

## 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 y
ELECT * 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 VARCHAR(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
to MySQL version 5.5.26 for the right syntax to use near '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	Banglore	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 | 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)