LAB 06

CSE 4308
Database Management Systems Lab

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Contents

Introduction

In DBMS lab 06, we were tasked to create views using different tables so that we can have only access to certain data. We also need to create roles and grant those roles permissions for specific users, so not everyone can have all the permissions while viewing a table view.

1 Task 01

For task 1 we need to create a view from the instructor table that consists of Id, Name and Dept name. we use the CREATE or REPLACE VIEW to create a view of the specified name. We must specify the table from which we want to create the view, also need to specify which attributes we want to add to the view.

```
-- TASK 01

CREATE OR REPLACE VIEW ADVISOR_SELECTION AS
SELECT
ID,
NAME,
DEPT_NAME
FROM
INSTRUCTOR;
```

1.1 Difficulties

- I faced no difficulties while doing this task.

2 Task 02

In the second task, we need to create a view using the previously created view and advisor table to show the student count. Here, we use the COUNT method to count the number of students per advisor.

```
-- TASK 02

CREATE OR REPLACE VIEW STUDENT_COUNT AS
SELECT
ADVISOR_SELECTION.NAME,
COUNT(ADVISOR.S_ID)  AS NUMBER_OF_STUDENT
```

```
        FROM
        ADVISOR_SELECTION,
        ADVISOR
        WHERE
        ADVISOR_SELECTION.ID=ADVISOR.I_ID
        GROUP BY
        ADVISOR_SELECTION.NAME;
```

2.1 Difficulties

- I had trouble placing the where condition.

3 Task 3-A

Before creating users and roles for users, we need to drop if any existing user already exists of similar names that we might use.

```
-- DROPPING USERS

  DROP USER STUDENT_USER;

  DROP USER TEACHER_USER;

  DROP USER HOD_USER;

  DROP USER ADMIN_USER;
```

3.1 Difficulties

- Dropping users before creating the users, I had to think of the right names.

4 Task 3-B

Once dropping the users has been taken care of, We will now create the roles for all individual users, with specific permissions. First, we create the student role which has grant access over the COURSE and ADVISOR tables. Then we need to create the student user and grant the user SESSION, RESOURCE and CREATE TABLESPACE permissions, as without these, we can not connect to the student user neither can we access the tables from main user account.

```sql
--1. STUDENT ROLE. --student_user

   CREATE ROLE STUDENT;

   GRANT SELECT ON COURSE TO STUDENT;

   GRANT SELECT ON ADVISOR TO STUDENT;

--STUDENT ROLE
   CREATE USER STUDENT_USER IDENTIFIED BY 1234;

   GRANT CREATE SESSION, RESOURCE, CREATE TABLESPACE TO STUDENT_USER;
```

4.1 Difficulties

- I had difficulty giving the session, resource and create tablespace permissions.

5 Task 3-C

Then, we need to create the teacher role, who will have access to the STUDENT and COURSE tables. And the teacher user will be granted the common permissions to create session and table.

```sql
--2. COURSE TEACHER. --teacher_user

   CREATE ROLE COURSE_TEACHER;

   GRANT SELECT ON STUDENT TO COURSE_TEACHER;

   GRANT SELECT ON COURSE TO COURSE_TEACHER;

--COURSE TEACHER ROLE
   CREATE USER TEACHER_USER IDENTIFIED BY 1234;

   GRANT CREATE SESSION, RESOURCE, CREATE TABLESPACE TO TEACHER_USER;
```

5.1 Difficulties

- I faced no difficulty for this task.

6 Task 3-D

The Head of department has the same permissions as the Course teacher, with the extra permission to INSERT instructors in tables. Then we create the Teacher User and grant the common permissions.

```sql
--3. HEAD OF DEPARTMENT ROLE.

    CREATE ROLE HEAD_OF_DEPT;

    GRANT COURSE_TEACHER TO HEAD_OF_DEPT;

    GRANT SELECT, INSERT ON INSTRUCTOR TO HEAD_OF_DEPT;

--HEAD OF DEPT ROLE
    CREATE USER HOD_USER IDENTIFIED BY 1234;

    GRANT CREATE SESSION, RESOURCE, CREATE TABLESPACE TO HOD_USER;
```

6.1 Difficulties

* I had difficulty giving the INSERT permission.

