DBMS-Lab Mid-Term

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1. **Create a 'university_midsem' database. Import records from the university_midsem.sql given**

```
MariaDB [university_midsem]> create database university_midsem;
Query OK, 1 row affected (0.001 sec)

MariaDB [university_midsem]> use university_midsem;
Database changed
```

```
C:\Users\raghu\IdeaProjects\DBMS\mid-term> mysql -u root -p university_midsem < university_midsem.sql
Enter password: *****
```

2. **Create database admin 'userdba' with password 'dbapwd'. Give complete privilege on university_midsem to 'userdba'. Logged in as 'userdba', create normal user's 'tom' and 'jerry' with passwords of your choice. 'tom' should have the privilege to see information about faculty members, but 'jerry' will not. Create another user 'simba' with the same privilege as 'jerry' (you may use roles)**

```
MariaDB [(none)]> create user 'userdba' identified by 'dbapwd';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> grant all privileges on *.* to 'userdba' with grant option;
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [(none)]> create user 'tom' identified by 'mot';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> create user 'jerry' identified by 'yrrej';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> grant select on university_midsem.instructor to 'tom';
Query OK, 0 rows affected (0.003 sec)
```

```
PS C:\Windows\System32> mysql -u tom -p
Enter password: ***
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 23
Server version: 10.5.8-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)]> select * from university_midsem.instructor limit 4;
+-------+------------+------------+-----------+
| ID    | name       | dept_name  | salary    |
+-------+------------+------------+-----------+
| 10101 | Srinivasan | Comp. Sci. | 65000.00 |
| 12121 | Wu         | Finance    | 90000.00 |
| 15151 | Mozart     | Music      | 40000.00 |
| 22222 | Einstein   | Physics    | 95000.00 |
+-------+------------+------------+-----------+
4 rows in set (0.000 sec)
```

```
PS C:\Windows\System32> mysql -u jerry -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 24
Server version: 10.5.8-MariaDB mariadb.org binary distribution

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

MariaDB [(none)]> select * from university_midsem.instructor limit 4;
ERROR 1142 (42000): SELECT command denied to user 'jerry'@'localhost' for table 'instructor'
```

Permission denied for jerry.

```
MariaDB [(none)]> create user 'simba' identified by 'abmis';
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> create role 'jerry_simba';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> grant 'jerry_simba' to 'jerry';
Query OK, 0 rows affected (0.003 sec)

MariaDB [(none)]> grant 'jerry_simba' to 'simba';
Query OK, 0 rows affected (0.002 sec)
```

```
MariaDB [(none)]> grant select on university_midsem.student to 'jerry_simba';
Query OK, 0 rows affected (0.001 sec)
```

Giving some permissions to the role to show the common privileges.

```
PS C:\Windows\System32> mysql -u jerry -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 26
Server version: 10.5.8-MariaDB mariadb.org binary distribution

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

MariaDB [(none)]> set role jerry_simba
    -> ;
Query OK, 0 rows affected (0.000 sec)

MariaDB [(none)]> select * from university_midsem.student limit 4;
+-------+----------+-------------+-----------+
| ID    | name     | dept_name   | tot_cred |
+-------+----------+-------------+-----------+
| 00128 | Zhang    | Comp. Sci. |       102 |
| 12345 | Shankar  | Comp. Sci. |        32 |
| 19991 | Brandt   | History     |        80 |
| 23121 | Chavez   | Finance     |       110 |
+-------+----------+-------------+-----------+
4 rows in set (0.001 sec)
```

```
PS C:\Windows\System32> mysql -u simba -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 28
Server version: 10.5.8-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)]> set role jerry_simba;
Query OK, 0 rows affected (0.000 sec)

MariaDB [(none)]> select * from university_midsem.student limit 4;
+-------+----------+-------------+-----------+
| ID    | name     | dept_name   | tot_cred |
+-------+----------+-------------+-----------+
| 00128 | Zhang    | Comp. Sci. |       102 |
| 12345 | Shankar  | Comp. Sci. |        32 |
| 19991 | Brandt   | History     |        80 |
| 23121 | Chavez   | Finance     |       110 |
+-------+----------+-------------+-----------+
4 rows in set (0.000 sec)
```

3. **Use a single statement to copy name and dept_name from instructor table into onlynames6 table only for those records which have a salary more than 60000.**

```
MariaDB [university_midsem]> create table onlynames6 as ( select name, dept_name from instructor where salary>60000 );
Query OK, 10 rows affected (0.028 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 (0.000 sec)
```

4. **Q4**
   a. **Create a view rank*_stud* which will list down *ID, name, dept_name, tot_cred* of students in ascending order of their credits.**

```
MariaDB [university_midsem]> create view rank_stud as (
    ->  select ID, name, dept_name, tot_cred
    ->  from student
    ->  order by tot_cred
    -> );
Query OK, 0 rows affected (0.004 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 (0.008 sec)
```

b. Update the tot_cred of Tanaka to 20 and show the records in rank_stud

```
MariaDB [university_midsem]> update rank_stud
    -> set tot_cred=20
    -> where name='Tanaka';
Query OK, 1 row affected (0.012 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. Show a list of names of the departments for which the average salary of instructors in the department is higher than average salary of instructors in the university.

```
MariaDB [university_midsem]> select dept_name
    -> from instructor
    -> group by dept_name
    -> having avg(salary) > (select avg(salary) from instructor);
+-------------+
| dept_name   |
+-------------+
| Comp. Sci.  |
| Elec. Eng.  |
| Finance     |
| Physics     |
+-------------+
4 rows in set (0.000 sec)
```

6. **Show the title of the course which has prerequisites from a department which is different from the department of the course**

```
MariaDB [university_midsem]> select c1.course_id, c1.title
    -> from prereq
    -> inner join course c1 on prereq.course_id = c1.course_id
    -> inner join course c2 on prereq.prereq_id = c2.course_id
    -> where c1.dept_name<>c2.dept_name;
+-----------+-------------------------------+
| course_id | title                         |
+-----------+-------------------------------+
| EE-181    | Intro. to Digital Systems |
+-----------+-------------------------------+
1 row in set (0.000 sec)
```

7. **Select name, dept_name of the advisors advising two students.**

```
MariaDB [university_midsem]> select name, dept_name
    -> from (
    ->  select i_ID
    ->  from advisor
    ->  group by i_ID
    ->  having count(s_ID)=2
    -> ) as two_students_advisor
    -> inner join instructor on i_ID=instructor.ID;
+-----------+-------------+
| name      | dept_name   |
+-----------+-------------+
| Einstein | Physics     |
| Katz     | Comp. Sci. |
| Kim      | Elec. Eng. |
+-----------+-------------+
3 rows in set (0.000 sec)
```