Exp 2

MariaDB [(none)]> show databases;

```
+--------------------+
| Database           |
+--------------------+
| asma               |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
```

5 rows in set (0.013 sec)

MariaDB [(none)]> create database dbms;

Query OK, 1 row affected (0.019 sec)

MariaDB [(none)]> show databases;

```
+--------------------+
| Database           |
+--------------------+
| asma               |
| dbms               |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
```

6 rows in set (0.001 sec)

MariaDB [(none)]> use dbms;

Database changed

MariaDB [dbms]> drop database dbms;

Query OK, 0 rows affected (0.096 sec)

MariaDB [(none)]> use dbms;

ERROR 1049 (42000): Unknown database 'dbms'

MariaDB [(none)]>

Exp 3

MariaDB [(none)]> use asma;

Database changed

MariaDB [asma]> CREATE TABLE Student_list (ID INT PRIMARY KEY,F_name VARCHAR(50) NOT NULL ,
L_name VARCHAR(50) NOT NULL , DOB DATE NOT NULL , Program VARCHAR(100));

Query OK, 0 rows affected (0.049 sec)
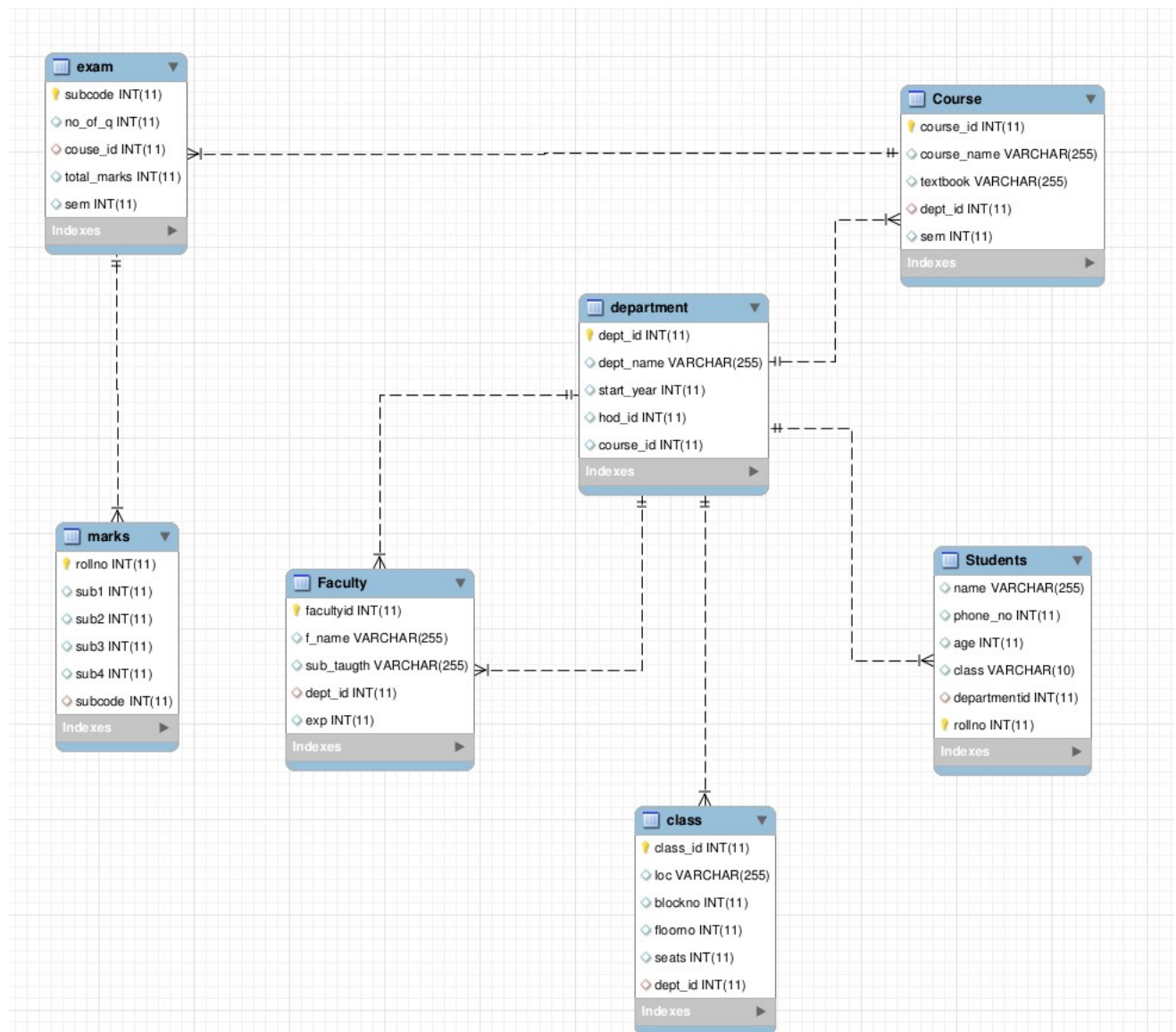
MariaDB [asma]> show tables;

```
+----------------+
| Tables_in_asma |
```

```
+----------------+
| student_list   |
+----------------+
1 row in set (0.001 sec)
MariaDB [asma]> ALTER TABLE student_list DROP COLUMN DOB;
Query OK, 0 rows affected (1.067 sec)
Records: 0  Duplicates: 0  Warnings: 0
MariaDB [asma]> ALTER TABLE student_list RENAME COLUMN Program to Course;
Query OK, 0 rows affected (0.843 sec)
Records: 0  Duplicates: 0  Warnings: 0
MariaDB [asma]> INSERT INTO student_list VALUES (1,'Rohan','Tom','History');
Query OK, 1 row affected (0.129 sec)
MariaDB [asma]> INSERT INTO student_list VALUES (2,'Rachel','Varghese','English');
Query OK, 1 row affected (0.069 sec)
MariaDB [asma]> SELECT * FROM student_list;
+----+--------+----------+---------+
| ID | F_name | L_name   | Course  |
+----+--------+----------+---------+
|  1 | Rohan  | Tom      | History |
|  2 | Rachel | Varghese | English |
+----+--------+----------+---------+
2 rows in set (0.006 sec)
MariaDB [asma]> TRUNCATE TABLE student_list;
Query OK, 0 rows affected (0.424 sec)
MariaDB [asma]> SELECT * FROM student_list;
Empty set (0.001 sec)
MariaDB [asma]> DROP TABLE student_list;
Query OK, 0 rows affected (0.541 sec)
MariaDB [asma]> SELECT * FROM student_list;
ERROR 1146 (42S02): Table 'asma.student_list' doesn't exist
MariaDB [asma]>
```

