Report on Oracle Database Practical Tasks

Name: KEZA SHANIA

ID: 25793

Course: Database Development with PL/SQL (INSY 8311)

Group: C

Overview: PDB Management Assignment No3

This practical assignment was a valuable exercise in hands-on Oracle database administration, focusing on the multi-tenant architecture (CDBs and PDBs) and the use of the graphical management tool, Oracle Enterprise Manager (OEM).

I successfully completed all three required tasks:

1. Creation and Configuration: I created and configured **my permanent PDB (sh_pdb_25793)** for class coursework.
2. Life-cycle Management: I practiced database life-cycle management by creating and deleting a temporary PDB.
3. Verification: I accessed and verified the setup using the required OEM Express dashboard.

Task 1: Creating My Coursework PDB

My first step was to establish the database environment for my class work. I created a new pluggable database, naming it **sh_pdb_25793**, by cloning the existing seed PDB. I also defined two users: an administrative user (**shania_plsqlauca_25793**) and my primary student account (**shania_student**) inside the new PDB.

Here are the **commands** I used to create, open, and save the state of my new PDB:

-- 1. Created the new PDB and administrative user

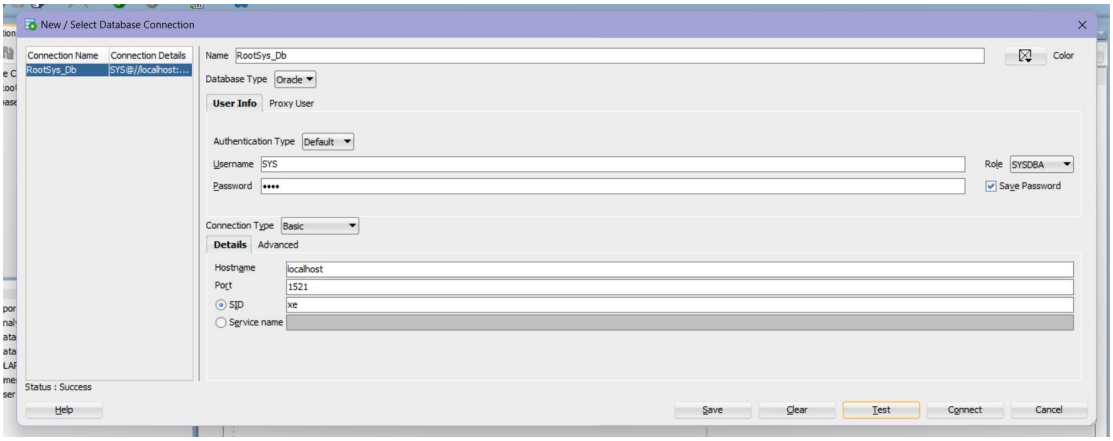
```
CREATE PLUGGABLE DATABASE sh_pdb_25793
ADMIN USER shania_plsqlauca_25793 IDENTIFIED BY Oracle123
FILE_NAME_CONVERT = ('C:\app\Lenovo\product\21c\oradata\XE\pdbseed\',
                     'C:\app\Lenovo\product\21c\oradata\XE\sh_pdb_25793\');
```

-- 2. Open the PDB for read/write access

```
ALTER PLUGGABLE DATABASE sh_pdb_25793 OPEN;
```

