SLIIT

COMPUTING | BUSINESS | ENGINEERING

IE2080
Database Systems Administration
2nd Year, Semester I

Assignment

Managing Oracle12C and SQL Developer software

Submitted to

Sri Lanka Institute of Information Technology

In partial fulfillment of the requirements for the

Bachelor of Science Special Honors Degree in Information Technology

21/05/2025

Declaration

Declaration I certify that this report does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and belief it does not contain any material previously published or written by another person, except where due reference is made in text.

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Name : Gamaethige T.S

Terms and References

As undergraduates specializing in Computer Systems and Network Engineering under the BSc. (Hons) in Information Technology degree program at SLIIT, we were assigned an individual task by our lecturer, Mr. Ashvinda Iddamalgoda, for the Database Systems Administration module. The purpose of this assignment was to explore and gain hands-on experience with Oracle 12C and SQL Developer platforms.

Abstract

This report outlines the step-by-step procedure for installing and configuring Oracle 12C and SQL Developer two widely used integrated development environments for managing relational databases using SQL. The report aims at investigating key administrative tasks in Oracle 12C, including setting up the database, configuration, and data manipulation using SQL Developer. In addition, it addresses practical aspects such as user account management, storage management, database backup methods, and performance monitoring. In performing these administration tasks, this report aims to demonstrate secure, effective, and best-practice methods in modern database administration.

Acknowledgement

I would like to express my heartfelt gratitude to Mr. Ashvinda Iddamalgoda, the lecturer in charge of the Database Systems Administration (IT2080) module, for his continuous support and guidance throughout this assignment. His valuable insights, encouragement, and unwavering commitment greatly contributed to the successful completion of this report. Despite her busy schedule, He consistently provided direction and assistance, for which I am sincerely thankful.

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B: Create a PDB by using Database Configuration Assistant (DBCA)

