

1.

```
MariaDB [(none)]> CREATE DATABASE university_midsem;
Query OK, 1 row affected (0.007 sec)

MariaDB [(none)]> USE university_midsem;
Database changed
MariaDB [university_midsem]> source /Users/vipul/Documents/coding/dbms/labs/midterm/university_midterm.sql;
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [university_midsem]> SHOW TABLES;
+-----+
| Tables_in_university_midsem |
+-----+
| advisor                      |
| classroom                    |
| course                       |
| department                   |
| instructor                    |
| prereq                       |
| section                      |
| student                      |
| takes                        |
| teaches                      |
| time_slot                    |
+-----+
11 rows in set (0.001 sec)
```

2.

```
MariaDB [university_midsem]> CREATE USER userdba IDENTIFIED BY 'dbapwd';
Query OK, 0 rows affected (0.014 sec)

MariaDB [university_midsem]> GRANT ALL ON *.* TO userdba WITH GRANT OPTION;
Query OK, 0 rows affected (0.012 sec)

MariaDB [university_midsem]> SELECT user,host FROM mysql.user;
+-----+-----+
| User      | Host      |
+-----+-----+
| userdba   | %         |
| mariadb.sys | localhost |
| root      | localhost |
| vipul     | localhost |
+-----+-----+
4 rows in set (0.001 sec)

MariaDB [university_midsem]> SHOW GRANTS FOR userdba;
+-----+
| Grants for userdba@% |
+-----+
| GRANT ALL PRIVILEGES ON *.* TO `userdba`@`%` IDENTIFIED BY PASSWORD '*25C75C15E8D19EC951688C84B1B11BA625FFCEC0' WITH GRANT OPTION |
+-----+
1 row in set (0.002 sec)
```

```

MariaDB [university_midsem]> quit
Bye
🍏 ~/Documents/coding/dbms/labs/midsem > mariadb -u userdba -pdbapwd;
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 5
Server version: 10.5.9-MariaDB Homebrew

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

MariaDB [(none)]> SELECT CURRENT_USER();
+-----+
| CURRENT_USER() |
+-----+
| userdba@%      |
+-----+
1 row in set (0.000 sec)

MariaDB [(none)]> CREATE USER tom IDENTIFIED BY 'tompwd';
Query OK, 0 rows affected (0.018 sec)

MariaDB [(none)]> CREATE USER jerry IDENTIFIED BY 'jerryPWD';
Query OK, 0 rows affected (0.016 sec)

MariaDB [(none)]> GRANT SELECT ON university_midsem.instructor TO tom;
Query OK, 0 rows affected (0.017 sec)

MariaDB [(none)]> SHOW GRANTS FOR tom;
+-----+
| Grants for tom@% |
+-----+
| GRANT USAGE ON *.* TO `tom`@`%` IDENTIFIED BY PASSWORD '*578334395B98DC14042E3D6F0ECA77CD88305FBC' |
| GRANT SELECT ON `university_midsem`.`instructor` TO `tom`@`%` |
+-----+
2 rows in set (0.000 sec)

```

```

MariaDB [(none)]> CREATE ROLE simpleroles;
Query OK, 0 rows affected (0.013 sec)

MariaDB [(none)]> GRANT SELECT ON university_midsem.student TO simpleroles;
Query OK, 0 rows affected (0.016 sec)

MariaDB [(none)]> GRANT simpleroles TO jerry;
Query OK, 0 rows affected (0.013 sec)

MariaDB [(none)]> CREATE USER simba;
Query OK, 0 rows affected (0.025 sec)

MariaDB [(none)]> GRANT simpleroles TO simba;
Query OK, 0 rows affected (0.013 sec)

MariaDB [(none)]> SHOW GRANTS FOR jerry;
+-----+
| Grants for jerry@% |
+-----+
| GRANT `simpleroles` TO `jerry`@`%` |
| GRANT USAGE ON *.* TO `jerry`@`%` IDENTIFIED BY PASSWORD '*92F7EA27279FDEF20C138C6D117C4615AE60D37C' |
+-----+
2 rows in set (0.001 sec)

MariaDB [(none)]> SHOW GRANTS FOR simba;
+-----+
| Grants for simba@% |
+-----+
| GRANT `simpleroles` TO `simba`@`%` |
| GRANT USAGE ON *.* TO `simba`@`%` |
+-----+
2 rows in set (0.000 sec)

```

```

MariaDB [(none)]> SELECT user, host FROM mysql.user;
+-----+-----+
| User      | Host      |
+-----+-----+
| simpleroles |          |
| jerry      | %         |
| simba      | %         |
| tom        | %         |
| userdba    | %         |
| mariadb.sys | localhost |
| root       | localhost |
| vipul      | localhost |
+-----+-----+
8 rows in set (0.002 sec)