-- 3. Ensure the PDB opens automatically on database startup

ALTER PLUGGABLE DATABASE sh_pdb_25793 SAVE STATE;




```
C:\Windows\System32>sqlplus / as sysdba

SQL*Plus: Release 21.0.0.0.0 - Production on Wed Oct 8 12:56:50 2025
Version 21.3.0.0.0

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Connected to:
Oracle Database 21c Express Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0

SQL> SHOW CON_NAME;

CON_NAME
------------------------------
CDB$ROOT
SQL> CREATE PLUGGABLE DATABASE sh_pdb_25793
  2  ADMIN USER shania_plsqlauca_25793 IDENTIFIED BY Oracle123
  3  FILE_NAME_CONVERT = ('C:\app\Lenovo\product\21c\oradata\XE\pdbseed\',
  4                       'C:\app\Lenovo\product\21c\oradata\XE\sh_pdb_25793\');

Pluggable database created.

SQL> ALTER PLUGGABLE DATABASE sh_pdb_25793 OPEN;

Pluggable database altered.

SQL> ALTER PLUGGABLE DATABASE sh_pdb_25793 SAVE STATE;

Pluggable database altered.

SQL> SHOW PDBS;

    CON_ID CON_NAME                       OPEN MODE  RESTRICTED
---------- ------------------------------ ---------- ----------
         2 PDB$SEED                       READ ONLY  NO
         3 XEPDB1                         READ WRITE NO
         4 SH_PDB_25793                   READ WRITE NO
SQL>
```
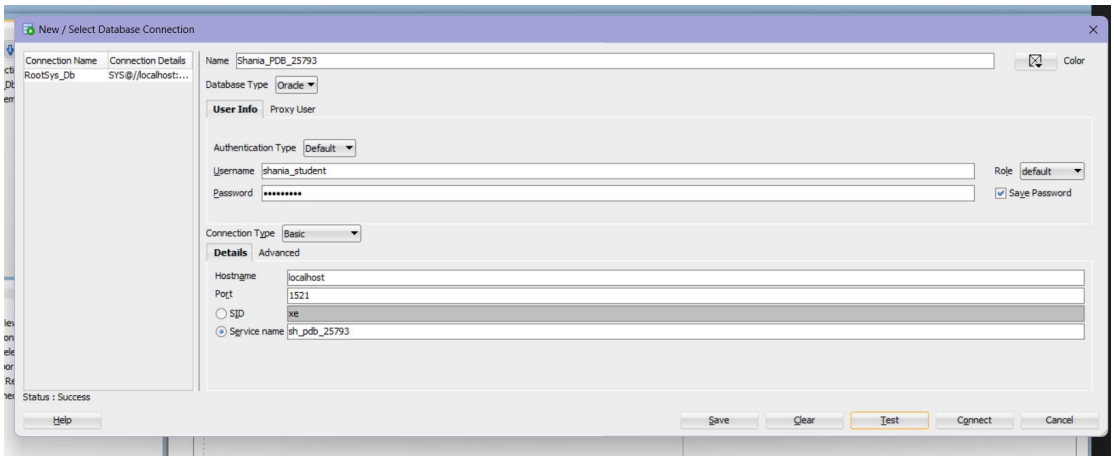

-- Additional steps to create the main student user (shania_student) inside the PDB were executed separately.

```
SQL> CONNECT sys/root AS SYSDBA;
Connected.
SQL> ALTER SESSION SET CONTAINER = sh_pdb_25793;

Session altered.

SQL> CREATE TABLESPACE users
  2  DATAFILE 'C:\APP\LENOVO\PRODUCT\21C\ORADATA\XE\sh_pdb_25793\users01.dbf'
  3  SIZE 100M AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED;

Tablespace created.

SQL> ALTER USER shania_student DEFAULT TABLESPACE users QUOTA UNLIMITED ON users;

User altered.

SQL> CONNECT shania_student/Oracle123@localhost:1521/sh_pdb_25793;
Connected.
SQL> CONNECT sys/root AS SYSDBA;
Connected.
```

--Also, I additionally connected my student user to my sql developer



Task 2: Create and Delete a Temporary PDB

Next, I focused on testing the full life-cycle management process. I created a second, temporary PDB named **sh_to_delete_pdb_25793**. After verifying its creation, I immediately closed and permanently dropped it along with its associated data files to ensure I understood the deletion syntax.

The ability to create and quickly drop databases demonstrates the core flexibility of Oracle's multi-tenant architecture.