7 Task 3-E

Finally, we have the Admin role which has permission on DEPARTMENT, IN-STRUCTOR and UPDATE on BUDGET. We create the Admin user to handle these.

```sql
--4. ADMIN ROLE.

    CREATE ROLE ADMIN;

    GRANT SELECT ON DEPARTMENT TO ADMIN;

    GRANT SELECT ON INSTRUCTOR TO ADMIN;

    GRANT UPDATE (BUDGET) ON DEPARTMENT TO ADMIN;

--HEAD OF ADMINISTRATION ROLE
```

4

```
CREATE USER ADMIN_USER IDENTIFIED BY 1234;

GRANT CREATE SESSION, RESOURCE, CREATE TABLESPACE TO ADMIN_USER;
```

7.1 Difficulties

- I had difficulty setting the Update permission on BUDGET.

8 Task 3-F

Finally, we assign the specific roles to specified users.

```
-- ASSIGNING ROLES

GRANT STUDENT TO STUDENT_USER;

GRANT COURSE_TEACHER TO TEACHER_USER;

GRANT HEAD_OF_DEPT TO HOD_USER;

GRANT ADMIN TO ADMIN_USER;
```

8.1 Difficulties

- I faced no difficulty doing this task.

9 Task 4-A

Now, we need to test the views and roles, using specific users for separate permissions. Here, the student role only has permission to SELECT from the Advisor and Course tables, so we need to access these tabled via our main account.

```
--TESTING USER student_user

CONNECT student_user/1234;

SELECT
*
FROM
C_210042174.ADVISOR;
```

```
SELECT
*
FROM
C_210042174.COURSE;
```

9.1 Difficulties

- I faced difficulty using the main account to access the tables.

10   Task 4-B

Now we set up the teacher user for testing and we try to access the STUDENT and COURSE tables. We also try to delete from the tables.

```
--TESTING USER teacher_user

CONNECT teacher_user/1234;

SELECT
*
FROM
C_210042174.STUDENT;

SELECT
*
FROM
C_210042174.COURSE;

DELETE FROM C_210042174.STUDENT;

DELETE FROM C_210042174.COURSE
WHERE
COURSE_ID='CS-190';
```

10.1 Difficulties

- I had difficulty while using the Delete statement.

11   Task 4-C

We need to finish the Testing with the Admin and HOD users. The HOD can add instructors. The admin can update the budget of any specific department.

```sql
--TESTING USER hod_user

SELECT
*
FROM
C_210042174.STUDENT;

SELECT
*
FROM
C_210042174.COURSE;

INSERT INTO C_210042174.INSTRUCTOR VALUES (
'00001',
'Hasin',
'Software Dev.',
'60000'
);

-- TESTING USER admin_user

SELECT
*
FROM
C_210042174.DEPARTMENT;

SELECT
*
FROM
C_210042174.INSTRUCTOR;

UPDATE C_210042174.DEPARTMENT
SET
BUDGET=100000
WHERE
DEPT_NAME='History';

UPDATE C_210042174.DEPARTMENT
SET
BUILDING='AB2'
WHERE
DEPT_NAME='History';
```

```
COURSE_I TITLE                                               DEPT_NAME
-------- -------------------------------------------------- --------------------
   CREDITS
----------
CS-319   Image Processing                                   Comp. Sci.
         3

CS-347   Database System Concepts                           Comp. Sci.
         3

EE-181   Intro. to Digital Systems                          Elec. Eng.
         3


COURSE_I TITLE                                               DEPT_NAME
-------- -------------------------------------------------- --------------------
   CREDITS
----------
FIN-201  Investment Banking                                 Finance
         3

HIS-351  World History                                      History
         3

MU-199   Music Video Production                             Music
         3


COURSE_I TITLE                                               DEPT_NAME
-------- -------------------------------------------------- --------------------
   CREDITS
----------
PHY-101  Physical Principles                                Physics
         4


13 rows selected.

INSERT INTO C_210042174.INSTRUCTOR VALUES (
```

Figure 1:

11.1 Difficulties

- I faced difficulty doing the Admin user test.

```
Connected.

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

ID    NAME                 DEPT_NAME              TOT_CRED
----- -------------------- -------------------- ----------
98765 Bourikas             Elec. Eng.                   98
98988 Tanaka               Biology                     120

13 rows selected.


COURSE_I TITLE                                                DEPT_NAME
-------- ---------------------------------------------------- --------------------
   CREDITS
----------
BIO-101  Intro. to Biology                                    Biology
      4

BIO-301  Genetics                                             Biology
      4

BIO-399  Computational Biology                                Biology
      3


COURSE_I TITLE                                                DEPT_NAME
-------- ---------------------------------------------------- --------------------
   CREDITS
----------
```