Exp 4

exam
- subcode INT(11)
- no_of_q INT(11)
- couse_id INT(11)
- total_marks INT(11)
- sem INT(11)
- Indexes

Course
- course_id INT(11)
- course_name VARCHAR(255)
- textbook VARCHAR(255)
- dept_id INT(11)
- sem INT(11)
- Indexes

department
- dept_id INT(11)
- dept_name VARCHAR(255)
- start_year INT(11)
- hod_id INT(11)
- course_id INT(11)
- Indexes

marks
- rollno INT(11)
- sub1 INT(11)
- sub2 INT(11)
- sub3 INT(11)
- sub4 INT(11)
- subcode INT(11)
- Indexes

Faculty
- facultyid INT(11)
- f_name VARCHAR(255)
- sub_taugth VARCHAR(255)
- dept_id INT(11)
- exp INT(11)
- Indexes

Students
- name VARCHAR(255)
- phone_no INT(11)
- age INT(11)
- class VARCHAR(10)
- departmentid INT(11)
- rollno INT(11)
- Indexes

class
- class_id INT(11)
- loc VARCHAR(255)
- blockno INT(11)
- floorno INT(11)
- seats INT(11)
- dept_id INT(11)
- Indexes

Exp 5

MariaDB [asma]> CREATE TABLE student (Name VARCHAR(20),Phone_no REAL,Age INT,Class
VARCHAR(10),Roll_No INT);
Query OK, 0 rows affected (0.638 sec)
MariaDB [asma]> INSERT INTO student VALUES ('Rachel',9384725172,25,'CS',4);
Query OK, 1 row affected (0.081 sec)
MariaDB [asma]> INSERT INTO student VALUES ('Sam',9984712172,25,'CS',7);
Query OK, 1 row affected (0.077 sec)
MariaDB [asma]> SELECT * FROM student;
```
+--------+------------+------+-------+---------+
| Name   | Phone_no   | Age  | Class | Roll_No |
+--------+------------+------+-------+---------+
| Rachel | 9384725172 |   25 | CS    |       4 |
```

```
| Sam    | 9984712172 |   25 | CS    |       7 |
+--------+------------+------+-------+---------+
```
2 rows in set (0.000 sec)

MariaDB [asma]> INSERT INTO student VALUES ('Amal',9127891234,24,'EC',1);

Query OK, 1 row affected (0.062 sec)

MariaDB [asma]> SELECT * FROM student;
```
+--------+------------+------+-------+---------+
| Name   | Phone_no   | Age  | Class | Roll_No |
+--------+------------+------+-------+---------+
| Rachel | 9384725172 |   25 | CS    |       4 |
| Sam    | 9984712172 |   25 | CS    |       7 |
| Amal   | 9127891234 |   24 | EC    |       1 |
+--------+------------+------+-------+---------+
```
3 rows in set (0.000 sec)

MariaDB [asma]>

Exp 6

MariaDB [asma]> SELECT * FROM student;
```
+--------+------------+------+-------+---------+
| Name   | Phone_no   | Age  | Class | Roll_No |
+--------+------------+------+-------+---------+
| Rachel | 9384725172 |   25 | CS    |       4 |
| Sam    | 9984712172 |   25 | CS    |       7 |
| Amal   | 9127891234 |   24 | EC    |       1 |
+--------+------------+------+-------+---------+
```
3 rows in set (0.001 sec)

MariaDB [asma]> SELECT Name,Class,Roll_No from student;
```
+--------+-------+---------+
| Name   | Class | Roll_No |
+--------+-------+---------+
| Rachel | CS    |       4 |
| Sam    | CS    |       7 |
| Amal   | EC    |       1 |
+--------+-------+---------+
```
3 rows in set (0.000 sec)

MariaDB [asma]> UPDATE student SET Class='MECH' WHERE Name='Sam';

Query OK, 1 row affected (0.011 sec)

Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [asma]> DELETE FROM student WHERE Class='CS';

Query OK, 1 row affected (0.008 sec)

MariaDB [asma]> SELECT * FROM student;
```
+------+------------+------+-------+---------+
| Name | Phone_no   | Age  | Class | Roll_No |
```

```
+------+------------+------+-------+---------+
| Sam  | 9984712172 |  25  | MECH  |    7    |
| Amal | 9127891234 |  24  | EC    |    1    |
+------+------------+------+-------+---------+
2 rows in set (0.000 sec)
MariaDB [asma]> INSERT INTO student VALUES ('Mani',9110023434,22,'CS',60);
Query OK, 1 row affected (0.068 sec)
MariaDB [asma]> SELECT * FROM student;
+------+------------+------+-------+---------+
| Name | Phone_no   | Age  | Class | Roll_No |
+------+------------+------+-------+---------+
| Sam  | 9984712172 |  25  | MECH  |    7    |
| Amal | 9127891234 |  24  | EC    |    1    |
| Mani | 9110023434 |  22  | CS    |   60    |
+------+------------+------+-------+---------+
3 rows in set (0.000 sec)
MariaDB [asma]>
```