Here are the commands I used for this task:

-- 1. Create the temporary PDB
CREATE PLUGGABLE DATABASE sh_to_delete_pdb_25793

```
ADMIN USER shania_plsqlauca_25793 IDENTIFIED BY Oracle123
FILE_NAME_CONVERT = ('C:\app\Lenovo\product\21c\oradata\XE\pdbseed\',
                     'C:\app\Lenovo\product\21c\oradata\XE\sh_to_delete_pdb_25793\');

-- 2. Close the PDB before dropping
ALTER PLUGGABLE DATABASE sh_to_delete_pdb_25793 CLOSE
IMMEDIATE;

-- 3. Permanently drop the PDB and its files
DROP PLUGGABLE DATABASE sh_to_delete_pdb_25793 INCLUDING
DATAFILES;
```

```
SQL> CREATE PLUGGABLE DATABASE sh_to_delete_pdb_25793
  2  ADMIN USER shania_plsqlauca_25793 IDENTIFIED BY Oracle123
  3  FILE_NAME_CONVERT = ('C:\app\Lenovo\product\21c\oradata\XE\pdbseed\',
  4                       'C:\app\Lenovo\product\21c\oradata\XE\sh_to_delete_pdb_25793\');

Pluggable database created.

SQL> ALTER PLUGGABLE DATABASE sh_to_delete_pdb_25793 OPEN;

Pluggable database altered.

SQL> SHOW PDBS;

    CON_ID CON_NAME                       OPEN MODE  RESTRICTED
---------- ------------------------------ ---------- ----------
         2 PDB$SEED                       READ ONLY  NO
         3 XEPDB1                         READ WRITE NO
         4 SH_PDB_25793                   MOUNTED
         5 SH_TO_DELETE_PDB_25793         READ WRITE NO
SQL>
```

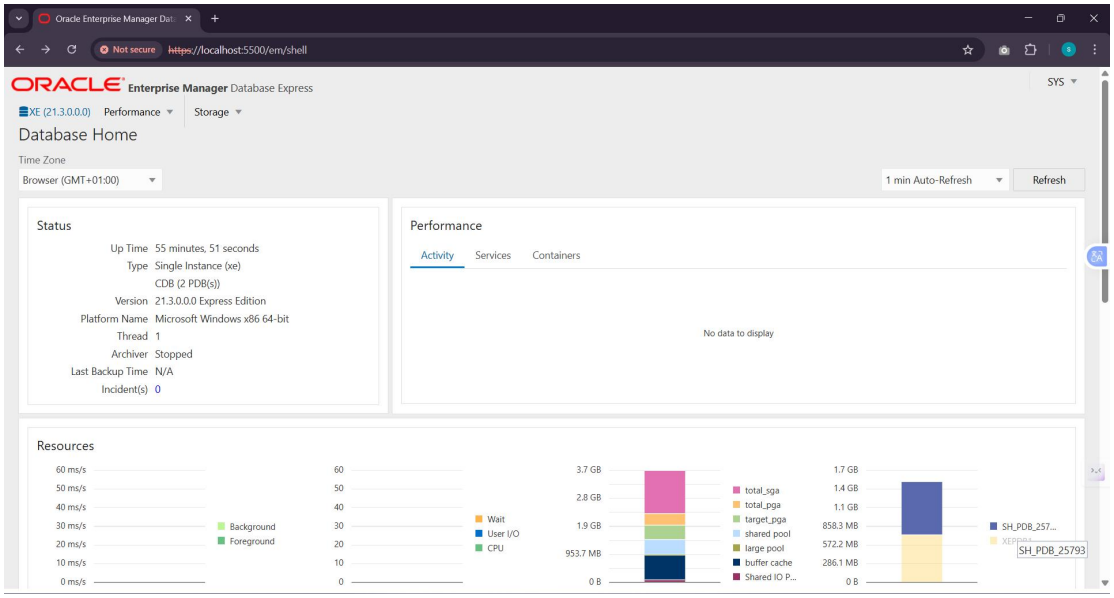
```
SQL> ALTER PLUGGABLE DATABASE sh_to_delete_pdb_25793 CLOSE IMMEDIATE;

Pluggable database altered.

SQL> DROP PLUGGABLE DATABASE sh_to_delete_pdb_25793 INCLUDING DATAFILES;

Pluggable database dropped.

SQL> SHOW PDBS;

    CON_ID CON_NAME                       OPEN MODE  RESTRICTED
---------- ------------------------------ ---------- ----------
         2 PDB$SEED                       READ ONLY  NO
         3 XEPDB1                         READ WRITE NO
         4 SH_PDB_25793                   MOUNTED
SQL>
```