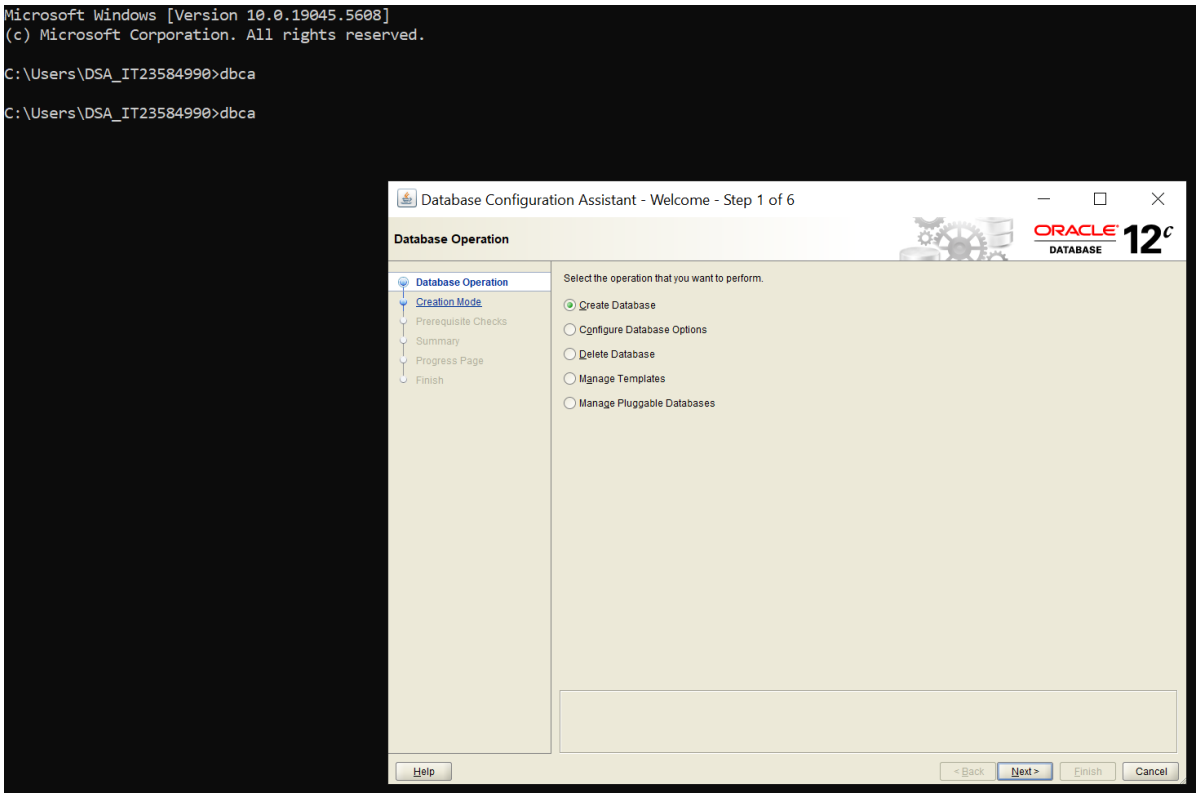

Figure B.2.1: Create database

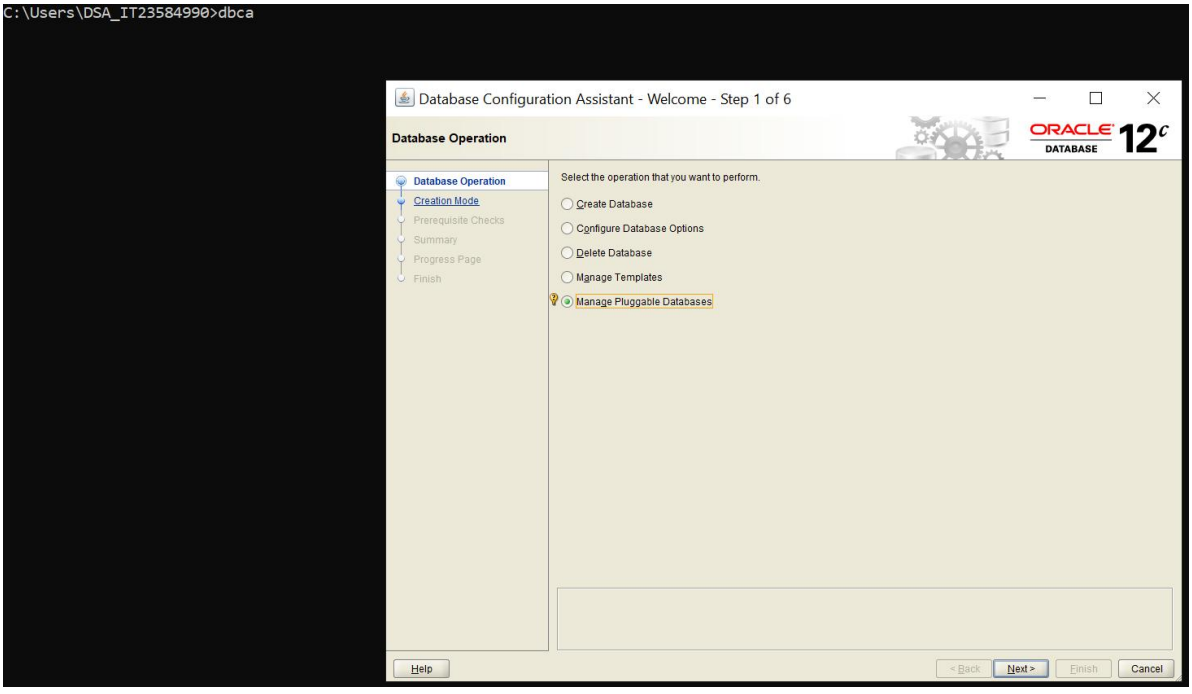

Figure B.2.2: Manage PDB

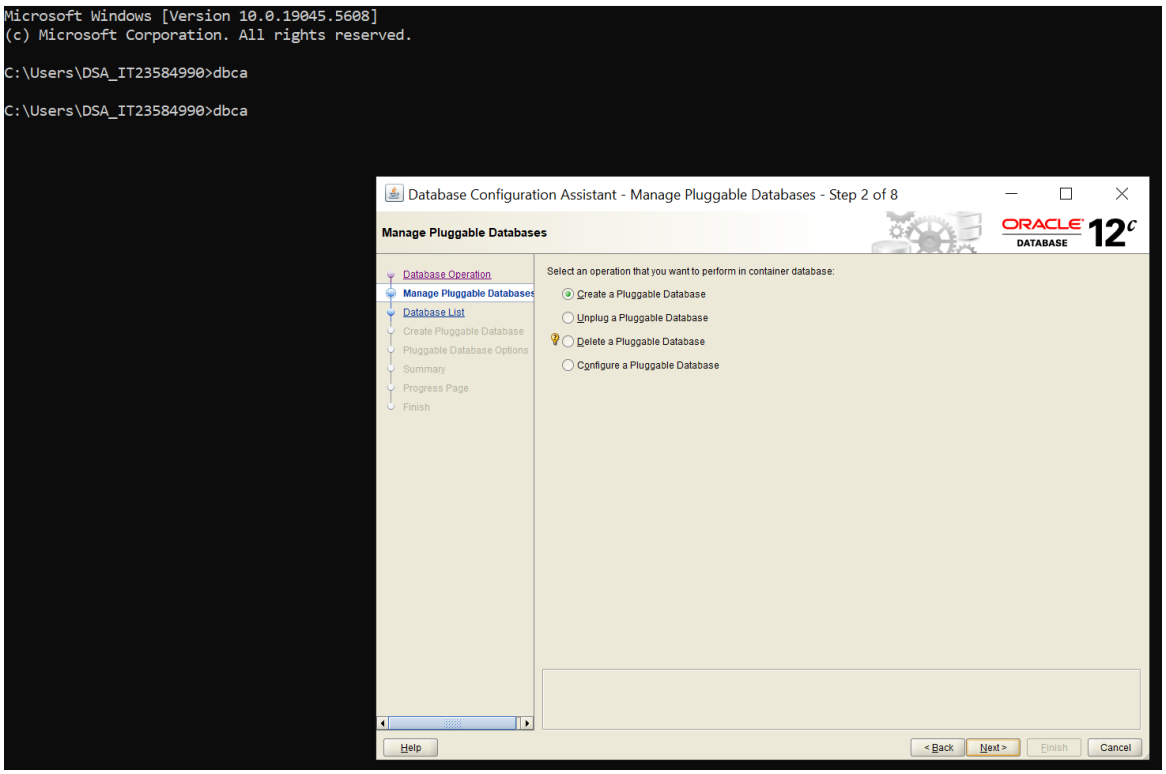

Figure B.2.3: Create PDB

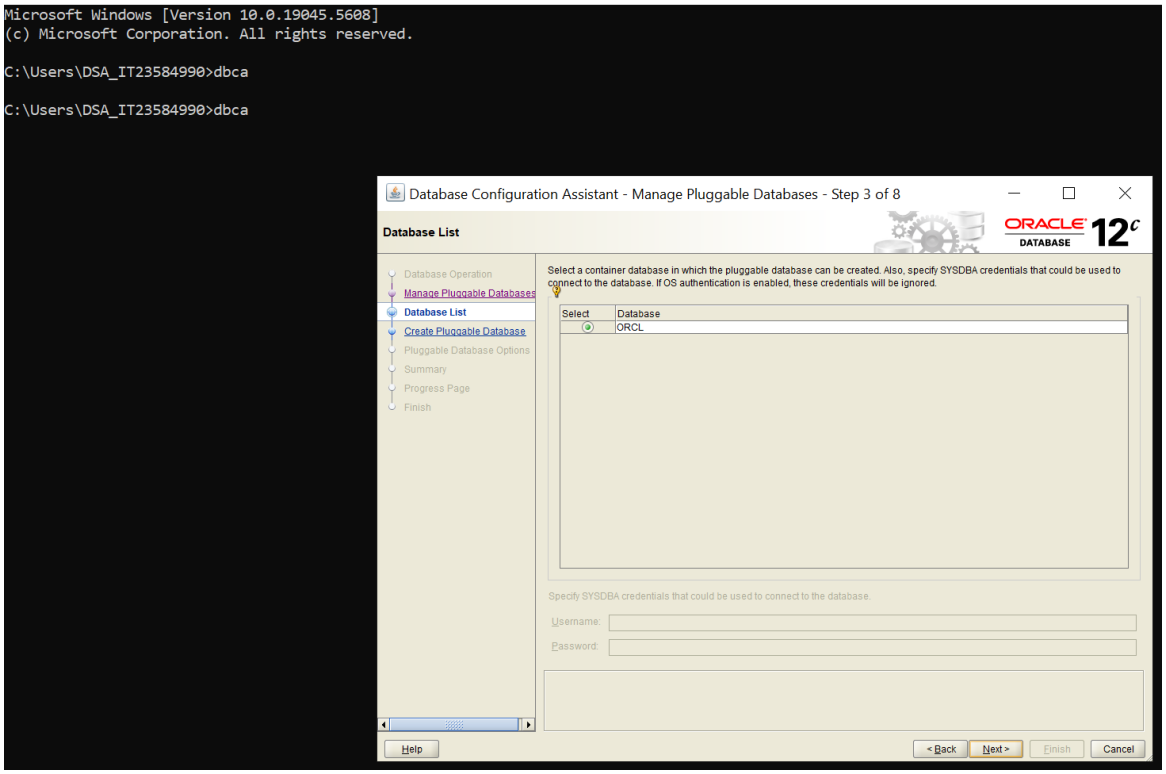

Figure B.2.4: Selecting CDB for the PDB

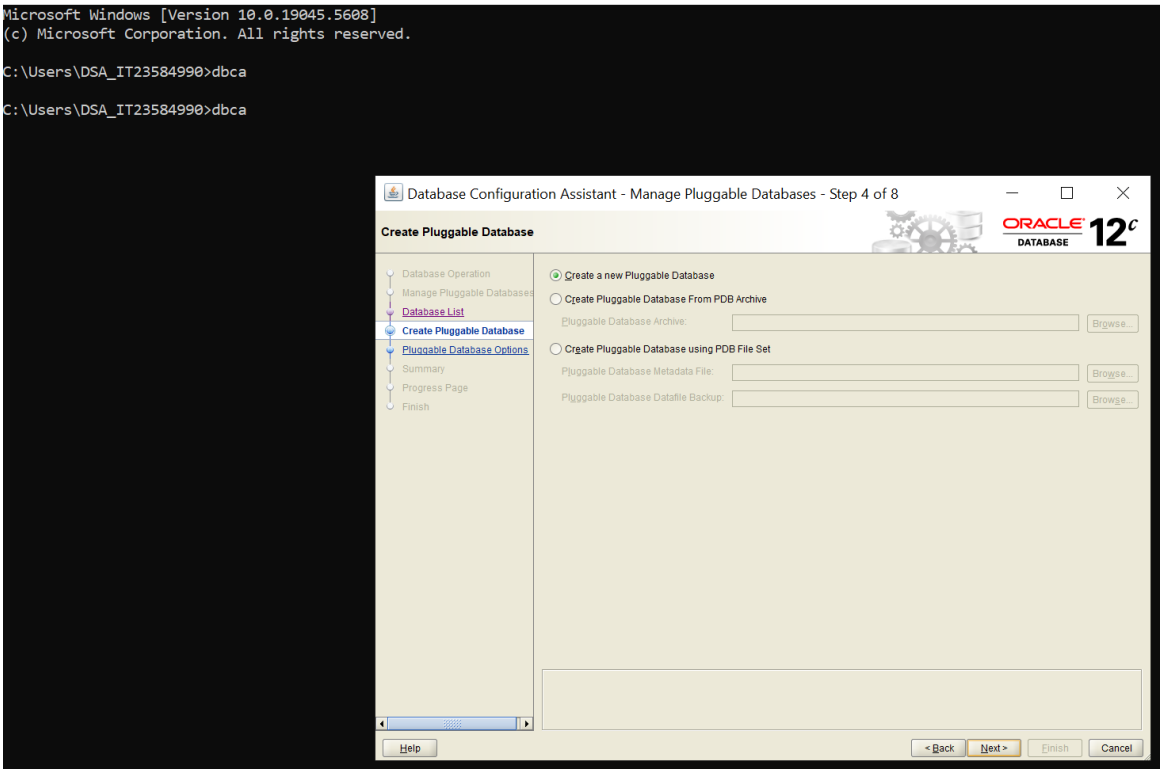

Figure B.2.5: Creating a new PDB

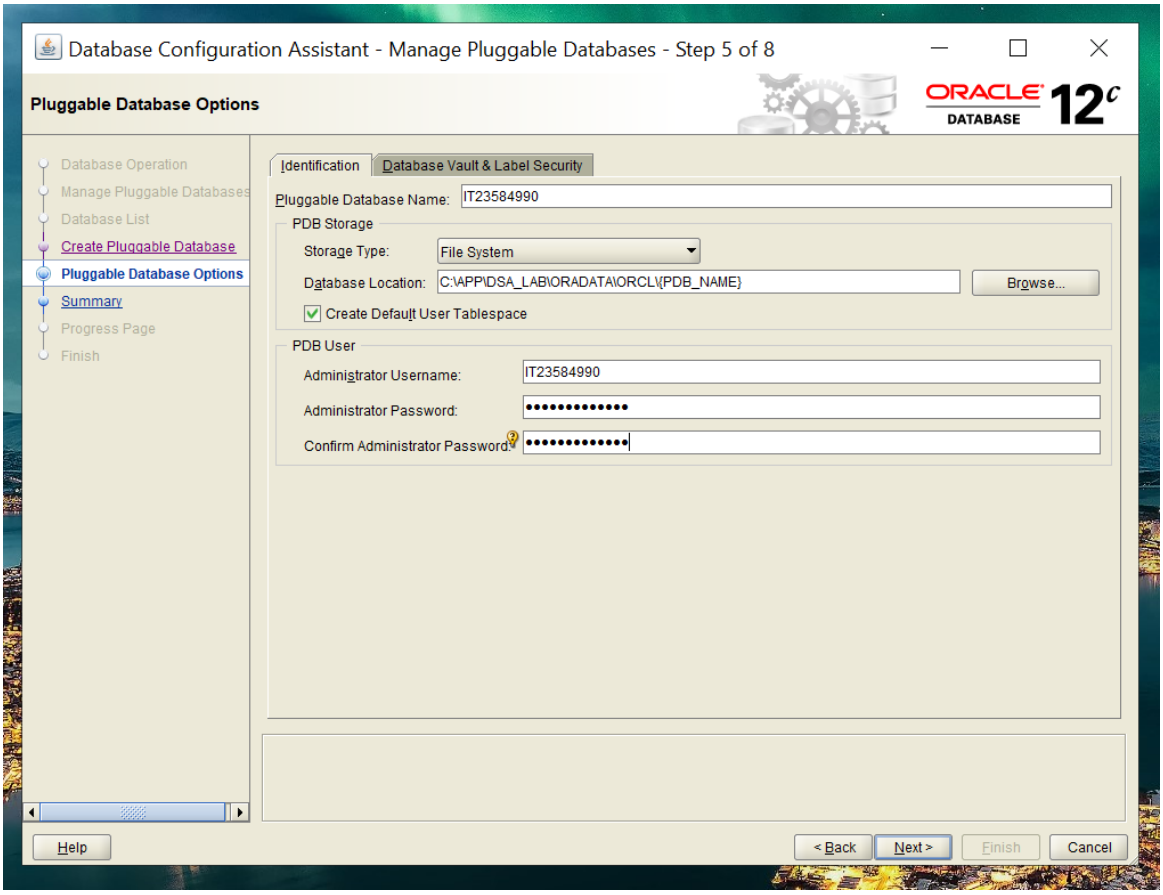

Figure B.2.6: Provide necessary details for PDB options

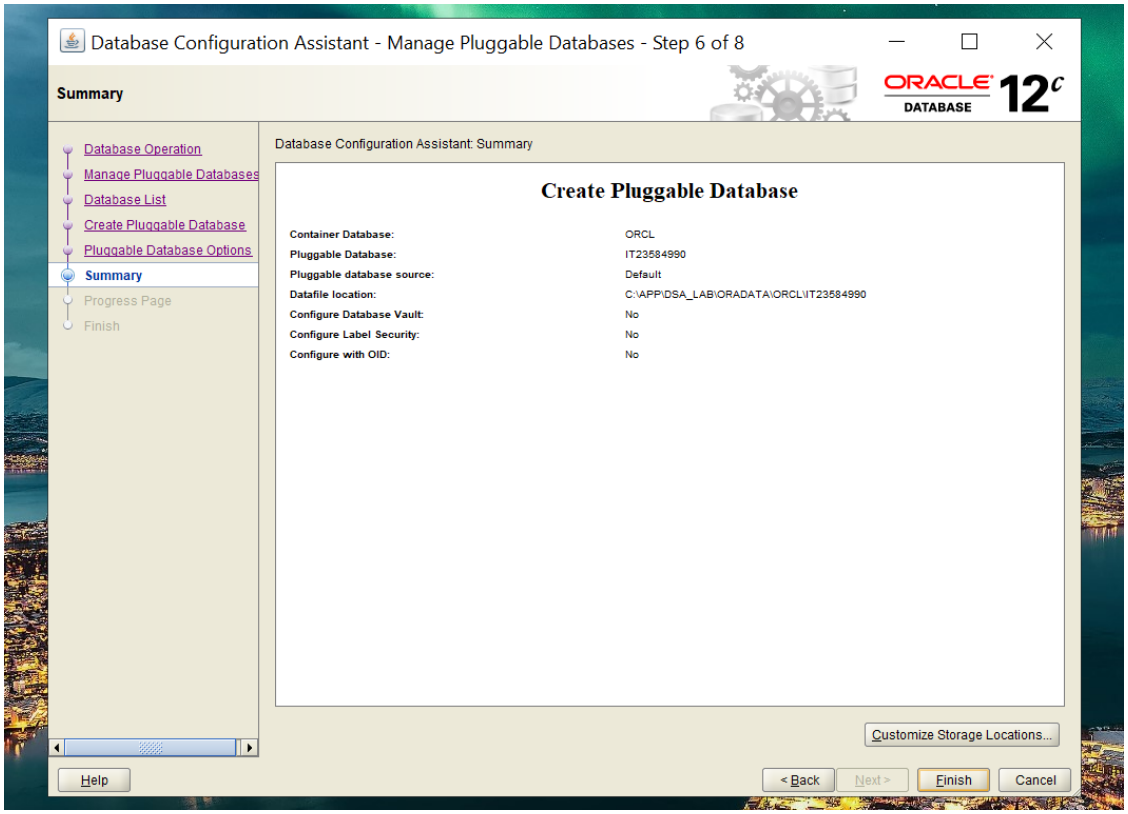

Figure B.2.7 - Summary of the newly created pluggable database

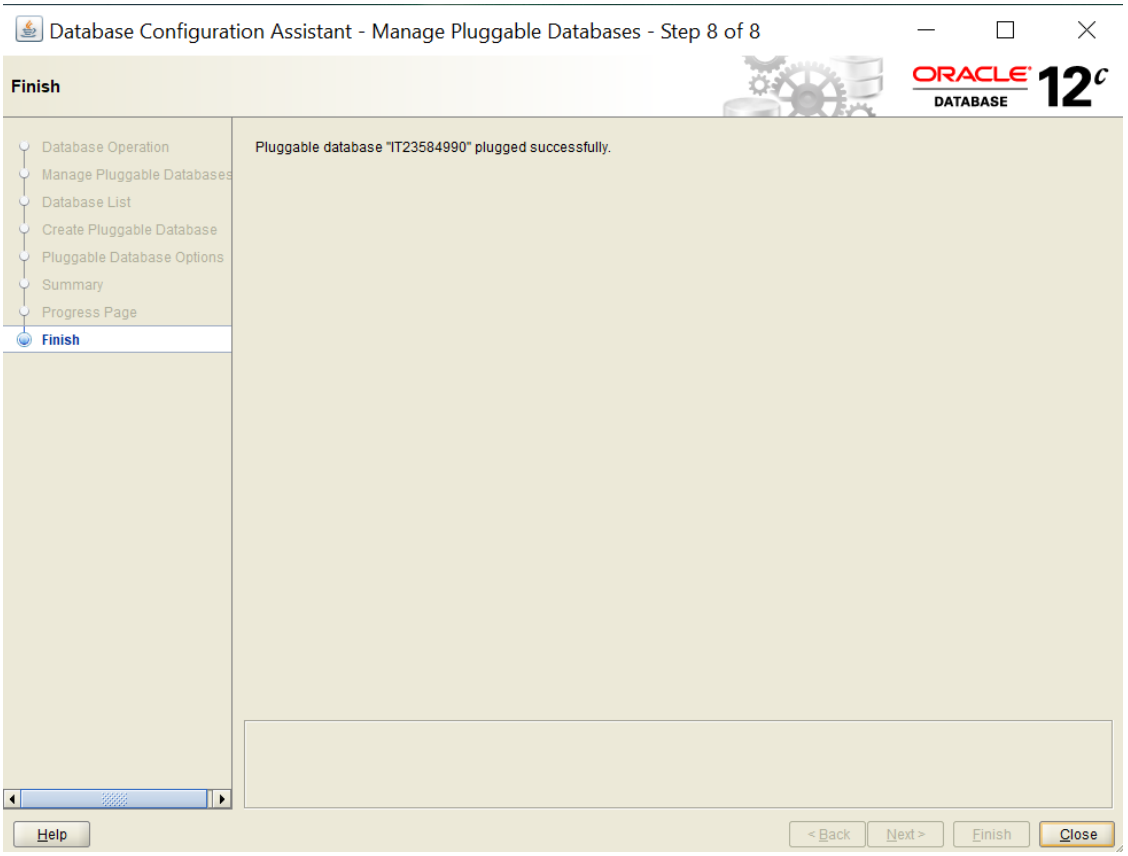

Figure B.2.8: Receiving successful completion message

Part C: Provide user administration and security using SQLPLUS

```
SQL> select con_id, name, open_mode from v$pdbs;

    CON_ID NAME                           OPEN_MODE
---------- ------------------------------ ----------
         2 PDB$SEED                       READ ONLY
         3 PDBORCL                        MOUNTED
         4 IT23584990                     READ WRITE
```

Figure C.1: Checking the newly created pluggable database

```
Connected to:
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options

SQL> select con_id, name, open_mode from v$pdbs;

    CON_ID NAME                           OPEN_MODE
---------- ------------------------------ ----------
         2 PDB$SEED                       READ ONLY
         3 PDBORCL                        MOUNTED
         4 IT23584990                     READ WRITE

SQL> alter pluggable database IT23584990 open;
alter pluggable database IT23584990 open
*
ERROR at line 1:
ORA-65019: pluggable database IT23584990 already open


SQL> alter pluggable database IT23584990 close immediate;

Pluggable database altered.

SQL> alter pluggable database IT23584990 open;

Pluggable database altered.

SQL> alter session set container = IT23584990;

Session altered.
```

