CSE 4308

DATABASE MANAGEMENT SYSTEMS LAB

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Introduction

In the fifth lab of Database Management Systems our goal was to learn and implement concepts of view and role.

A view is a virtual table that does not physically exist. Rather, it is created by a query joining one or more tables. It is stored in the Oracle data dictionary. It derives its data from the tables on which it is based. Views are very powerful since they can be treated just like any other table but do not occupy the space of a table.

Role-Based Access Control enables us to restrict system access to authorized users based on their assigned roles.This simplifies system administration because users do not need to be assigned permissions directly, and instead acquire them through their assigned roles.

We were to write all the given SQL statements in an editor first and save them with .sql extension. Then execute the script.

Task

We were given 11 interrelated tables .

1.Create a view named Advisor_Selection that shows the ID, name and department name

of instructors.

Solution:

```
CREATE OR REPLACE VIEW Advisor_Selection

AS

SELECT ID,name ,dept_name

FROM

instructor ;
```

2.Create another view named Student_Count using Advisor_Selection and advisor to show the name of the instructor and the number of students assigned under them.

Solution:

```
CREATE OR REPLACE VIEW Student_Count

AS

(select name, numberofstudents

from Advisor_Selection,(Select i_id,count(s_ID) as numberofstudents

from advisor

group by i_ID)

where ID = i_ID

);
```

3.Four categories of users have been identified in the database:

(a) Students should be able to view information regarding advisors and courses.

Solution:

```
Create role Students;

Grant select on advisor to Students;

Grant select on course to Students;
```

(b) Course teachers should be able to view information about the students and courses.

Solution:

```
Create role CourseTeacher;

Grant select on student to CourseTeacher;

Grant select on course to CourseTeacher;
```

(c) Head of the Departments should have all the privileges that a course teacher has. Addi-

tionally, s/he should be able to add new instructors.

Solution:

```
Create role HeadofDepartment;

Grant  CourseTeacher to HeadofDepartment;

Grant insert on instructor to HeadofDepartment;
```

(d) Administrator should be able to see information about the department and instructors. They should also be able to update the department budget.

Solution:

```
Create role Administrator;

Grant select on department to Administrator;

Grant select on instructor to Administrator;

Grant update on department to Administrator;
```

4.Create users under these roles and write relevant SQL queries to demonstrate that the imposed access control works.

Solution:

```
Create user U_1 IDENTIFIED by C1;

Grant Students to U_1;

Grant create session to U_1;

CONNECT U_1/C1;

select * from s_200042137.course ;

select * from s_200042137.advisor;


Create user U_2 IDENTIFIED by C2;

Grant CourseTeacher to U_2;
```

```
Grant create session to U_2;

CONNECT U_2/C2;

select * from s_200042137.course ;

select * from s_200042137.student;


Create user U_4 IDENTIFIED by C4;

Grant HeadofDepartment to U_4;

Grant create session to U_4;

CONNECT U_4/C4;

insert into s_200042137.instructor VALUES('137', 'N' ,'Comp. Sci.',25000);


Create user U_5 IDENTIFIED by C5;

Grant Administrator to U_5;

Grant create session to U_5;

CONNECT U_5/C5;

update s_200042137.department

set budget = 25000

where dept_name = 'Comp. Sci.';
```