Exp 7

```
MariaDB [asma]> SELECT ASCII('A'),ASCII('b');
+------------+------------+
| ASCII('A') | ASCII('b') |
+------------+------------+
|       65   |      98    |
+------------+------------+
1 row in set (0.000 sec)
MariaDB [asma]> SELECT LOWER('HELLO'),UPPER('world'),LENGTH('STRING'),REPLACE('RED','R','B');
+----------------+----------------+-----------------+-----------------------+
| LOWER('HELLO') | UPPER('world') | LENGTH('STRING') | REPLACE('RED','R','B') |
+----------------+----------------+-----------------+-----------------------+
| hello          | WORLD          |        6        | BED                   |
+----------------+----------------+-----------------+-----------------------+
1 row in set (0.003 sec)
MariaDB [asma]> SELECT PI() AS pi_value;
+----------+
| pi_value |
+----------+
| 3.141593 |
+----------+
1 row in set (0.017 sec)
MariaDB [asma]> SELECT COS(.5),POWER(2,3),SQRT(25),ROUND(3.52,1);
+--------------------+------------+----------+---------------+
| COS(.5)            | POWER(2,3) | SQRT(25) | ROUND(3.52,1) |
```

```
+--------------------+------------+----------+---------------+
| 0.8775825618903728 |        8 |      5 |         3.5 |
+--------------------+------------+----------+---------------+
```
1 row in set (0.009 sec)
MariaDB [asma]> SELECT TRIM('   SPACE '),SUBSTRING('HELLO WORLD',2,8);
```
+---------------------+------------------------------+
| TRIM('     SPACE ') | SUBSTRING('HELLO WORLD',2,8) |
+---------------------+------------------------------+
| SPACE            | ELLO WOR               |
+---------------------+------------------------------+
```
1 row in set (0.000 sec)
MariaDB [asma]>

Exp 8
MariaDB [asma]> SELECT * FROM student_mark;
```
+------+----------+---------+------+
| Id  | Name    | Subject | Mark |
+------+----------+---------+------+
|   1 | Sam     | History |  90 |
|   2 | Santhosh | English |  95 |
|   3 | Shaji   | Maths   |  86 |
+------+----------+---------+------+
```
3 rows in set (0.000 sec)
MariaDB [asma]> SELECT avg(Mark) AS Average_mark FROM student_mark;
```
+--------------+
| Average_mark |
+--------------+
|     90.3333 |
+--------------+
```
1 row in set (0.004 sec)
MariaDB [asma]> SELECT COUNT(Id) AS Count FROM student_mark;
```
+-------+
| Count |
+-------+
|    3 |
+-------+
```
1 row in set (0.000 sec)
MariaDB [asma]> SELECT MIN(Mark) AS Min_Mark FROM student_mark;
```
+----------+
| Min_Mark |
+----------+
|     86 |
+----------+
```

1 row in set (0.007 sec)

MariaDB [asma]> SELECT MAX(Mark) AS Max_Mark FROM student_mark;

```
+----------+
| Max_Mark |
+----------+
|       95 |
+----------+
```

1 row in set (0.000 sec)

MariaDB [asma]> SELECT SUM(Mark) AS Total FROM student_mark;

```
+-------+
| Total |
+-------+
|   271 |
+-------+
```

1 row in set (0.179 sec)

MariaDB [asma]>

Exp 9

MariaDB [asma]> SELECT * FROM teacher;

```
+------+--------------+--------+------+
| Id   | Name         | Salary | Dept |
+------+--------------+--------+------+
|    1 | Bindu Joseph | 500000 | CSE  |
|    2 | Sharath S    | 700000 | ECE  |
|    3 | Reethu Kurian| 850000 | CSE  |
|    4 | John Mathew  | 300000 | EEE  |
+------+--------------+--------+------+
```

4 rows in set (0.000 sec)

MariaDB [asma]> SELECT * FROM teacher ORDER BY Salary;

```
+------+--------------+--------+------+
| Id   | Name         | Salary | Dept |
+------+--------------+--------+------+
|    4 | John Mathew  | 300000 | EEE  |
|    1 | Bindu Joseph | 500000 | CSE  |
|    2 | Sharath S    | 700000 | ECE  |
|    3 | Reethu Kurian| 850000 | CSE  |
+------+--------------+--------+------+
```

4 rows in set (0.004 sec)

MariaDB [asma]> SELECT Dept,COUNT(*) FROM teacher GROUP BY Dept;

```
+------+----------+
| Dept | COUNT(*) |
+------+----------+
| CSE  |        2 |
```

```
| ECE  |       1 |
| EEE  |       1 |
+------+----------+
```
3 rows in set (0.009 sec)

MariaDB [asma]> SELECT Dept,COUNT(*) FROM teacher GROUP BY Dept HAVING COUNT(*)>1;
```
+------+----------+
| Dept | COUNT(*) |
+------+----------+
| CSE  |       2 |
+------+----------+
```
1 row in set (0.002 sec)

