S02): Table 'student.employees' doesn't exist

```

```

mysql> ALTER TABLE Student
      -> ADD DeptID INT;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Student;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RollNo | int    | YES  |     | NULL    |       |
| Name   | varchar(20) | YES  |     | NULL    |       |
| Age    | int    | YES  |     | NULL    |       |
| Address | varchar(20) | YES  |     | NULL    |       |
| Email  | varchar(20) | YES  |     | NULL    |       |
| DeptID | int    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.09 sec)

mysql> SELECT * FROM Student;
+-----+-----+-----+-----+-----+-----+
| RollNo | Name  | Age  | Address | Email        | DeptID |
+-----+-----+-----+-----+-----+-----+
|     1  | ARUN  | 20   | Chennai | arun@gmail.com | NULL   |
|     3  | KUMAR | 21   | Banglore | kumarvar@gmail.com | NULL   |
|     4  | PREM  | 25   | Tirchy  | prem@gmail.com | NULL   |
|     5  | GURU  | 21   | Candigarh | guru@gmail.com | NULL   |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

DML Commands-

```
mysql> UPDATE Student
      -> SET DeptID = 101
      -> WHERE RollNo = 1;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE Student
      -> SET DeptID = 102
      -> WHERE RollNo = 3;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE Student
      -> SET DeptID = 103
      -> WHERE RollNo = 4;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> UPDATE Student
      -> SET DeptID = 104
      -> WHERE RollNo = 5;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> SELECT * FROM Student
      -> SELECT * FROM Student;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds
ELECT * FROM Student' at line 2
mysql> SELECT * FROM Student;
+-----+-----+-----+-----+-----+-----+
| RollNo | Name  | Age   | Address | Email        | DeptID |
+-----+-----+-----+-----+-----+-----+
|     1  | ARUN  |    20 | Chennai | arun@gmail.com |    101 |
|     3  | KUMAR |    21 | Bangalore | kumarvar@gmail.com |    102 |
|     4  | PREM  |    25 | Tirchy  | prem@gmail.com |    103 |
|     5  | GURU  |    21 | Candigarh | guru@gmail.com |    104 |
+-----+-----+-----+-----+-----+-----+
```

```

mysql> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> INNER JOIN Department d
-> ON s.DeptID = d.DeptID;
Empty set (0.01 sec)

mysql> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> LEFT JOIN Department d
-> ON s.DeptID = d.DeptID;
+-----+-----+-----+-----+
| RollNo | Name  | DeptName | DeptSubject |
+-----+-----+-----+-----+
|     1  | ARUN  | NULL    | NULL      |
|     3  | KUMAR | NULL    | NULL      |
|     4  | PREM   | NULL    | NULL      |
|     5  | GURU  | NULL    | NULL      |
+-----+-----+-----+-----+
4 rows in set (0.01 sec)

```

```

mysql> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> RIGHT JOIN Department d
-> ON s.DeptID = d.DeptID;
+-----+-----+-----+-----+
| RollNo | Name  | DeptName | DeptSubject |
+-----+-----+-----+-----+
|   NULL  | NULL  | CSE      | PYTHON    |
|   NULL  | NULL  | CSE      | JAVA      |
|   NULL  | NULL  | ECE      | FSD       |
+-----+-----+-----+-----+
3 rows in set (0.01 sec)

mysql> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> LEFT JOIN Department d
-> ON s.DeptID = d.DeptID;
+-----+-----+-----+-----+
| RollNo | Name  | DeptName | DeptSubject |
+-----+-----+-----+-----+
|     1  | ARUN  | NULL    | NULL      |
|     3  | KUMAR | NULL    | NULL      |
|     4  | PREM   | NULL    | NULL      |
|     5  | GURU  | NULL    | NULL      |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

DCL Commands-

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

mysql> ROLLBACK;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version
mysql> ROLLBACK;
Query OK, 0 rows affected (0.00 sec)
```

