CSE 4308
Database Management Systems Lab

Lab-06
Group-B

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Task 1

After executing "smallRelationsInsertFile.sql" and "DDL+drop.sql", Now I need to create a view named "Advisor_Selection" which will contain ID, name, dept_name from the instructor table. we need to execute the following code to do that

```sql
CREATE OR REPLACE VIEW Advisor_Selection AS
SELECT ID, name, dept_name
FROM instructor;
```

Task 2

To create a view named "Student_Count" which will use Advisor_Selection view and advisor table to show the instructor name and the number of students he advises. We need to join the advisor table.

```sql
CREATE OR REPLACE VIEW Student_Count AS
SELECT Advisor_Selection.name AS
instructor_name, COUNT(s_ID) AS student_count
FROM Advisor_Selection
JOIN advisor ON Advisor_Selection.ID =
advisor.i_id
GROUP BY Advisor_Selection.name;
```

Task 3

To Create Student role and grant select privilege on advisor and course Table.

```
CREATE ROLE 'Student';
GRANT SELECT ON advisor TO Student;
GRANT SELECT ON course TO Student;
```

To Create "CourseTeacher" role and grant select privilege on student and course Table.

```
CREATE ROLE 'CourseTeacher';
GRANT SELECT ON student TO CourseTeacher;
GRANT SELECT ON course TO CourseTeacher;
```

To Create "HeadOfDepartment" role and grant Whatever privilege CourseTeacher had also insert privilege on instructor Table.

```
CREATE ROLE 'HeadOfDepartment';
GRANT CourseTeacher TO HeadOfDepartment;
GRANT INSERT ON instructor TO
HeadOfDepartment;
```

To Create "Admin" role and grant select privilege on department and instructor Table. Also granting update privilege for the budget of the department table.

```sql
CREATE ROLE 'Admin';
GRANT SELECT ON department TO Admin;
GRANT SELECT ON instructor TO Admin;
GRANT UPDATE (budget) ON department TO Admin;
```

Task 4

Creating users and granting them role.

```sql
CREATE USER 'student2'@'localhost' IDENTIFIED BY '123'
default role 'Student';

CREATE USER 'teacher1'@'localhost' IDENTIFIED BY '123'
DEFAULT ROLE 'CourseTeacher';

CREATE USER 'hod1'@'localhost' IDENTIFIED BY '123'
DEFAULT ROLE 'HeadOfDepartment';
```

```
CREATE USER 'admin1'@'localhost' IDENTIFIED BY
'123'
DEFAULT ROLE 'Admin';
```

After logging in as a Student role user we can
access advisor and course table.

```
select * from advisor;
select * from student; -- access denied
-- access denied
insert into advisor values('101', '102');
```

Error Code: 1142. SELECT command denied to user 'student2'@'localhost' for table 'student'
Error Code: 1142. INSERT command denied to user 'student2'@'localhost' for table 'advisor'

After logging in as a CourseTeacher role user
we can access student and instructor table.

```
mysql> use `Lab 6`;
Database changed
mysql> select * from student;
+-------+----------+------------+-----------+
| ID    | name     | dept_name  | tot_cred  |
+-------+----------+------------+-----------+
| 00128 | Zhang    | Comp. Sci. |       102 |
| 12345 | Shankar  | Comp. Sci. |        32 |
| 19991 | Brandt   | History    |        80 |
| 23121 | Chavez   | Finance    |       110 |
| 44553 | Peltier  | Physics    |        56 |
| 45678 | Levy     | Physics    |        46 |
| 54321 | Williams | Comp. Sci. |        54 |
| 55739 | Sanchez  | Music      |        38 |
| 70557 | Snow     | Physics    |         0 |
| 76543 | Brown    | Comp. Sci. |        58 |
| 76653 | Aoi      | Elec. Eng. |        60 |
| 98765 | Bourikas | Elec. Eng. |        98 |
| 98988 | Tanaka   | Biology    |       120 |
+-------+----------+------------+-----------+
13 rows in set (0.01 sec)
```

we cannot insert into student table.

```
[mysql> insert into student values ('123', 'test', 'cse', 12);                    ]
ERROR 1142 (42000): INSERT command denied to user 'teacher1'@'localhost' for tab
le 'student'
```

After logging in as the HeadOfDepartment role:

```
mysql> insert into instructor values ('123', 'test', 'Comp. Sci.', 30000);
Query OK, 1 row affected (0.01 sec)

mysql> select user();
+----------------+
| user()         |
+----------------+
| hod1@localhost |
+----------------+
1 row in set (0.00 sec)
```

```
mysql> select user();
+----------------+
| user()         |
+----------------+
| hod1@localhost |
+----------------+
1 row in set (0.00 sec)

mysql> select * from course;
+-----------+---------------------------+------------+---------+
| course_id | title                     | dept_name  | credits |
+-----------+---------------------------+------------+---------+
| BIO-101   | Intro. to Biology         | Biology    |       4 |
| BIO-301   | Genetics                  | Biology    |       4 |
| BIO-399   | Computational Biology     | Biology    |       3 |
| CS-101    | Intro. to Computer Science | Comp. Sci. |       4 |
| CS-190    | Game Design               | Comp. Sci. |       4 |
| CS-315    | Robotics                  | Comp. Sci. |       3 |
| CS-319    | Image Processing          | Comp. Sci. |       3 |
| CS-347    | Database System Concepts  | Comp. Sci. |       3 |
| EE-181    | Intro. to Digital Systems | Elec. Eng. |       3 |
| FIN-201   | Investment Banking        | Finance    |       3 |
| HIS-351   | World History             | History    |       3 |
| MU-199    | Music Video Production     | Music      |       3 |
| PHY-101   | Physical Principles       | Physics    |       4 |
+-----------+---------------------------+------------+---------+
13 rows in set (0.01 sec)
```

```
mysql> delete from course;
ERROR 1142 (42000): DELETE command denied to user 'hod1'@'localhost' for table
'course'
```

after logging in as an admin role user:

```
[mysql> select * from department;
+------------+-----------+-----------+
| dept_name  | building  | budget    |
+------------+-----------+-----------+
| Biology    | Watson    |  90000.00 |
| Comp. Sci. | Taylor    | 100000.00 |
| Elec. Eng. | Taylor    |  85000.00 |
| Finance    | Painter   | 120000.00 |
| History    | Painter   |  50000.00 |
| Music      | Packard   |  80000.00 |
| Physics    | Watson    |  70000.00 |
+------------+-----------+-----------+
7 rows in set (0.00 sec)

[mysql> select user();
+-----------------+
| user()          |
+-----------------+
| admin1@localhost |
+-----------------+
1 row in set (0.00 sec)
```

```
[mysql> select user();
+-----------------+
| user()          |
+-----------------+
| admin1@localhost |
+-----------------+
1 row in set (0.00 sec)

[mysql> update department set budget = 1000 where dept_name = 'Biology';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```