Figure C.2: Altering the session and setting the container for the new PDB

```
SQL> CREATE PROFILE Accountant LIMIT
  2  SESSIONS_PER_USER UNLIMITED
  3  CPU_PER_SESSION UNLIMITED
  4  CPU_PER_CALL 3000
  5  CONNECT_TIME 40
  6  LOGICAL_READS_PER_CALL 1000
  7  PRIVATE_SGA 25K
  8  COMPOSITE_LIMIT 5000000
  9  FAILED_LOGIN_ATTEMPTS 3
 10  PASSWORD_LIFE_TIME 180
 11  PASSWORD_REUSE_TIME 30
 12  PASSWORD_REUSE_MAX 7
 13  PASSWORD_LOCK_TIME 1/24
 14  PASSWORD_GRACE_TIME 7
 15  PASSWORD_VERIFY_FUNCTION NULL;

Profile created.
```

Figure C.3: Creating the profile ‘Accountant’

```
SQL>  CREATE TABLESPACE GamaethigeTS
  2  DATAFILE 'Gamaethige_perm.dat' SIZE
  3  100M REUSE
  4  AUTOEXTEND ON NEXT 10M MAXSIZE 200M;

Tablespace created.
```

Figure C.4: Creating a new tablespace ‘GamaethigeTS’

```
SQL> CREATE TEMPORARY TABLESPACE
  2  GamaethigeTEMP
  3  TEMPFILE 'Gamaethige_temp.dbf' SIZE 10M
  4  AUTOEXTEND ON;

Tablespace created.
```

Figure C.5: Creating a new temporary tablespace ‘GamaethigeTEMP’

```
SQL> CREATE ROLE Accountant;

Role created.

SQL> GRANT CONNECT, RESOURCE, DBA TO Accountant;

Grant succeeded.

SQL> GRANT CREATE SESSION TO Accountant;

Grant succeeded.
```

Figure C.6: Creating a new role ‘Accountant’

```
SQL> GRANT CREATE TABLE, CREATE VIEW, CREATE PROCEDURE, CREATE TRIGGER, CREATE SYNONYM TO Accountant;

Grant succeeded.
```

Figure C.7: Granting privileges to the newly created role ‘Accountant’

```
SQL> CREATE USER Gamaethige
  2  IDENTIFIED BY Gamaethige12
  3  DEFAULT TABLESPACE GamaethigeTS
  4  TEMPORARY TABLESPACE GamaethigeTEMP
  5  QUOTA 50M ON GamaethigeTS
  6  PROFILE Accountant;

User created.
```

Figure C.8: Creating a new user ‘Gamaethige’

```
SQL> CONNECT SYS/Gamaethige12@localhost/IT23584990 as sysdba
Connected.
SQL> GRANT Accountant TO Gamaethige;o
  2
SQL>
SQL> GRANT Accountant TO Gamaethige;

Grant succeeded.

SQL> GRANT CREATE SESSION TO Gamaethige;

Grant succeeded.

SQL> connect Gamaethige/Gamaethige12@localhost/IT23584990;
Connected.
```

Figure C.9: Connecting to the new PDB using the user account ‘Gamaethige’

Part D: Managing schema objects using SQL developer

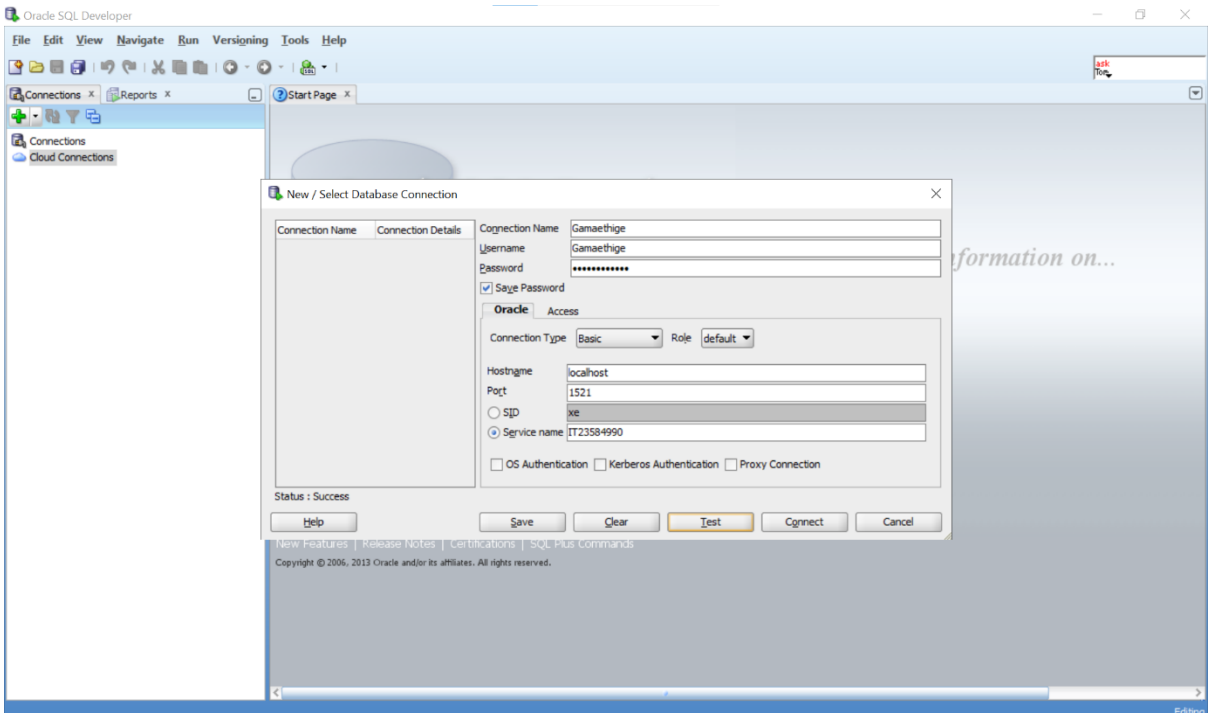

Figure D.1: Creating a database connection in SQL Developer the newly created pluggable database