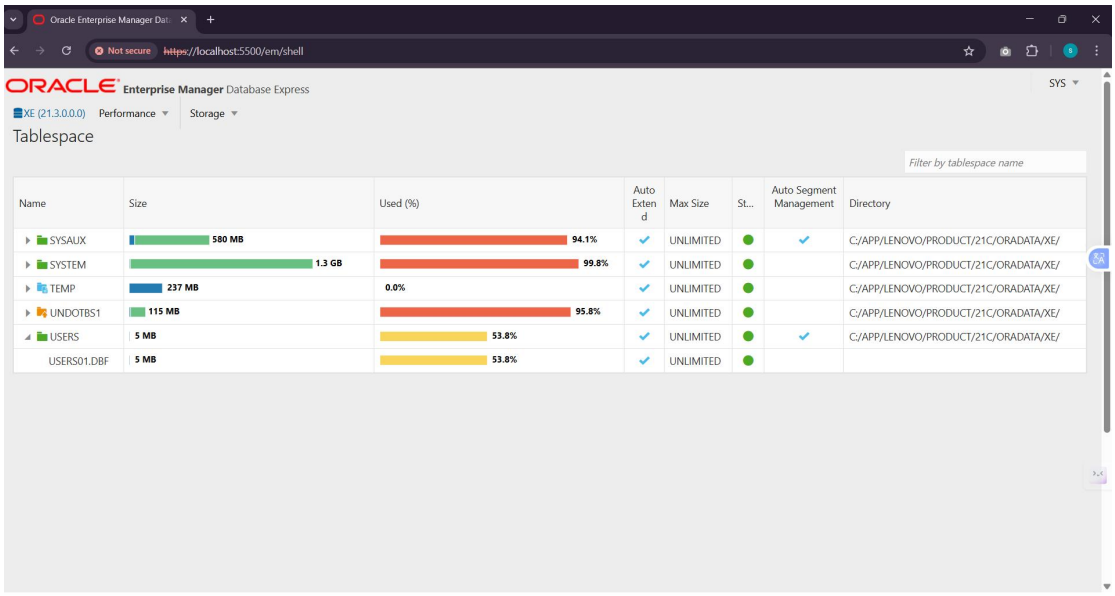
Task 3: Oracle Enterprise Manager (OEM) Verification

After confirming the PDB environment was correctly set up (with only **sh_pdb_25793** remaining), I accessed the web interface. I successfully configured and accessed **Oracle Enterprise Manager (OEM)** Express using the URL determined during the 21c installation.

I was able to log in using my administrative credentials and confirm the presence of the root container and my new PDB.

Access URL: https://localhost:5501/em





Notes and Challenges Encountered

The most significant challenge I faced was ensuring I was running the correct version of Oracle to complete Task 3.

- **Initial Issue (23ai):** I started with Oracle Database 23ai, but I quickly discovered it does not support the classic Oracle Enterprise Manager (OEM) Express dashboard required for the assignment, resulting in "Not Implemented" errors.
- **Resolution (Downgrade):** To meet the assignment's explicit requirement, I made the decision to uninstall 23ai and install Oracle 21c Express Edition instead, which includes the OEM Express feature.
- **Second Challenge (Cleanup):** During the 21c installation, I ran into configuration errors due to remnants of the old 23ai installation remaining in the Windows Registry and file system. I resolved this by completely removing all old Oracle folders, resetting relevant environment variables, and running the 21c installer again with administrator privileges.
- After these troubleshooting steps, the 21c installation and the subsequent connection to the OEM interface at **https://localhost:5501/em** succeeded, allowing me to fully complete the assignment.