MariaDB [asma]>

Exp 10

MariaDB [asma]> SELECT * FROM department;
```
+---------+-----------+------------+--------+-----------+
| Dept_Id | Dept_Name | Start_Year | Hod_Id | Course_ID |
+---------+-----------+------------+--------+-----------+
|     100 | CS        |       2016 |    201 |         1 |
|     101 | EC        |       2019 |    203 |         2 |
|     102 | EEE       |       2017 |    204 |         3 |
|     103 | EBE       |       2017 |    203 |         5 |
|     104 | MECH      |       2017 |    203 |         6 |
+---------+-----------+------------+--------+-----------+
```
5 rows in set (0.000 sec)

MariaDB [asma]> SELECT * FROM course;
```
+-----------+-------------+------------+---------+------+
| Course_Id | Course_Name | Textbook   | Dept_Id | Sem  |
+-----------+-------------+------------+---------+------+
|         1 | COA         | INTRO      |     100 |    4 |
|         2 | DBMS        | NAVATHE    |     100 |    4 |
|         3 | CN          | FIROZ      |     100 |    5 |
|         4 | ECS         | INTROTO EC |     101 |    5 |
|         5 | CPROG       | INTRO TO C |     102 |    2 |
+-----------+-------------+------------+---------+------+
```
5 rows in set (0.000 sec)

MariaDB [asma]> SELECT Course_Id FROM department INTERSECT SELECT Course_Id FROM course;
```
+-----------+
| Course_Id |
+-----------+
|         1 |
|         2 |
|         3 |
```

```
|       5 |
+-----------+
4 rows in set (0.006 sec)
MariaDB [asma]> SELECT Course_Id FROM department UNION SELECT Course_Id FROM course;
+-----------+
| Course_Id |
+-----------+
|       1 |
|       2 |
|       3 |
|       5 |
|       6 |
|       4 |
+-----------+
6 rows in set (0.001 sec)
MariaDB [asma]> SELECT Course_Id FROM department UNION ALL SELECT Course_Id FROM course;
+-----------+
| Course_Id |
+-----------+
|       1 |
|       2 |
|       3 |
|       5 |
|       6 |
|       1 |
|       2 |
|       3 |
|       4 |
|       5 |
+-----------+
10 rows in set (0.000 sec)
MariaDB [asma]> SELECT * FROM student;
+------+------------+------+-------+---------+
| Name | Phone_no   | Age  | Class | Roll_No |
+------+------------+------+-------+---------+
| Sam  | 9984712172 |   25 | MECH  |       7 |
| Amal | 9127891234 |   24 | EC    |       1 |
| Mani | 9110023434 |   22 | CS    |      60 |
| Achu | 9376120100 |   20 | CS    |       5 |
| Ramu | 9371111100 |   21 | CS    |       2 |
+------+------------+------+-------+---------+
5 rows in set (0.000 sec)
```

MariaDB [asma]> SELECT * FROM marks;

```
+---------+------+------+------+------+
| Roll_No | Sub1 | Sub2 | Sub3 | Sub4 |
+---------+------+------+------+------+
|       1 |   78 |   79 |   80 |   90 |
|       2 |   75 |   78 |   98 |   90 |
|       5 |   70 |   65 |   98 |   91 |
|      21 |   76 |   90 |   98 |   99 |
|       7 |   66 |   97 |   98 |   45 |
+---------+------+------+------+------+
```
5 rows in set (0.000 sec)

MariaDB [asma]> SELECT student.Roll_No , student.Name , marks.sub1 , marks.sub2 , marks.sub3 FROM STUDENT INNER JOIN marks ON student.Roll_No=marks.Roll_No;

```
+---------+------+------+------+------+
| Roll_No | Name | sub1 | sub2 | sub3 |
+---------+------+------+------+------+
|       1 | Amal |   78 |   79 |   80 |
|       2 | Ramu |   75 |   78 |   98 |
|       5 | Achu |   70 |   65 |   98 |
|       7 | Sam  |   66 |   97 |   98 |
+---------+------+------+------+------+
```
4 rows in set (0.006 sec)

MariaDB [asma]> SELECT student.Roll_No , student.Name , marks.sub1 , marks.sub2 , marks.sub3 FROM STUDENT LEFT OUTER JOIN marks ON student.Roll_No=marks.Roll_No;

```
+---------+------+------+------+------+
| Roll_No | Name | sub1 | sub2 | sub3 |
+---------+------+------+------+------+
|       1 | Amal |   78 |   79 |   80 |
|       2 | Ramu |   75 |   78 |   98 |
|       5 | Achu |   70 |   65 |   98 |
|       7 | Sam  |   66 |   97 |   98 |
|      60 | Mani | NULL | NULL | NULL |
+---------+------+------+------+------+
```
5 rows in set (0.005 sec)

MariaDB [asma]> SELECT student.Roll_No , student.Name , marks.sub1 , marks.sub2 , marks.sub3 FROM STUDENT RIGHT OUTER JOIN marks ON student.Roll_No=marks.Roll_No;

```
+---------+------+------+------+------+
| Roll_No | Name | sub1 | sub2 | sub3 |
+---------+------+------+------+------+
|       7 | Sam  |   66 |   97 |   98 |
|       1 | Amal |   78 |   79 |   80 |
|       5 | Achu |   70 |   65 |   98 |
```

```
|      2 | Ramu |   75 |   78 |   98 |
|   NULL | NULL |   76 |   90 |   98 |
+---------+------+------+------+------+
5 rows in set (0.001 sec)
MariaDB [asma]>
```