Figure 2:

```
COURSE_I TITLE                                                DEPT_NAME
-------- ---------------------------------------------------- --------------------
   CREDITS
----------
FIN-201  Investment Banking                                   Finance
      3

HIS-351  World History                                        History
      3

MU-199   Music Video Production                               Music
      3


COURSE_I TITLE                                                DEPT_NAME
-------- ---------------------------------------------------- --------------------
   CREDITS
----------
PHY-101  Physical Principles                                  Physics
      4


13 rows selected.

UPDATE C_210042174.COURSE
              *
ERROR at line 1:
ORA-01031: insufficient privileges


INSERT INTO C_210042174.COURSE VALUES (
                       *
ERROR at line 1:
ORA-01031: insufficient privileges


DELETE FROM C_210042174.COURSE
                       *
ERROR at line 1:
```

Figure 3:

```
SQL> @G:\DOCS\IUT\DBMS1_CSE4307\Lab_06\Tests.sql
Connected.

S_ID  I_ID
----- -----
00128 45565
12345 10101
23121 76543
44553 22222
45678 22222
76543 45565
76653 98345
98765 98345
98988 76766

9 rows selected.


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
    CREDITS
----------
BIO-101  Intro. to Biology                                 Biology
         4

BIO-301  Genetics                                          Biology
         4

BIO-399  Computational Biology                             Biology
         3


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
    CREDITS
----------
CS-101   Intro. to Computer Science                        Comp. Sci.
         4
```

Figure 4:

```
COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
    CREDITS
----------
CS-101   Intro. to Computer Science                        Comp. Sci.
         4

CS-190   Game Design                                       Comp. Sci.
         4

CS-315   Robotics                                          Comp. Sci.
         3


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
    CREDITS
----------
CS-319   Image Processing                                  Comp. Sci.
         3

CS-347   Database System Concepts                          Comp. Sci.
         3

EE-181   Intro. to Digital Systems                         Elec. Eng.
         3


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
    CREDITS
----------
FIN-201  Investment Banking                                Finance
         3

HIS-351  World History                                     History
         3
```

Figure 5:

```
Connected.

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

ID     NAME                  DEPT_NAME             TOT_CRED
-----  --------------------  --------------------  ----------
98765  Bourikas              Elec. Eng.                   98
98988  Tanaka                Biology                     120

13 rows selected.


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
   CREDITS
----------
BIO-101  Intro. to Biology                                 Biology
         4

BIO-301  Genetics                                          Biology
         4

BIO-399  Computational Biology                             Biology
         3
```

Figure 6:

```
COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
   CREDITS
----------
FIN-201  Investment Banking                                Finance
         3

HIS-351  World History                                     History
         3

MU-199   Music Video Production                            Music
         3


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
   CREDITS
----------
PHY-101  Physical Principles                               Physics
         4


13 rows selected.
```

Figure 7:

```
COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
   CREDITS
----------
CS-101   Intro. to Computer Science                        Comp. Sci.
         4

CS-190   Game Design                                       Comp. Sci.
         4

CS-315   Robotics                                          Comp. Sci.
         3


COURSE_I TITLE                                             DEPT_NAME
-------- ------------------------------------------------- --------------------
   CREDITS
----------
CS-319   Image Processing                                  Comp. Sci.
         3

CS-347   Database System Concepts                          Comp. Sci.
         3

EE-181   Intro. to Digital Systems                         Elec. Eng.
         3
```

Figure 8:

```
Connected.

S_ID  I_ID
----- -----
00128 45565
12345 10101
23121 76543
44553 22222
45678 22222
76543 45565
76653 98345
98765 98345
98988 76766

9 rows selected.


COURSE_I TITLE                                            DEPT_NAME
-------- ------------------------------------------------ --------------------
    CREDITS
----------
BIO-101  Intro. to Biology                                Biology
      4

BIO-301  Genetics                                         Biology
      4

BIO-399  Computational Biology                            Biology
      3
```

Figure 9:

```
Grant succeeded.

Grant succeeded.

Grant succeeded.

User dropped.

User dropped.

User dropped.

User dropped.

User created.

Grant succeeded.

User created.

Grant succeeded.

User created.

Grant succeeded.

User created.
```

Figure 10: