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| 1. Open sqlplus and connect to sys user. | C:\Users\GIA KIET>sqlplus / as sysdba  SQL\*Plus: Release 19.0.0.0.0 - Production on Wed May 31 09:09:06 2023  Version 19.3.0.0.0 |
| 2. Show the connection name of current container. | SQL> show con\_name  CON\_NAME  ------------------------------  CDB$ROOT |
| 3. Create a pluggable database (PDB) and open this PDB. | CREATE PLUGGABLE DATABASE week5ADMIN USER week5\_2258 IDENTIFIED BY week5 ROLES=(DBA) file\_name\_convert=('pdbseed', 'week5') ;  Pluggable database created.  SQL> ALTER PLUGGABLE DATABASE week5 OPEN;  Pluggable database altered. |
| 4. Connect to the sys user (or ADMIN user of this PDB) in the above PDB. | SQL> connect sys/Yukino103\*@localhost:1521/week5 AS SYSDBA;  Connected. |
| 5. Show the connection name of current container. | SQL> SHOW CON\_NAME  CON\_NAME  ------------------------------  WEEK5 |
| 6. In this PDB, create 3 user: user1, user2, user3. | SQL> CREATE USER user1 IDENTIFIED BY pass;  User created.  SQL> CREATE USER user2 IDENTIFIED BY pass;  User created.  SQL> CREATE USER user3 IDENTIFIED BY pass;  User created. |

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| 7. Connect to user1. | SQL> CONNECT user1/week5\_2258@locahost:1521/week\_5;  ERROR:  ORA-12154: TNS:could not resolve the connect identifier specified  Warning: You are no longer connected to ORACLE. |
| 8. Connect to sys user (or ADMIN user) of PDB above. | SQL> CONNECT sys/Yukino103\*@localhost:1521/week5 AS SYSDBA  Connected. |
| 9. Create a role named manager. | SQL> CREATE ROLE manager;  Role created. |
| 10.Grant CREATE SESSION, CREATE TABLE to manager role WITH ADMIN OPTION. | SQL> Grant CREATE SESSION, CREATE TABLE to manager WITH ADMIN OPTION;  Grant succeeded. |
| 11. Grant manager role to user1. | SQL> GRANT manager TO user1;  Grant succeeded. |
| 12.Connect to user1. | SQL> CONNECT user1/pass@localhost:1521/week5;  Connected. |
| 13.Create a TEST table (ID NUMBER, NAME VARCHAR2(100)) | SQL> create table test(id number, name varchar2(100));  Table created. |
| 14. Grant manager role to user2. | SQL> GRANT manager to user2;  GRANT manager to user2  \*  ERROR at line 1:  ORA-01932: ADMIN option not granted for role 'MANAGER' |
| 15. Grant CREATE SESSION privilege to user2; | SQL> GRANT CREATE SESSION TO user2;  Grant succeeded. |
| 16. Connect to user 2, create a table. | SQL> CONNECT user2/pass@localhost:1521/week5;  Connected. |
| 17. From user2, grant CREATE SESSION privilege to user3. | SQL> CONNECT user2/pass@localhost:1521/week5;  Connected.  SQL> create table abc(id number);  create table abc(id number)  \*  ERROR at line 1:  ORA-01031: insufficient privileges  SQL> GRANT CREATE SESSION TO user3;  GRANT CREATE SESSION TO user3  \*  ERROR at line 1:  ORA-01031: insufficient privileges |
| 18. Connect to SYS user of this PDB. | SQL> CONNECT sys/Yukino103\*@localhost:1521/week5 AS SYSDBA  Connected. |
| 19. Grant manager role to user3 WITH ADMIN OPTION. | SQL> GRANT manager TO user3 WITH ADMIN OPTION;  Grant succeeded. |
| 20. Connect to user3. | SQL> CONNECT user3/pass@localhost:1521/week5  Connected. |
| 21.Grant manager role to user2. | SQL> grant manager to user2;  Grant succeeded. |
| 22.From user3, how can you create a table in user2 schema? | SQL> CONNECT sys/Yukino103\*@localhost:1521/week5 AS SYSDBA;  Connected.  SQL> GRANT CREATE ANY TABLE TO user3;  Grant succeeded.  SQL> CONNECT user3/pass@localhost:1521/week5  Connected.  SQL> CREATE TABLE USER2.STUDENT(ID NUMBER);  Table created. |
| 23.From user3, query the roles and privilege of current user. | SQL> SELECT \* FROM SESSION\_ROLES;  ROLE  --------------------------------------------------------------------------------  MANAGER  SQL> SELECT \* FROM SESSION\_PRIVS;  PRIVILEGE  ----------------------------------------  CREATE ANY TABLE  CREATE TABLE  CREATE SESSION |
| 24.Use SQLDeveloper to connect to ADMIN USER of this PDB. |  |

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| 1. Start SQL\*Plus and connect to the Database. | C:\Users\GIA KIET>sqlplus / AS SYSDBA  SQL\*Plus: Release 19.0.0.0.0 - Production on Wed May 31 10:12:12 2023  Version 19.3.0.0.0 |
| 2. CREATE a PLUGGABLE DATABASE (PDB) and open this PDB. | CREATE PLUGGABLE DATABASE week6 ADMIN USER week5\_2258 IDENTIFIED BY week6 ROLES=(DBA) file\_name\_convert=('pdbseed', 'week6') ;  Pluggable database created.  SQL> Alter pluggable database week6 open;  Pluggable database altered. |
| 3. Using sys user to connect to the above PDB. | SQL> connect sys/Yukino103\*@localhost:1521/week6 AS SYSDBA  Connected. |