Exp 11

```
MariaDB [asma]> CREATE TEMPORARY TABLE Temp_Student AS SELECT * FROM student;
Query OK, 5 rows affected (0.008 sec)
Records: 5  Duplicates: 0  Warnings: 0
MariaDB [asma]> SELECT * FROM Temp_student;
+------+------------+------+-------+---------+
| Name | Phone_no   | Age  | Class | Roll_No |
+------+------------+------+-------+---------+
| Sam  | 9984712172 |   25 | MECH  |       7 |
| Amal | 9127891234 |   24 | EC    |       1 |
| Mani | 9110023434 |   22 | CS    |      60 |
| Achu | 9376120100 |   20 | CS    |       5 |
| Ramu | 9371111100 |   21 | CS    |       2 |
+------+------------+------+-------+---------+
5 rows in set (0.000 sec)
MariaDB [asma]>
```

Exp 12

```
MariaDB [asma]> SELECT * FROM teacher;
+------+---------------+--------+------+
| Id   | Name          | Salary | Dept |
+------+---------------+--------+------+
|    1 | Bindu Joseph  | 500000 | CSE  |
|    2 | Sharath S     | 700000 | ECE  |
|    3 | Reethu Kurian | 850000 | CSE  |
|    4 | John Mathew   | 300000 | EEE  |
+------+---------------+--------+------+
4 rows in set (0.001 sec)
MariaDB [asma]> COMMIT;
Query OK, 0 rows affected (0.006 sec)
MariaDB [asma]> BEGIN;
Query OK, 0 rows affected (0.000 sec)
MariaDB [asma]> SAVEPOINT 4_Records;
Query OK, 0 rows affected (0.006 sec)
MariaDB [asma]> DELETE FROM teacher where Id=2;
Query OK, 1 row affected (0.000 sec)
MariaDB [asma]> SELECT * FROM teacher;
+------+---------------+--------+------+
```

```
| Id   | Name         | Salary | Dept |
+------+--------------+--------+------+
|    1 | Bindu Joseph  | 500000 | CSE  |
|    3 | Reethu Kurian | 850000 | CSE  |
|    4 | John Mathew   | 300000 | EEE  |
+------+--------------+--------+------+
3 rows in set (0.000 sec)
```
MariaDB [asma]> ROLLBACK TO 4_Records;
Query OK, 0 rows affected (0.008 sec)
MariaDB [asma]> SELECT * FROM teacher;
```
+------+--------------+--------+------+
| Id   | Name         | Salary | Dept |
+------+--------------+--------+------+
|    1 | Bindu Joseph  | 500000 | CSE  |
|    2 | Sharath S     | 700000 | ECE  |
|    3 | Reethu Kurian | 850000 | CSE  |
|    4 | John Mathew   | 300000 | EEE  |
+------+--------------+--------+------+
4 rows in set (0.000 sec)
```
MariaDB [asma]>

Exp 13

MariaDB [asma]> CREATE USER hello identified by '4103';
Query OK, 0 rows affected (0.010 sec)
MariaDB [asma]> GRANT SELECT ON asma.teacher to hello;
Query OK, 0 rows affected (0.010 sec)
MariaDB [asma]> exit
Bye
C:\Program Files\MariaDB 11.3\bin>mysql -u hello -p
Enter password: ****
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 6
Server version: 11.3.0-MariaDB mariadb.org binary distribution
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MariaDB [(none)]> use asma;
Database changed
MariaDB [asma]> SELECT * FROM teacher;
```
+------+--------------+--------+------+
| Id   | Name         | Salary | Dept |
+------+--------------+--------+------+
|    1 | Bindu Joseph  | 500000 | CSE  |
|    2 | Sharath S     | 700000 | ECE  |
```

```
|   3 | Reethu Kurian | 850000 | CSE  |
|   4 | John Mathew   | 300000 | EEE  |
+------+---------------+--------+------+
```
4 rows in set (0.000 sec)

MariaDB [asma]> UPDATE teacher SET Dept='CSE' WHERE Id=2;

ERROR 1142 (42000): UPDATE command denied to user 'hello'@'localhost' for table `asma`.`teacher`

MariaDB [asma]>

Exp 14

MariaDB [asma]> CREATE VIEW Marks_Greater_76 AS SELECT Roll_No,Sub1,Sub2,Sub3,Sub4 FROM marks WHERE Sub1>76;

Query OK, 0 rows affected (0.017 sec)

MariaDB [asma]> SELECT * FROM Marks_Greater_76;

```
+---------+------+------+------+------+
| Roll_No | Sub1 | Sub2 | Sub3 | Sub4 |
+---------+------+------+------+------+
|       1 |   78 |   79 |   80 |   90 |
+---------+------+------+------+------+
```
1 row in set (0.016 sec)

MariaDB [asma]> CREATE TABLE asma (Id INT , Name VARCHAR(20),Salary REAL, CHECK(Salary>20000));

Query OK, 0 rows affected (0.023 sec)

MariaDB [asma]> INSERT INTO asma VALUES (1,'Sonia',250000);

Query OK, 1 row affected (0.027 sec)

MariaDB [asma]> INSERT INTO asma VALUES (1,'Akash',2500);

ERROR 4025 (23000): CONSTRAINT `CONSTRAINT_1` failed for `asma`.`asma`

MariaDB [asma]> INSERT INTO asma VALUES (1,'Akash',25000);

Query OK, 1 row affected (0.001 sec)

MariaDB [asma]> SELECT * FROM asma;

```
+------+-------+--------+
| Id   | Name  | Salary |
+------+-------+--------+
|    1 | Sonia | 250000 |
|    1 | Akash |  25000 |
+------+-------+--------+
```
2 rows in set (0.000 sec)