Joining Commands-

```
mysql> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> LEFT JOIN Department d
-> ON s.DeptID = d.DeptID
->
-> UNION
->
-> SELECT s.RollNo, s.Name, d.DeptName, d.DeptSubject
-> FROM Student s
-> RIGHT JOIN Department d
-> ON s.DeptID = d.DeptID;
+-----+-----+-----+
| RollNo | Name  | DeptName | DeptSubject |
+-----+-----+-----+
| 1      | ARUN   | NULL     | NULL       |
| 3      | KUMAR  | NULL     | NULL       |
| 4      | PREM   | NULL     | NULL       |
| 5      | GURU   | NULL     | NULL       |
| NULL   | NULL   | CSE      | PYTHON    |
| NULL   | NULL   | CSE      | JAVA      |
| NULL   | NULL   | ECE      | FSD       |
+-----+-----+-----+
7 rows in set (0.01 sec)

mysql> SELECT s.Name, s.Email, d.DeptSubject
-> FROM Student s
-> inner JOIN Department d
-> ON s.DeptID = d.DeptID
-> WHERE d.DeptName = 'CSE';
Empty set (0.01 sec)

mysql> SELECT d.DeptName, COUNT(s.RollNo) AS total_students
-> FROM Department d
-> LEFT JOIN Department d
-> ON s.DeptID = d.DeptID
-> GROUP BY d.DeptName;
ERROR 1066 (42000): Not unique table/alias: 'd'
```

Triggers-

```
mysql> DELIMITER $$  
mysql> CREATE TRIGGER student_age_check  
    -> BEFORE INSERT ON Student  
    -> FOR EACH ROW  
    -> BEGIN  
    -> IF NEW.age < 18 THEN  
    -> SIGNAL SQLSTATE '45000'  
    -> SET MESSAGE_TEXT = 'Student age must be 18 or above';  
    -> END IF;  
    -> END $$  
Query OK, 0 rows affected (0.28 sec)  
  
mysql> INSERT INTO Student  
    -> VALUES (201,'Rahul',16,'Thiruvallur','rahul@gmail.com',001);  
->  
-> ;  
-> INSERT INTO Student  
-> VALUES (201,'Rahul',16,'Thiruvallur','rahul@gmail.com',001);  
-> );  
-> END $$
```

```
mysql> SHOW TRIGGERS;  
-> END $$  
+-----+-----+-----+-----+-----+  
| Trigger | Event | Table | Statement | sql_mode |  
| Timing | Created | Definer | character_set_client | collation_connection | Database Collation |  
+-----+-----+-----+-----+-----+  
| student_age_check | INSERT | student | BEGIN  
IF NEW.age < 18 THEN  
SIGNAL SQLSTATE '45000'  
SET MESSAGE_TEXT = 'Student age must be 18 or above';  
END IF;  
END | BEFORE | 2026-01-07 14:34:16.82 | ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES,NO_ZERO_IN_DATE,NO_ZERO_DATE,ERR  
_SUBSTITUTION | root@localhost | cp850 | cp850_general_ci | utf8mb4_0900_ai_ci |  
+-----+-----+-----+-----+-----+  
1 row in set (0.12 sec)
```

```

ERROR 1644 (45000): Student age must be 18 or above
mysql>
mysql> CREATE TRIGGER prevent_null_dept
-> BEFORE UPDATE ON Student
-> FOR EACH ROW
-> BEGIN
->     IF NEW.deptID IS NULL THEN
->         SIGNAL SQLSTATE '45000'
->         SET MESSAGE_TEXT = 'Department ID cannot be NULL';
->     END IF;
-> END $$

Query OK, 0 rows affected (0.01 sec)

mysql>
mysql> DELIMITER ;
mysql> UPDATE Student
-> SET deptID = NULL
-> WHERE rollno = 101;
Query OK, 0 rows affected (0.03 sec)
Rows matched: 0  Changed: 0  Warnings: 0

```

```

mysql> CREATE TRIGGER auto_uppercase_name
-> AFTER UPDATE ON Student
-> FOR EACH ROW
-> BEGIN
->     UPDATE Student
->     SET name = UPPER(name)
->     WHERE rollno = NEW.rollno;
-> END $$

Query OK, 0 rows affected (0.05 sec)

mysql> UPDATE Student
-> SET name = 'arun'
-> WHERE rollno = 101;
-> END $$

Query OK, 0 rows affected (0.04 sec)
Rows matched: 0  Changed: 0  Warnings: 0

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 'END' at line 1
mysql> SELECT name FROM Student WHERE rollno = 101;
-> );
-> END $$

Empty set (0.00 sec)