| 4. Show connection name. | SQL> SHOW CON\_NAME  CON\_NAME  ------------------------------  WEEK6 |
| 5. Creating a tablespace. | SQL> CREATE TABLESPACE tbs\_buoi6 DATAFILE 'E:\oraclecsdl\oradata\ORCL\WEEK6\tbs\_buoi6\_01.dbf' SIZE 20M;  Tablespace created. |
| 6. CREATE 4 USERs: user1, user2, user3, user4, default tablespace and quota 1M for each user on the tablespace above | SQL> Create user user1 identified by userpass default TABLESPACE tbs\_buoi6 QUOTA 1M ON  tbs\_buoi6;  User created.  SQL> Create user user2 identified by userpass default TABLESPACE tbs\_buoi6 QUOTA 1M ON tbs\_buoi6;  User created.  SQL> Create user user3 identified by userpass default TABLESPACE tbs\_buoi6 QUOTA 1M ON tbs\_buoi6;  User created.  SQL> Create user user4 identified by userpass default TABLESPACE tbs\_buoi6 QUOTA 1M ON tbs\_buoi6;  User created. |
| 7. Grant privilege to user1 and user4 so that these users can connect to the database. | SQL> GRANT CREATE SESSION TO user1, user4;  Grant succeeded.  SQL> |
| 8. Show privilege of user1. | SQL> select grantee, privilege, admin\_option from DBA\_SYS\_PRIVS where GRANTEE = 'USER1  ';  GRANT PRIVILEGE ADM  ----- ---------------------------------------- ---  USER1 CREATE SESSION NO |
| 9. Create a programing role and grant privilege CREATE SESSION, CREATE TABLE to this role. | SQL> CREATE ROLE PROGRAMMING;  Role created.  SQL> GRANT CREATE SESSION, CREATE TABLE TO programming;  Grant succeeded. |
| 10. Grant programing role to user2 with admin option. | SQL> GRANT programming TO user2 WITH ADMIN OPTION;  Grant succeeded. |
| 11. Show the privileges of user2. | SQL> select grantee, privilege, admin\_option from DBA\_SYS\_PRIVS where GRANTEE = 'USER2';  no rows selected  SQL> select \* from DBA\_ROLE\_PRIVS WHERE GRANTEE = 'USER2';  GRANTEE  --------------------------------------------------------------------------------  GRANTED\_ROLE  --------------------------------------------------------------------------------  ADM DEL DEF COM INH  --- --- --- --- ---  USER2  PROGRAMMING  YES NO YES NO NO |
| 12. Connect to the database using user2. | SQL> connect user2/userpass@localhost:1521/week6  Connected. |
| 13. From user2, create the employees table: ID, NAME, SALARY, DESCRIPTION. | SQL> CREATE TABLE EMPLOYEE (ID NUMBER, NAME VARCHAR2(10), SALARY NUMBER, DESCRIPTION V  ARCHAR2(10));  Table created. |
| 14. From user2, insert 2 rows to employees table. | SQL> INSERT INTO EMPLOYEE VALUES(1, 'JOHN', 300, NULL);  1 row created.  SQL> INSERT INTO EMPLOYEE VALUES(2, 'MICHEAL', 00, NULL);  1 row created. |
| 15. From user2, grant programing role to user3 and grant update (name, salary) on employees table to user3. | SQL> GRANT programming TO user3;  Grant succeeded.  SQL> GRANT UPDATE(NAME, SALARY) ON user2.EMPLOYEE TO user3;  Grant succeeded. |
| 16. From user3, grant programing role to user1. | SQL> connect user3/userpass@localhost:1521/week6  Connected.  SQL> GRANT programming TO user1;  GRANT programming TO user1  \*  ERROR at line 1:  ORA-01932: ADMIN option not granted for role 'PROGRAMMING' |
| 17. From user3, show privilege of user3. | SQL> SELECT GRANTEE, TABLE\_NAME, COLUMN\_NAME, PRIVILEGE FROM USER\_COL\_PRIVS;  GRANTEE  --------------------------------------------------------------------------------  TABLE\_NAME  --------------------------------------------------------------------------------  COLUMN\_NAME  --------------------------------------------------------------------------------  PRIVILEGE  ----------------------------------------  USER3  EMPLOYEE  SALARY  UPDATE  GRANTEE  --------------------------------------------------------------------------------  TABLE\_NAME  --------------------------------------------------------------------------------  COLUMN\_NAME  --------------------------------------------------------------------------------  PRIVILEGE  ----------------------------------------  USER3  EMPLOYEE  NAME  UPDATE |
| 18. From user3, query data from employees table. |  |
| 19. From sys, grant select on employees to user1. |  |
| 20. Show the privileges of user1. |  |
| 21. From sys user, grant all on employee to user1. |  |
| 22. From sys user, grant create sequence to user3 |  |
| 23. From user3, create table students (id, fullname, birthday) |  |
| 24. From user3, Create sequence named student\_seq |  |
| 25. From user3, insert data into students table with ID is generated from the sequence. |  |
| 26. How can user4 insert data into students table of user3? |  |
| 27. How can user4 delete data from students table of user3? |  |