MariaDB [asma]>

Exp 15

Program

```
DECLARE
  marks INTEGER;
  BEGIN
  marks:=&marks;
  CASE
```

```
    WHEN marks>=90 THEN DBMS_OUTPUT.PUT_LINE('Excellent');
    WHEN marks>=80 AND marks < 90 THEN DBMS_OUTPUT.PUT_LINE('Very Good');
    WHEN marks>=70 AND marks < 80 THEN DBMS_OUTPUT.PUT_LINE('Good');
    WHEN marks>=60 AND marks < 70 THEN DBMS_OUTPUT.PUT_LINE('Fair');
    WHEN marks>=50 AND marks < 60 THEN DBMS_OUTPUT.PUT_LINE('Poor');
    ELSE DBMS_OUTPUT.PUT_LINE('No such Grade');
    END CASE;
    DBMS_OUTPUT.PUT_LINE('Marks is '||marks);
    END;
    /
```

Output

```
SQL> @C:\Users\Dell\Desktop\else.sql
Enter value for marks: 45
old  4:   marks:=&marks;
new  4:   marks:=45;
No such Grade
Marks is 45
PL/SQL procedure successfully completed.
SQL> @C:\Users\Dell\Desktop\else.sql
Enter value for marks: 56
old  4:   marks:=&marks;
new  4:   marks:=56;
Poor
Marks is 56
PL/SQL procedure successfully completed.
SQL> @C:\Users\Dell\Desktop\else.sql
Enter value for marks: 72
old  4:   marks:=&marks;
new  4:   marks:=72;
Good
Marks is 72
PL/SQL procedure successfully completed.

SQL> SELECT * FROM employee;
    ID NAME              SALARY CITY
---------- -------------------- ---------- --------------------
     2 Manu Rathor         4789 Agra
     4 Rahul Saxena        5512 London
     5 Kumar               4459 Bombay
     6 Ramu                8435 JK
     7 Shetty             10000 Jaipur
```

```
SQL> BEGIN
  2  FOR row_data IN(SELECT * FROM employee)
  3  LOOP
  4  IF(row_data.SALARY>=5000)
  5  THEN
  6  DBMS_OUTPUT.PUT_LINE('ID: '|| row_data.ID || ',Name: '||row_data.NAME || ',Salary:
'||row_data.SALARY);
  7  ELSE
  8  DBMS_OUTPUT.PUT_LINE('Salary less than 5000');
  9  END if;
 10  END LOOP;
 11  END;
 12  /
Salary less than 5000
ID: 4,Name: Rahul Saxena,Salary: 5512
Salary less than 5000
ID: 6,Name: Ramu,Salary: 8435
ID: 7,Name: Shetty,Salary: 10000
PL/SQL procedure successfully completed.
SQL>
```

Exp 16

Program

```
CREATE OR REPLACE TRIGGER display_salary_change
  BEFORE DELETE OR INSERT OR UPDATE ON employee
  FOR EACH ROW
  BEGIN
  DBMS_OUTPUT.PUT_LINE('OLD Salary : '||:OLD.SALARY);
  DBMS_OUTPUT.PUT_LINE('NEW Salary : '||:NEW.SALARY);
  END;
  /
```

Output

```
SQL> @C:\Users\Dell\Desktop\trigger.sql
Trigger created.
SQL> UPDATE employee SET SALARY=12000 WHERE ID=7;
OLD Salary : 10000
NEW Salary : 12000
1 row updated.
SQL>
```

Program

```
DECLARE
  a INTEGER;
  b INTEGER;
```

```
  c INTEGER;
FUNCTION findMax(x IN INTEGER, y IN INTEGER)
RETURN INTEGER
IS
   z INTEGER;
BEGIN
  IF x > y THEN
    z:= x;
  ELSE
    Z:= y;
  END IF;
  RETURN z;
END;
BEGIN
  a:= &a;
  b:= &b;
  c := findMax(a, b);
  dbms_output.put_line(' Maximum of ('||a||','||b||'): ' || c);
END;
/
```

Output

```
SQL> @C:\Users\Dell\Desktop\function.sql
Enter value for a: 56
old  18:   a:= &a;
new  18:   a:= 56;
Enter value for b: 12
old  19:   b:= &b;
new  19:   b:= 12;
Maximum of (56,12): 56
PL/SQL procedure successfully completed.
SQL>
```

Program

```
DECLARE
  a INTEGER;
  b INTEGER;
  c INTEGER;
PROCEDURE findMin(x IN INTEGER, y IN INTEGER, z OUT INTEGER) IS
BEGIN
  IF x < y THEN
    z:= x;
  ELSE
    z:= y;
```

```
    END IF;
END;
BEGIN
  a:= &a;
  b:= &b;
  findMin(a, b, c);
  dbms_output.put_line(' Minimum of a and b is : ' || c);
END;
/
```

Output

```
SQL> @C:\Users\Dell\Desktop\proc.sql
Enter value for a: 45
old  14:    a:= &a;
new  14:    a:= 45;
Enter value for b: 23
old  15:    b:= &b;
new  15:    b:= 23;
Minimum of a and b is : 23
PL/SQL procedure successfully completed.
SQL>
```

EXP 17

SQL> SELECT * FROM employee;

```
     ID NAME                 SALARY CITY
---------- -------------------- ---------- --------------------
      2 Manu Rathor            4789 Agra
      4 Rahul Saxena           5512 London
      5 Kumar                  4459 Bombay
      6 Ramu                   8435 JK
      7 Shetty                12000 Jaipur
```

SQL> CREATE PACKAGE cust_sal AS
  2 PROCEDURE find_sal(c_id employee.id%type);
  3 END cust_sal;
  4 /

Package created.

Package body Program

```
CREATE OR REPLACE PACKAGE BODY cust_sal AS
  PROCEDURE find_sal(c_id employee.id%TYPE) IS
  c_sal employee.salary%TYPE;
  BEGIN
    SELECT salary INTO c_sal
    FROM employee
    WHERE id = c_id;
    dbms_output.put_line('Salary: '|| c_sal);
  END find_sal;
END cust_sal;
/
```

Output

SQL> @C:\Users\Dell\Desktop\package_body.sql

Package body created.