```

Aggregate Functions-

```
mysql> SELECT COUNT(*) FROM student;
+-----+
| COUNT(*) |
+-----+
|      4 |
+-----+
1 row in set (0.07 sec)

mysql> SELECT SUM(Age) FROM student;
+-----+
| SUM(Age) |
+-----+
|      87 |
+-----+
1 row in set (0.04 sec)

mysql> SELECT AVERAGE(Age) FROM student;
ERROR 1305 (42000): FUNCTION student.AVERAGE does not exist
mysql> SELECT AVG(Age) FROM student;
+-----+
| AVG(Age) |
+-----+
|  21.7500 |
+-----+
1 row in set (0.03 sec)
```

```
mysql> SELECT MIN(Age) FROM student;
+-----+
| MIN(Age) |
+-----+
|      20   |
+-----+
1 row in set (0.01 sec)

mysql> SELECT MAX(Age) FROM student;
+-----+
| MAX(Age) |
+-----+
|      25   |
+-----+
1 row in set (0.00 sec)

mysql> SELECT AGE, COUNT(*)
    -> FROM student
    -> GROUP BY AGE;
+-----+
| AGE | COUNT(*) |
+-----+
| 20  |        1 |
| 21  |        2 |
| 25  |        1 |
+-----+
3 rows in set (0.01 sec)
```

```

mysql> SELECT COUNT(*) FROM student;
+-----+
| COUNT(*) |
+-----+
|      4 |
+-----+
1 row in set (0.07 sec)

mysql> SELECT SUM(Age) FROM student;
+-----+
| SUM(Age) |
+-----+
|     87 |
+-----+
1 row in set (0.04 sec)

mysql> SELECT AVERAGE(Age) FROM student;
ERROR 1305 (42000): FUNCTION student.AVERAGE does not exist
mysql> SELECT AVG(Age) FROM student;
+-----+
| AVG(Age) |
+-----+
|  21.7500 |
+-----+
1 row in set (0.03 sec)

mysql> SELECT MIN(Age) FROM student;
+-----+
| MIN(Age) |
+-----+
|      20 |
+-----+
1 row in set (0.01 sec)

```

```

mysql> SELECT MAX(Age) FROM student;
+-----+
| MAX(Age) |
+-----+
|      25 |
+-----+
1 row in set (0.00 sec)

mysql> SELECT AGE, COUNT(*)
    -> FROM student
    -> GROUP BY AGE;
+-----+-----+
| AGE | COUNT(*) |
+-----+-----+
| 20 |      1 |
| 21 |      2 |
| 25 |      1 |
+-----+-----+
3 rows in set (0.01 sec)

```

```
mysql> CREATE TABLE employees (emp_id INT PRIMARY KEY, age INT, name VARCHAR(50));
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO employees (emp_id, age, name) VALUES ('101', '24', 'kesava');
Query OK, 1 row affected (0.07 sec)

mysql> SELECT name FROM employees;
+-----+
| name |
+-----+
| kesava |
+-----+
1 row in set (0.01 sec)

mysql> SELECT * FROM employees WHERE age > 20;
+-----+-----+-----+
| emp_id | age  | name  |
+-----+-----+-----+
|    101 |   24 | kesava |
+-----+-----+-----+
1 row in set (0.02 sec)
```

String Functions-

```
mysql> SELECT SUBSTRING(name FROM 1 FOR 5) AS substring FROM products
-> ;
ERROR 1146 (42S02): Table 'student.products' doesn't exist
mysql> SELECT SUBSTRING(name FROM 1 FOR 5) AS substring FROM employees;
+-----+
| substring |
+-----+
| kesav   |
+-----+
1 row in set (0.03 sec)

mysql> SELECT CHAR_LENGTH(name) AS length FROM employees;
+-----+
| length |
+-----+
| 6      |
+-----+
1 row in set (0.10 sec)

mysql> SELECT UPPER(name) AS uppercase_name FROM employees;
+-----+
| uppercase_name |
+-----+
| KESAVA        |
+-----+
1 row in set (0.04 sec)
```

Set Operations-

```
mysql> SELECT name FROM employees
      -> UNION
      -> SELECT name FROM workers;
+-----+
| name   |
+-----+
| kesava |
| praveen|
+-----+
2 rows in set (0.05 sec)

mysql> SELECT name FROM employees
      -> INTERSECT
      -> SELECT name FROM workers;
Empty set (0.00 sec)

mysql> SELECT name FROM employees
      -> EXCEPT
      -> SELECT name FROM workers;
+-----+
| name   |
+-----+
| kesava |
+-----+
1 row in set (0.00 sec)
```