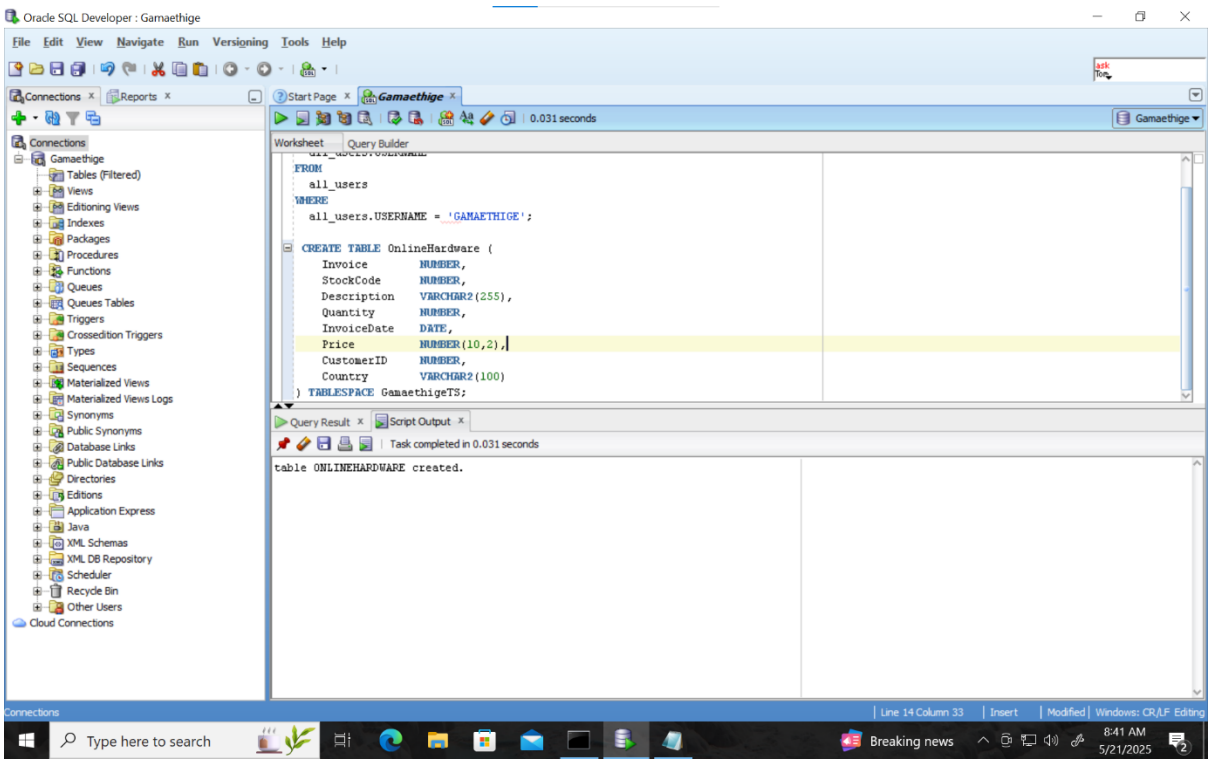

Figure D.2: Creating the table ‘OnlineHardware’ using appropriate data types for the fields.