SQL> DECLARE
  2 code employee.id%type:=&cc_id;
  3 begin
  4 cust_sal.find_sal(code);
  5 END;
  6 /

Enter value for cc_id: 4

old   2: code employee.id%type:=&cc_id;

new   2: code employee.id%type:=4;

Salary: 5512

PL/SQL procedure successfully completed.

SQL>

Exp 18

Implicit Cursor Program

```
DECLARE
  total_rows number(2);
BEGIN
  UPDATE employee
  SET salary = salary + 500;
  IF sql%notfound THEN
    dbms_output.put_line('no customers selected');
  ELSIF sql%found THEN
    total_rows := sql%rowcount;
    dbms_output.put_line( total_rows || ' customers selected ');
  END IF;
END;
/
```

Output

```
SQL> @C:\Users\Dell\Desktop\cursor.sql
OLD Salary : 4789
NEW Salary : 5289
OLD Salary : 5512
NEW Salary : 6012
OLD Salary : 4459
NEW Salary : 4959
OLD Salary : 8435
NEW Salary : 8935
OLD Salary : 12000
NEW Salary : 12500
5 customers selected
PL/SQL procedure successfully completed.
SQL>
```

Explicit Cursor

```
SQL> DECLARE
  2    c_id employee.id%type;
  3    c_name employee.name%type;
  4    CURSOR c_customers is
  5    SELECT id, name FROM employee;
  6    BEGIN
  7    OPEN c_customers;
  8    LOOP
  9    FETCH c_customers into c_id, c_name;
 10    EXIT WHEN c_customers%notfound;
 11    dbms_output.put_line(c_id || ' ' || c_name);
 12    END LOOP;
```

```
13    CLOSE c_customers;
14    END;
15    /
```
2 Manu Rathor

4 Rahul Saxena

5 Kumar

6 Ramu

7 Shetty

PL/SQL procedure successfully completed.

SQL>

Exp 19

Program

```
DECLARE
  c_id employee.id%type := &c_id;
  c_name employee.Name%type;
BEGIN
  SELECT  id,name INTO  c_id,c_name
  FROM employee
  WHERE id = c_id;
  DBMS_OUTPUT.PUT_LINE ('Id: ' || c_id);
  DBMS_OUTPUT.PUT_LINE ('Name: '|| c_name);
EXCEPTION
  WHEN no_data_found THEN
    dbms_output.put_line('No such customer!');
  WHEN others THEN
    dbms_output.put_line('Error!');
END;
/
```

Output

SQL> @C:\Users\Dell\Desktop\excep.sql

Enter value for c_id: 4

old   2:   c_id employee.id%type := &c_id;

new   2:   c_id employee.id%type := 4;

Id: 4

Name: Rahul Saxena

PL/SQL procedure successfully completed.

SQL> @C:\Users\Dell\Desktop\excep.sql

Enter value for c_id: 3

old   2:   c_id employee.id%type := &c_id;

new   2:   c_id employee.id%type := 3;

No such customer!

PL/SQL procedure successfully completed.

SQL>
Program – user defined
```
DECLARE
  c_id employee.id%type := &cc_id;
  c_name employee.Name%type;
  -- user defined exception
  ex_invalid_id  EXCEPTION;
BEGIN
  IF c_id <= 0 THEN
    RAISE ex_invalid_id;
  ELSE
    SELECT  id,name INTO  c_id,c_name
    FROM employee
    WHERE id = c_id;
     DBMS_OUTPUT.PUT_LINE ('Id: ' || c_id);
     DBMS_OUTPUT.PUT_LINE ('Name: '||  c_name);
  END IF;
EXCEPTION
  WHEN ex_invalid_id THEN
    dbms_output.put_line('ID must be greater than zero!');
  WHEN no_data_found THEN
    dbms_output.put_line('No such customer!');
  WHEN others THEN
    dbms_output.put_line('Error!');
END;
/
```
Output
```
SQL> @C:\Users\Dell\Desktop\userexcep.sql
Enter value for cc_id: 5
old   2:   c_id employee.id%type := &cc_id;
new   2:   c_id employee.id%type := 5;
Id: 5
Name: Kumar
PL/SQL procedure successfully completed.
SQL> @C:\Users\Dell\Desktop\userexcep.sql
Enter value for cc_id: 3
old   2:   c_id employee.id%type := &cc_id;
new   2:   c_id employee.id%type := 3;
No such customer!
PL/SQL procedure successfully completed.
SQL> @C:\Users\Dell\Desktop\userexcep.sql
Enter value for cc_id: 0
```

