Lab 4.1: Creating a New CDB

Objective:

To create a new Container Database (CDB) named `CDBDEV` using the `CREATE DATABASE` SQL command with specified characteristics.

Steps:

1. **Verify CDBDEV is not in /etc/oratab**

   Check if `CDBDEV` is recorded in `/etc/oratab`. If it is, remove the entry:

   ```
   sudo vi /etc/oratab
   ```

   Remove the line containing `CDBDEV` if it exists.

2. **Set Oracle Environment Variables**

   Set the Oracle environment variables using the `oraenv` script:

   ```
   . oraenv
   ```

   When prompted, enter `CDBDEV`.

3. **Create an Initialization Parameter File**

   Create an initialization parameter file from the sample `init.ora` file:

   ```
   cp $ORACLE_HOME/dbs/init.ora $ORACLE_HOME/dbs/initCDBDEV.ora
   ```

   Edit the `initCDBDEV.ora` file and set the following parameters:

   ```
   db_name='CDBDEV'
   enable_pluggable_database=true
   db_create_file_dest='/u01/app/oracle/oradata'
   db_recovery_file_dest='/u01/app/oracle/fast_recovery_area'
   db_recovery_file_dest_size=2G
   audit_file_dest='/u01/app/oracle/admin/CDBDEV/adump'
   diagnostic_dest='/u01/app/oracle'
   ```

4. **Verify Required Directories Exist**

   Verify that the directories exist, create them if they do not:

   ```
   mkdir -p /u01/app/oracle/oradata
   mkdir -p /u01/app/oracle/fast_recovery_area
   mkdir -p /u01/app/oracle/admin/CDBDEV/adump
   ```

5. **Start the Database Instance in NOMOUNT Mode**

   Start the database instance in `NOMOUNT` mode:

   ```
   sqlplus / as sysdba
   ```

   ```
   STARTUP NOMOUNT PFILE=$ORACLE_HOME/dbs/initCDBDEV.ora;
   ```

6. **Create the CDB**

   Execute the script with the `CREATE DATABASE` command:

```
CREATE DATABASE CDBDEV
USER SYS IDENTIFIED BY fenago
USER SYSTEM IDENTIFIED BY fenago
LOGFILE GROUP 1 ('/u01/app/oracle/oradata/CDBDEV/redo01.log') SIZE 100M,
        GROUP 2 ('/u01/app/oracle/oradata/CDBDEV/redo02.log') SIZE 100M,
        GROUP 3 ('/u01/app/oracle/oradata/CDBDEV/redo03.log') SIZE 100M
MAXLOGFILES 5
MAXLOGMEMBERS 5
MAXLOGHISTORY 1
MAXDATAFILES 100
CHARACTER SET AL32UTF8
NATIONAL CHARACTER SET AL16UTF16
EXTENT MANAGEMENT LOCAL
DATAFILE '/u01/app/oracle/oradata/CDBDEV/system01.dbf' SIZE 700M REUSE
SYSAUX DATAFILE '/u01/app/oracle/oradata/CDBDEV/sysaux01.dbf' SIZE 550M REUSE
DEFAULT TABLESPACE users
   DATAFILE '/u01/app/oracle/oradata/CDBDEV/users01.dbf'
   SIZE 200M REUSE AUTOEXTEND ON MAXSIZE UNLIMITED
DEFAULT TEMPORARY TABLESPACE temp
   TEMPFILE '/u01/app/oracle/oradata/CDBDEV/temp01.dbf'
   SIZE 20M REUSE
UNDO TABLESPACE undotbs
   DATAFILE '/u01/app/oracle/oradata/CDBDEV/undotbs01.dbf'
   SIZE 200M REUSE AUTOEXTEND ON MAXSIZE UNLIMITED
ENABLE PLUGGABLE DATABASE
   SEED
   FILE_NAME_CONVERT = ('/u01/app/oracle/oradata/CDBDEV/',
'/u01/app/oracle/oradata/pdbseed/')
   SYSTEM DATAFILES SIZE 125M AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED
   SYSAUX DATAFILES SIZE 100M;
```

   If you receive errors, use the SQL*Plus command `SHUTDOWN ABORT`, correct the errors, and restart from step 5.

7. **Execute Catalog and Catproc Scripts**

   Run the following scripts:

```
@$ORACLE_HOME/rdbms/admin/catalog.sql
@$ORACLE_HOME/rdbms/admin/catproc.sql
```

8. **Exit SQL*Plus**

```
EXIT;
```

9. **Add Entry to /etc/oratab**

   Add the new entry to `/etc/oratab`:

```
echo "CDBDEV:/u01/app/oracle/product/19.3.0/dbhome_1:Y" | sudo tee -a
/etc/oratab
```

Verify the entry:

```
cat /etc/oratab
```

10. **Verify Database Characteristics**

    Verify that the specified tablespaces are created for the `CDB$ROOT`:

    ```
    sqlplus / as sysdba
    ```

    ```
    SELECT tablespace_name FROM dba_tablespaces;
    ```

    Expected Output: The output should include `SYSTEM`, `SYSAUX`, `UNDOTBS`, `TEMP`, and `USERS`.

Summary

By following these steps, you will successfully create a new CDB named `CDBDEV` using the `CREATE DATABASE` SQL command with the specified characteristics. This practice helps in understanding the manual creation of databases and configuring essential parameters.