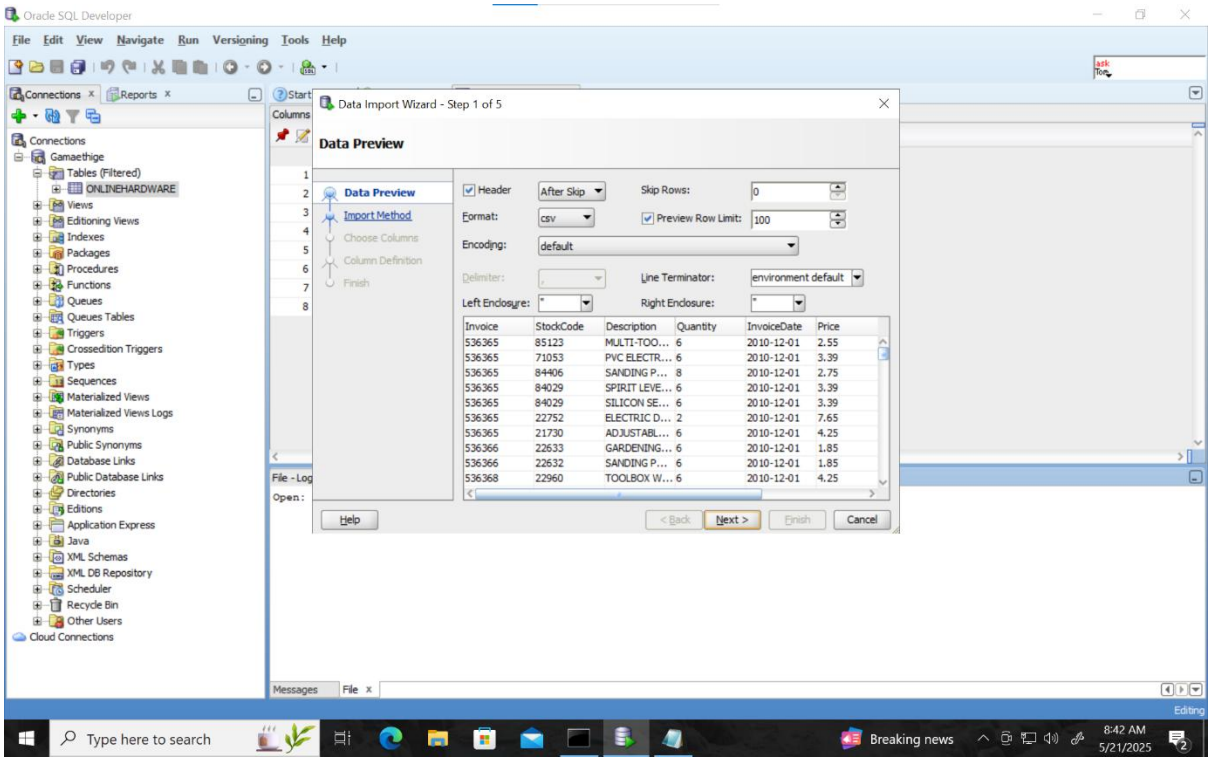

Figure D.3.a

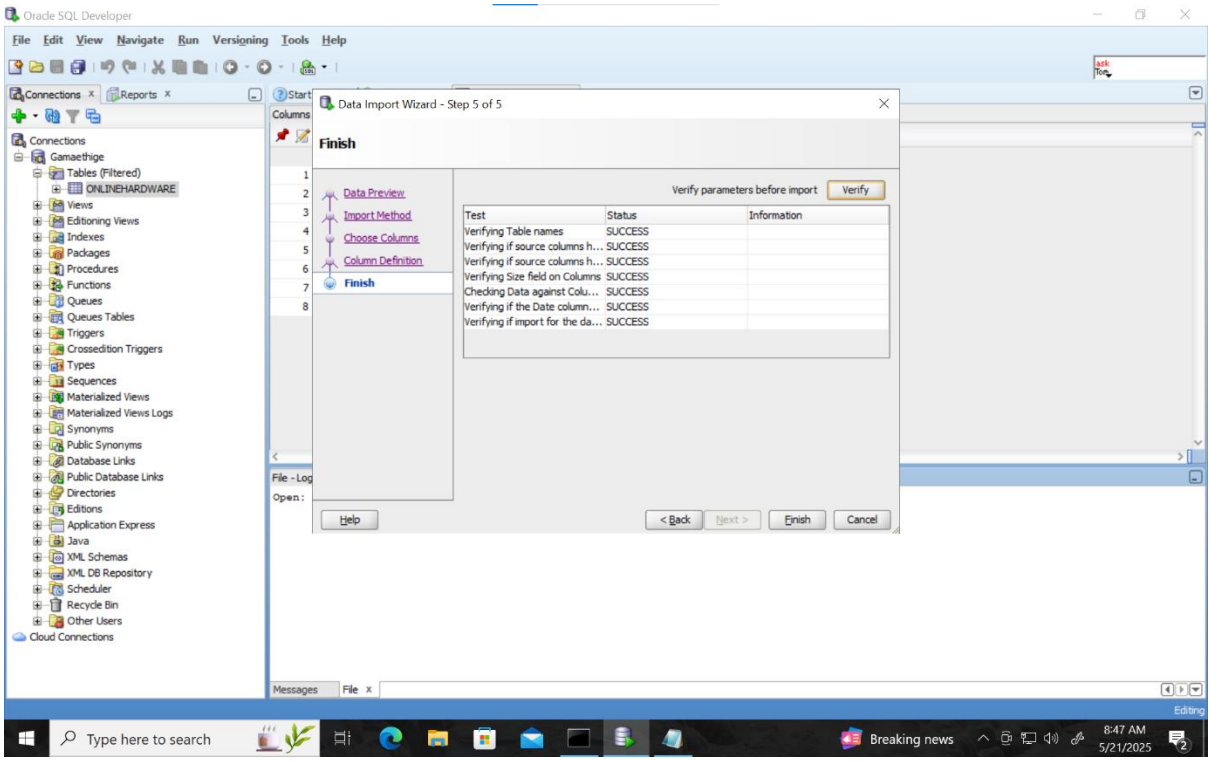

Figure D.3.b

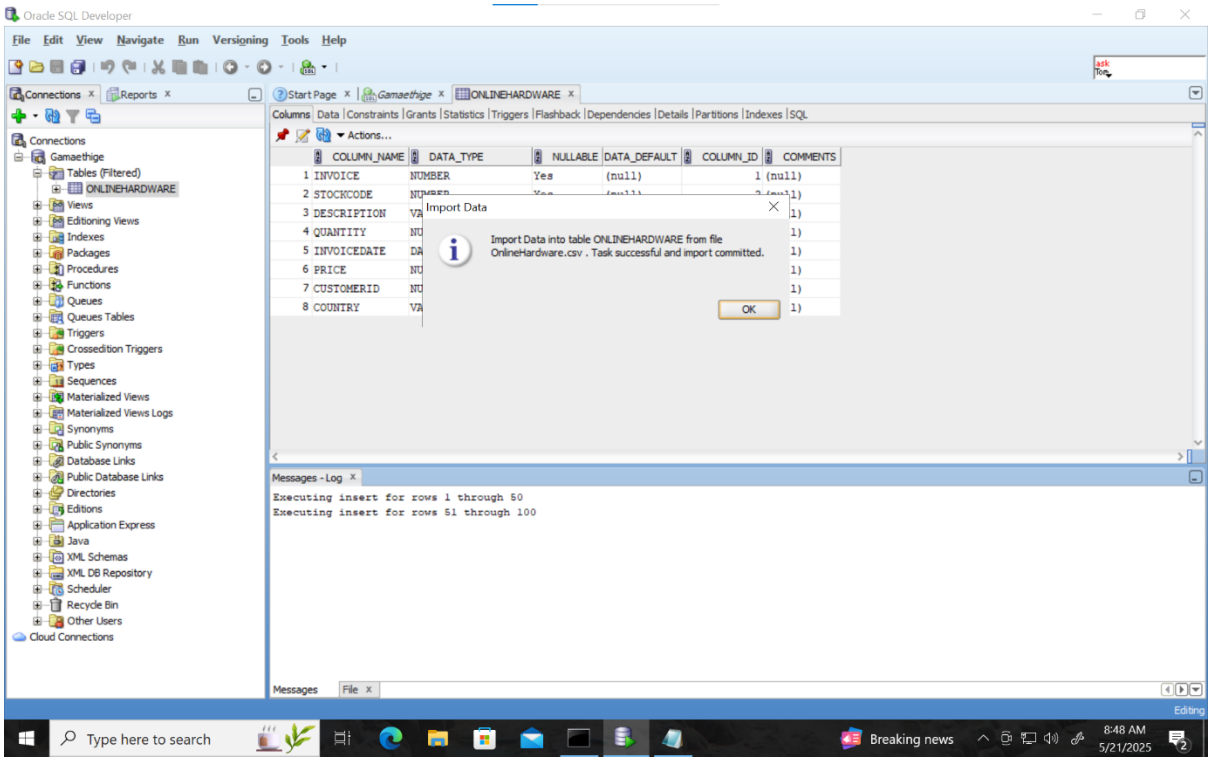

Figure D.3.c

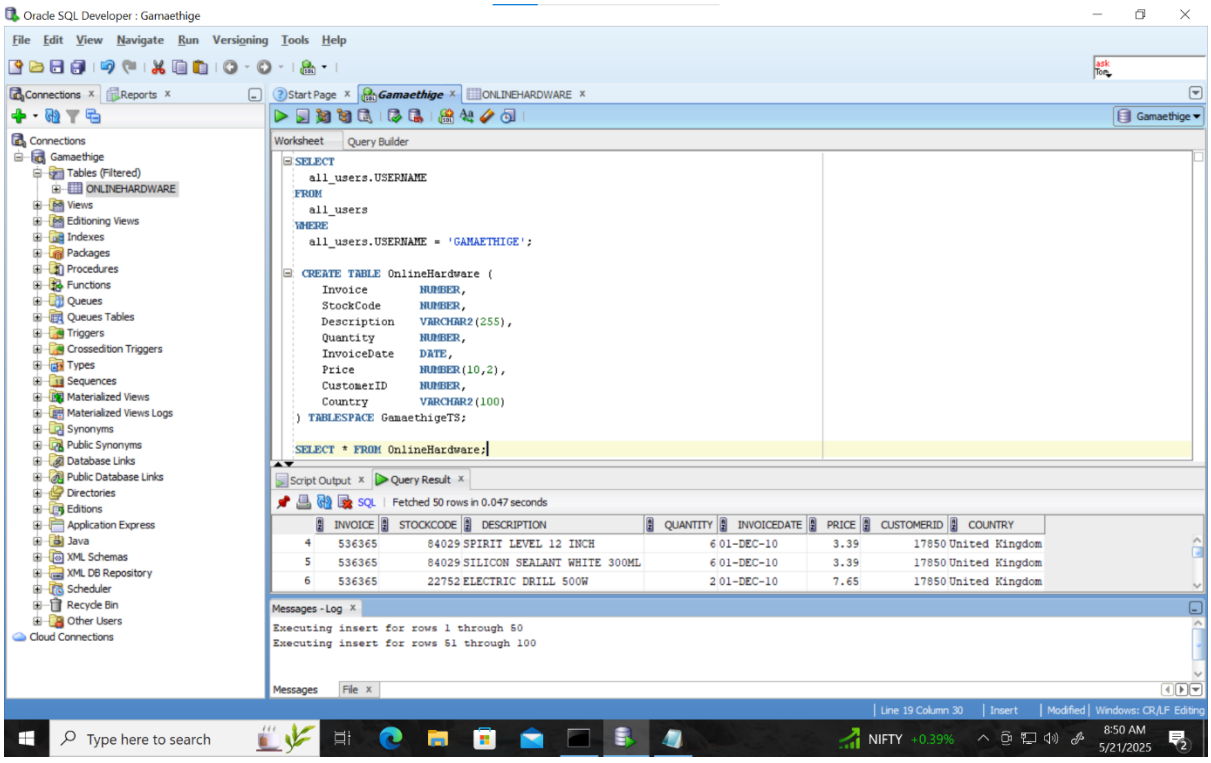

Figure D.3.d

Figure D.3: Loading data into newly created ‘OnlineHardware’ table.

