DATABASE & SYSTEM SECURITY

LAB-01

Fundamentals of Database Security

Pre-Lab:

Q1. What is a role and user in oracle.

Sol) **Roles** are the collections of granted privileges that are much more granular and diverse and limited than the super system privileges.

Q2. Write a query to create a role.

Sol) CREATE ROLE role_name;

Q3. What is the default role a user gets when it is created.

Sol) CONNECT

Q4. What privilege does CONNECT role provide.

Sol) create session

Q5. List different types of privileges and explain each of them.

Sol) **System privileges -** CREATE, ALTER, or DROP

Object priviliges - EXECUTE, SELECT, INSERT, UPDATE, DELETE

Q6. Write a query to grant permissions to a role or a user.

Sol) GRANT privilige_name ON database_name TO user_name|role_name;

Q7. Write a query to grant password protected role to a user.

Sol) GRANT role_name TO user_name IDENTIFIED BY password;

In-Lab:

Q1. Create a user with a default tablespace, temporary tablespace and with a 2M quota.

Sol

```
SQL*Plus: Release 10.2.0.1.0 - Production on Tue Feb 15 16:02:48 2022

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SQL> connect system/Sivani_0512
Connected.
SQL> CREATE USER labtest001 IDENTIFIED BY lab001
  2  default tablespace users
  3  temporary tablespace temp
  4  quota 2m on users
  5  account unlock;

User created.

SQL>
```

Q2. Alter the earlier created user and change his password as well as lock his account.

Sol)

```
SQL> alter user labtest001 identified by lab001 account lock;

User altered.

SQL> alter user labtest001 identified by lab001 account unlock;

User altered.

SQL>
```

Q3. Display the count of employees.

Sol

```
SQL> SELECT COUNT(*) FROM hr.EMPLOYEES;

  COUNT(*)
----------
       107
```

Q4. PayrollSpecialist - this group of employee needs to create a session and is responsible for working with all of the Employee data. Create this role using SQL.

Sol)

```
SQL> create role PayrolllSpecialist;

Role created.
```

Q5. Provide system and object privileges to the role created earlier.

Sol)

– system privileges

```
SQL> grant create session, select any dictionary to PayrolllSpecialist;

Grant succeeded.
```

– object privileges

```
SQL> grant select, insert, update on hr.EMPLOYEES to PayrolllSpecialist;

Grant succeeded.
```

Q6. Grant the earlier created role (with the added privileges) to the earlier created user.

Sol)

```
SQL> grant PayrolllSpecialist to labtest001;

Grant succeeded.
```

Q7. Now you will test if the earlier created user can SELECT from the hr.EMPLOYEES table. Display all the employees with the last name 'Smith'.

Sol)

```
SQL> connect labtest001/lab001
Connected.
SQL> desc hr.EMPLOYEES;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 EMPLOYEE_ID                               NOT NULL NUMBER(6)
 FIRST_NAME                                         VARCHAR2(20)
 LAST_NAME                                 NOT NULL VARCHAR2(25)
 EMAIL                                     NOT NULL VARCHAR2(25)
 PHONE_NUMBER                                       VARCHAR2(20)
 HIRE_DATE                                 NOT NULL DATE
 JOB_ID                                    NOT NULL VARCHAR2(10)
 SALARY                                             NUMBER(8,2)
 COMMISSION_PCT                                     NUMBER(2,2)
 MANAGER_ID                                         NUMBER(6)
 DEPARTMENT_ID                                      NUMBER(4)

SQL>
```

select * from hr.employees where last_name ='Smith';

```
SQL> select * from hr.employees where last_name='Smith';

EMPLOYEE_ID FIRST_NAME           LAST_NAME
----------- -------------------- -------------------------
EMAIL                     PHONE_NUMBER         HIRE_DATE JOB_ID         SALARY
------------------------- -------------------- --------- ---------- ----------
COMMISSION_PCT MANAGER_ID DEPARTMENT_ID
-------------- ---------- -------------
        159 Lindsey              Smith
LSMITH                    011.44.1345.729268   10-MAR-97 SA_REP           8000
           .3        146            80

        171 William              Smith
WSMITH                    011.44.1343.629268   23-FEB-99 SA_REP           7400
           .15       148            80

EMPLOYEE_ID FIRST_NAME           LAST_NAME
----------- -------------------- -------------------------
EMAIL                     PHONE_NUMBER         HIRE_DATE JOB_ID         SALARY
------------------------- -------------------- --------- ---------- ----------
COMMISSION_PCT MANAGER_ID DEPARTMENT_ID
-------------- ---------- -------------


SQL>
```

Q8. Remove the earlier granted privilege from the user.

Sol

```
SQL> connect system
Enter password:
Connected.
SQL> revoke PayrolllSpecialist from labtest001;

Revoke succeeded.

SQL>
```

Post-Lab:

Q1. Connect to any database as SYS user and grant him SYSDBA privilege.

Sol) connect sys/password as sysdba

Q2. Write a query to retrieve all the columns of data from V$PWFILE_USERS view.

***Sol*)** select * from sys.v$pwfile_users;

Q3. Create a role named appaccess and grant the ability to read the application tables to that role.

Sol

```
SQL> create role appaccess;

Role created.

SQL> select owner,table_name from dba_tables;

OWNER                          TABLE_NAME
------------------------------ ------------------------------
SYS                            CON$
SYS                            UNDO$
SYS                            CDEF$
SYS                            CCOL$
SYS                            PROXY_ROLE_DATA$
SYS                            FILE$
SYS                            FET$
SYS                            TS$
SYS                            PROXY_DATA$
SYS                            SEG$
SYS                            UET$

OWNER                          TABLE_NAME
------------------------------ ------------------------------
SYS                            TSQ$
```

```
OWNER                          TABLE_NAME
------------------------------ ------------------------------
SYSTEM                         LOGMNRP_CTAS_PART_MAP
SYSTEM                         LOGMNR_LOG$
SYSTEM                         LOGMNR_RESTART_CKPT$
SYS                            UTL_RECOMP_COMPILED

1093 rows selected.
```

```
SQL> create table map_object(Sno number(10),Name varchar(20));

Table created.

SQL> grant SELECT on map_object to appaccess;

Grant succeeded.
```

Q4. Create a role create_session_role that will have only one privilege CREATE SESSION in order to connect to an ORACLE database.

Sol

```
SQL> create role create_session_role NOT IDENTIFIED;

Role created.

SQL> GRANT CREATE SESSION TO create_session_role;

Grant succeeded.
```

Q5. Write a query that adds to existing roles

Sol)

```
SQL> SET ROLE ALL;

Role set.
```

Q6. Create the user secadm and grant him password protected create_session_role

Sol) **GRANT create_session_role TO secadm IDENTIFIED BY password;**

```
SQL> GRANT create_session_role TO secadm IDENTIFIED BY password;

Grant succeeded.

SQL>
```

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Sec-02A