```

3.

```
MariaDB [university_midsem]> CREATE TABLE onlynames6  
  -> AS (SELECT name, dept_name FROM instructor WHERE salary > 60000);  
Query OK, 10 rows affected (0.027 sec)  
Records: 10  Duplicates: 0  Warnings: 0
```

```
MariaDB [university_midsem]> SELECT * FROM onlynames6;
```

| name | dept_name |
|------------|------------|
| Srinivasan | Comp. Sci. |
| Wu | Finance |
| Einstein | Physics |
| Gold | Physics |
| Katz | Comp. Sci. |
| Califieri | History |
| Singh | Finance |
| Crick | Biology |
| Brandt | Comp. Sci. |
| Kim | Elec. Eng. |

```
10 rows in set (0.001 sec)
```

4.

a.

```
MariaDB [university_midsem]> CREATE VIEW rank_stud AS  
-> (SELECT ID, name, dept_name, tot_cred  
-> FROM student  
-> ORDER BY tot_cred ASC);
```

Query OK, 0 rows affected (0.020 sec)

```
MariaDB [university_midsem]> SELECT * FROM rank_stud;
```

| ID | name | dept_name | tot_cred |
|-------|----------|------------|----------|
| 70557 | Snow | Physics | 0 |
| 12345 | Shankar | Comp. Sci. | 32 |
| 55739 | Sanchez | Music | 38 |
| 45678 | Levy | Physics | 46 |
| 54321 | Williams | Comp. Sci. | 54 |
| 44553 | Peltier | Physics | 56 |
| 76543 | Brown | Comp. Sci. | 58 |
| 76653 | Aoi | Elec. Eng. | 60 |
| 19991 | Brandt | History | 80 |
| 98765 | Bourikas | Elec. Eng. | 98 |
| 00128 | Zhang | Comp. Sci. | 102 |
| 23121 | Chavez | Finance | 110 |
| 98988 | Tanaka | Biology | 120 |

13 rows in set (0.001 sec)

b.

```
MariaDB [university_midsem]> UPDATE student SET tot_cred = 20 WHERE name = 'Tanaka';
Query OK, 1 row affected (0.003 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
MariaDB [university_midsem]> SELECT * FROM rank_stud;
```

| ID | name | dept_name | tot_cred |
|-------|----------|------------|----------|
| 70557 | Snow | Physics | 0 |
| 98988 | Tanaka | Biology | 20 |
| 12345 | Shankar | Comp. Sci. | 32 |
| 55739 | Sanchez | Music | 38 |
| 45678 | Levy | Physics | 46 |
| 54321 | Williams | Comp. Sci. | 54 |
| 44553 | Peltier | Physics | 56 |
| 76543 | Brown | Comp. Sci. | 58 |
| 76653 | Aoi | Elec. Eng. | 60 |
| 19991 | Brandt | History | 80 |
| 98765 | Bourikas | Elec. Eng. | 98 |
| 00128 | Zhang | Comp. Sci. | 102 |
| 23121 | Chavez | Finance | 110 |

```
13 rows in set (0.001 sec)
```

5.

```
MariaDB [university_midsem]> WITH table1(avg_salary_in_university) AS (SELECT AVG(salary) AS avg_salary_in_university
-> FROM instructor),
-> table2(dept_name, avg_salary) AS (SELECT dept_name, AVG(salary) as avg_salary
-> FROM instructor
-> GROUP BY dept_name)
-> SELECT dept_name
-> FROM table2, table1
-> WHERE table2.avg_salary > table1.avg_salary_in_university;
```

| dept_name |
|------------|
| Comp. Sci. |
| Elec. Eng. |
| Finance |
| Physics |

```
4 rows in set (0.001 sec)
```

6.

```
MariaDB [university_midsem]> SELECT c1.title AS course_title
-> FROM course AS c1 INNER JOIN prereq AS p1 ON c1.course_id = p1.course_id
-> INNER JOIN course AS c2 ON c2.course_id = p1.prereq_id
-> WHERE c1.dept_name <> c2.dept_name;
```

| course_title |
|---------------------------|
| Intro. to Digital Systems |

```
1 row in set (0.001 sec)
```

7.

```
MariaDB [university_midsem]> SELECT name, dept_name
  -> FROM instructor
  -> WHERE instructor.ID IN (SELECT i_ID FROM advisor GROUP BY i_ID HAVING COUNT(s_ID) = 2);
```

| name | dept_name |
|----------|------------|
| Einstein | Physics |
| Katz | Comp. Sci. |
| Kim | Elec. Eng. |

3 rows in set (0.005 sec)