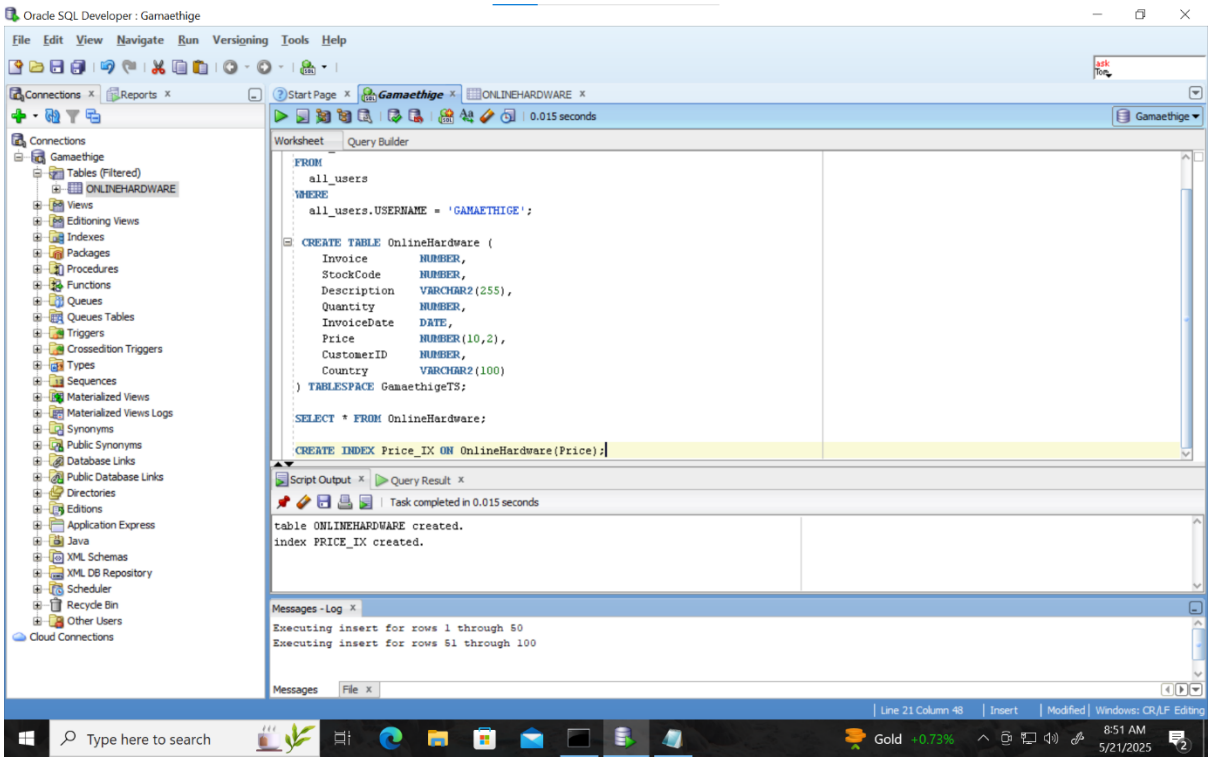

Figure D.4.a

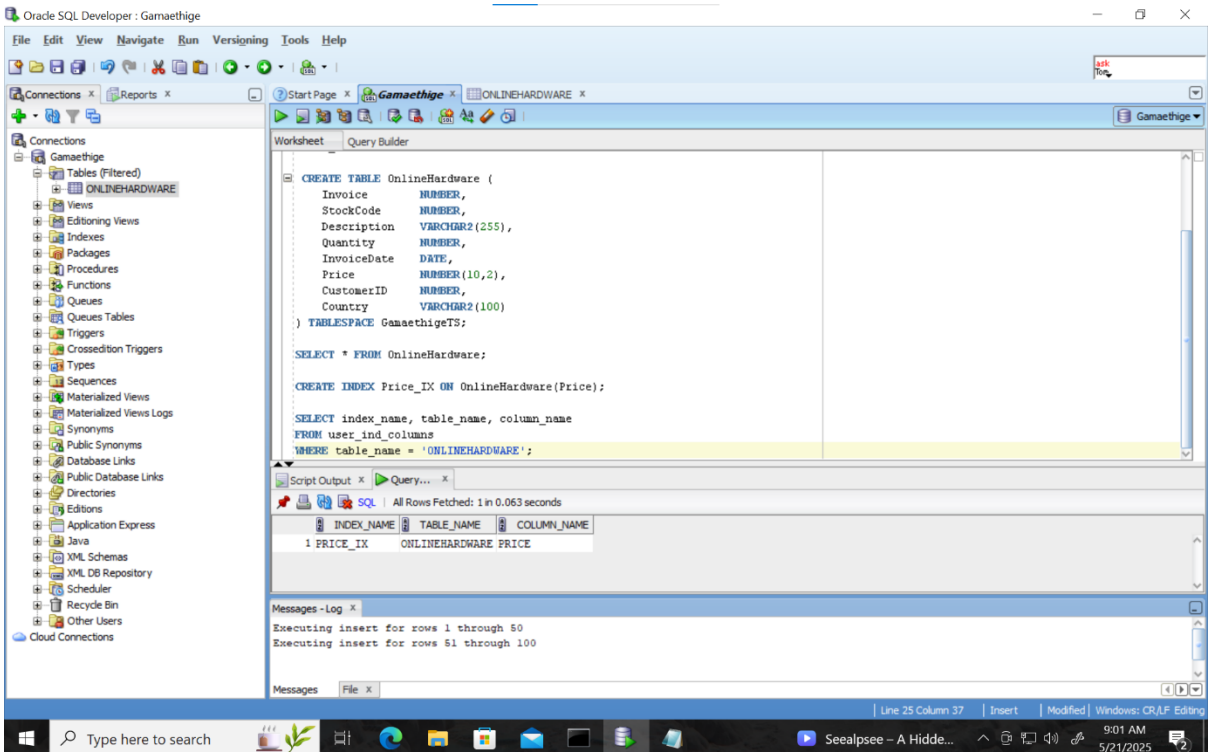

Figure D.4.b

Figure D.4. Index Creation: Price_IX on Price Column.