old   2:   c_id employee.id%type := &cc_id;
new   2:   c_id employee.id%type := 0;
ID must be greater than zero!
PL/SQL procedure successfully completed.
SQL>
Exp 20

```
⇒ use userdb;
switched to db userdb
⇒ db.createCollection("users");
{ "ok" : 1 }
⇒ db.users.insertOne({name:"Nanditha",
... age:20,
... phoneNumber:998765,
... city:"kochi:});
2023-11-15T09:45:12.669+0530 E QUERY    [thread1] SyntaxError: unterminated string literal @(shell):4:5

⇒ db.users.insertOne({name:"Nanditha", age:20, phoneNumber:998765, city:"kochi"});
{
        "acknowledged" : true,
        "insertedId" : ObjectId("655445eb5c663242c9d4a1cb")
}
⇒ db.users.insertMany({name:"Steve",
... age:45,
... phoneNumber:998654,
... city:"Delhi"});
2023-11-15T09:46:37.838+0530 E QUERY    [thread1] TypeError: documents.map is not a function :
DBCollection.prototype.insertMany@src/mongo/shell/crud_api.js:260:1
@(shell):1:1

⇒ db.users.insertMany({name:"Steve", age:45, phoneNumber:998654, city:"Delhi"},{name:"Harry" , age:35,phoneNumber:98765,city:"Mumbai"});
20db.users.insertMany({name:"Steve", age:45, phoneNumber:998654, city:"Delhi"},{name:"Harry" , age:35,phoneNumber:98765,city:"Mumbai"});
2023-11-15T09:48:45.471+0530 E QUERY    [thread1] TypeError: documents.map is not a function :
DBCollection.prototype.insertMany@src/mongo/shell/crud_api.js:260:1
@(shell):1:1

⇒ db.users.insertMany([{name:"Steve", age:45, phoneNumber:998654, city:"Delhi"},{name:"Harry" , age:35,phoneNumber:98765,city:"Mumbai"}]);
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("655446cf5c663242c9d4a1cc"),
                ObjectId("655446cf5c663242c9d4a1cd")
        ]
}
⇒ db.users.find({});
{ "_id" : ObjectId("655445eb5c663242c9d4a1cb"), "name" : "Nanditha", "age" : 20, "phoneNumber" : 998765, "city" : "kochi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45, "phoneNumber" : 998654, "city" : "Delhi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35, "phoneNumber" : 98765, "city" : "Mumbai" }
⇒ db.users.find({ age: { $gt: 29 } }, { name: 1, age: 1 })
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45 }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35 }
⇒ db.users.updateOne({ name:"Nanditha" ,{ $set {email :"nanditha@gmail.com"}}});
2023-11-15T09:55:55.491+0530 E QUERY    [thread1] SyntaxError: invalid property id @(shell):1:38

⇒ db.users.updateOne({ name:"Nanditha" ,{ $set {city:"Ernamkulam"}}});
2023-11-15T09:56:19.988+0530 E QUERY    [thread1] SyntaxError: invalid property id @(shell):1:38

⇒ db.users.updateOne({ name:"Nanditha"} ,{ $set {city:"Ernamkulam"}});
2023-11-15T09:56:41.780+0530 E QUERY    [thread1] SyntaxError: missing : after property id @(shell):1:46
```

```
⇒ db.users.find({});
{ "_id" : ObjectId("655445eb5c663242c9d4a1cb"), "name" : "Nanditha", "age" : 20, "phoneNumber" : 998765, "city" : "kochi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45, "phoneNumber" : 998654, "city" : "Delhi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35, "phoneNumber" : 98765, "city" : "Mumbai" }
⇒ db.users.find({ age: { $gt: 29 } }, { name: 1, age: 1 })
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45 }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35 }
⇒ db.users.updateOne({ name:"Nanditha" ,{ $set {email :"nanditha@gmail.com"}}});
2023-11-15T09:55:55.491+0530 E QUERY    [thread1] SyntaxError: invalid property id @(shell):1:38

⇒ db.users.updateOne({ name:"Nanditha" ,{ $set {city:"Ernamkulam"}}});
2023-11-15T09:56:19.988+0530 E QUERY    [thread1] SyntaxError: invalid property id @(shell):1:38

⇒ db.users.updateOne({ name:"Nanditha"} ,{ $set {city:"Ernamkulam"}});
2023-11-15T09:56:41.780+0530 E QUERY    [thread1] SyntaxError: missing : after property id @(shell):1:46

⇒ db.users.updateOne({ name:"Nanditha"} ,{ $set: {city:"Ernamkulam"}});
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
⇒ db.users.updateOne({ name:"Nanditha"} ,{ $set: {email :"Nanditha@gmail.com}});
2023-11-15T09:57:48.724+0530 E QUERY    [thread1] SyntaxError: unterminated string literal @(shell):1:55

⇒ db.users.updateOne({ name:"Nanditha"} ,{ $set: {email :"Nanditha@gmail.com"}});
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
⇒ db.users.find({});
{ "_id" : ObjectId("655445eb5c663242c9d4a1cb"), "name" : "Nanditha", "age" : 20, "phoneNumber" : 998765, "city" : "Ernamkulam", "email" : "Nanditha@gmail.com" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45, "phoneNumber" : 998654, "city" : "Delhi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35, "phoneNumber" : 98765, "city" : "Mumbai" }
⇒ db.users.deleteOne({name:"Hary"});
{ "acknowledged" : true, "deletedCount" : 0 }
⇒ db.users.find({});
{ "_id" : ObjectId("655445eb5c663242c9d4a1cb"), "name" : "Nanditha", "age" : 20, "phoneNumber" : 998765, "city" : "Ernamkulam", "email" : "Nanditha@gmail.com" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45, "phoneNumber" : 998654, "city" : "Delhi" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cd"), "name" : "Harry", "age" : 35, "phoneNumber" : 98765, "city" : "Mumbai" }
⇒ db.users.deleteOne({name:"Harry"});
{ "acknowledged" : true, "deletedCount" : 1 }
⇒ db.users.find({});
{ "_id" : ObjectId("655445eb5c663242c9d4a1cb"), "name" : "Nanditha", "age" : 20, "phoneNumber" : 998765, "city" : "Ernamkulam", "email" : "Nanditha@gmail.com" }
{ "_id" : ObjectId("655446cf5c663242c9d4a1cc"), "name" : "Steve", "age" : 45, "phoneNumber" : 998654, "city" : "Delhi" }
⇒ db.users.drop();
true
```