IE2080
Database Systems Administration
2nd Year, Semester I

Assignment

Install Oracle database in the windows environment, provide user administration and security with the support of PDB management

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

10/17/2024

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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Introduction

This report is an individual assignment for Database systems administration module which is focused on the practical aspects of creating database,defining security features and defining appropriate roles.In this assignment students have to use Oracle 12c, which is one of the leading database systems.It can provide robust solutions for handling large amounts of data.

Table of Contents

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

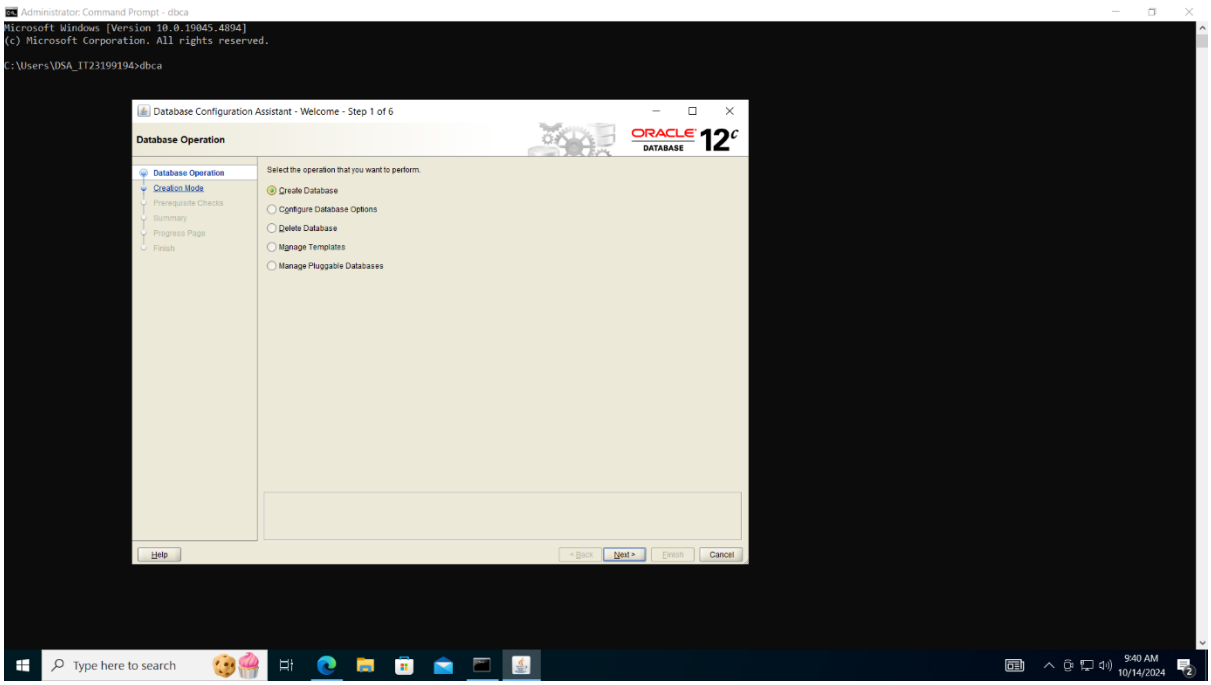

Figure 1.0 – Create database

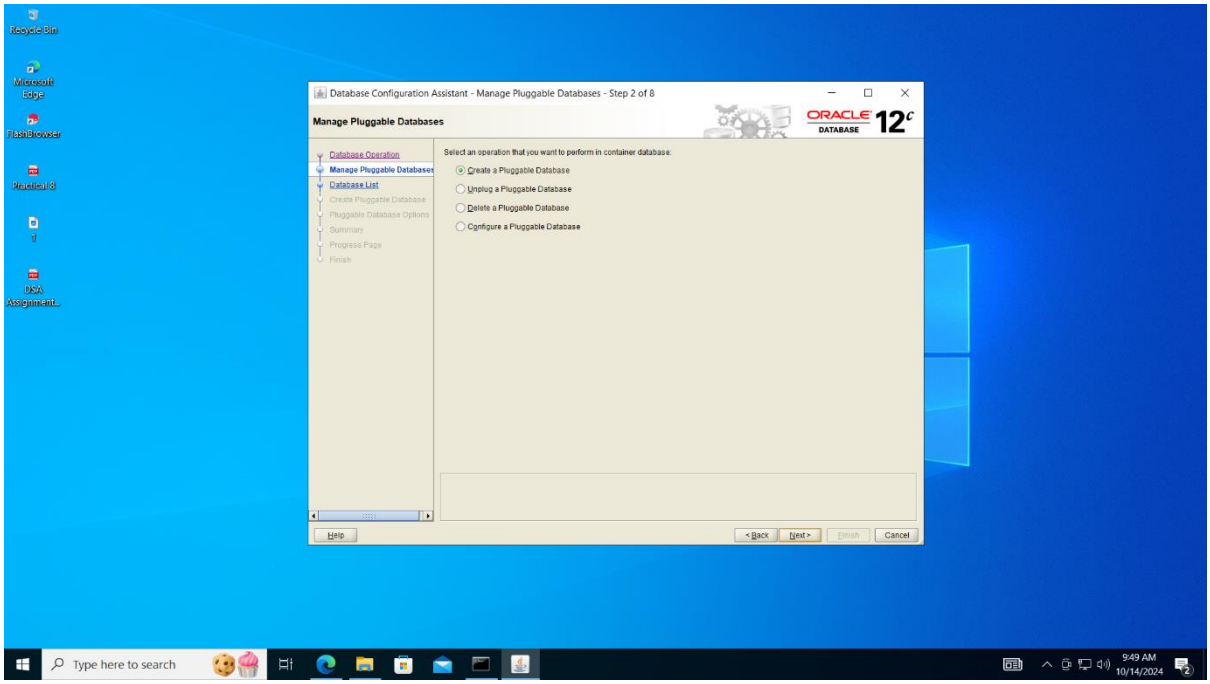

Figure 1.2 – Manage PDB

Figure 1.3 – Create PDB

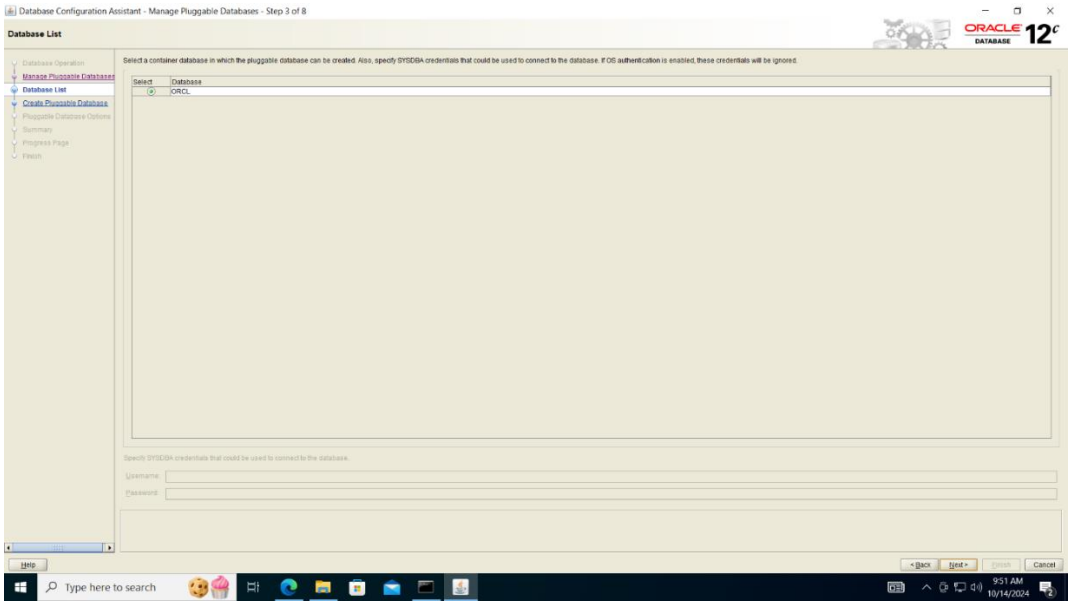

Figure 1.3 – Create PDB

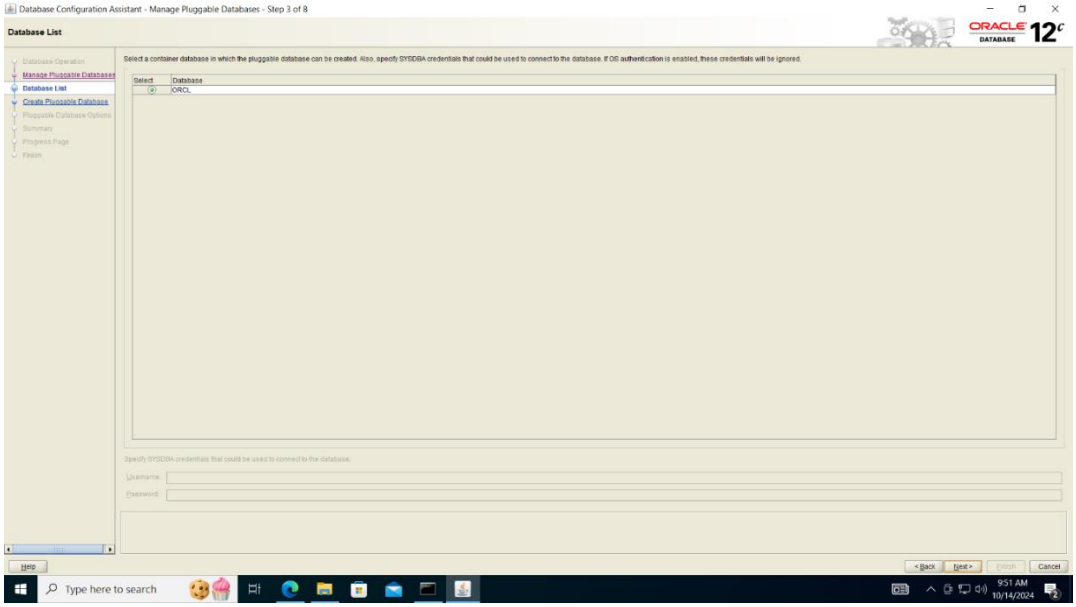

Figure 1.4 – Create PDB database list

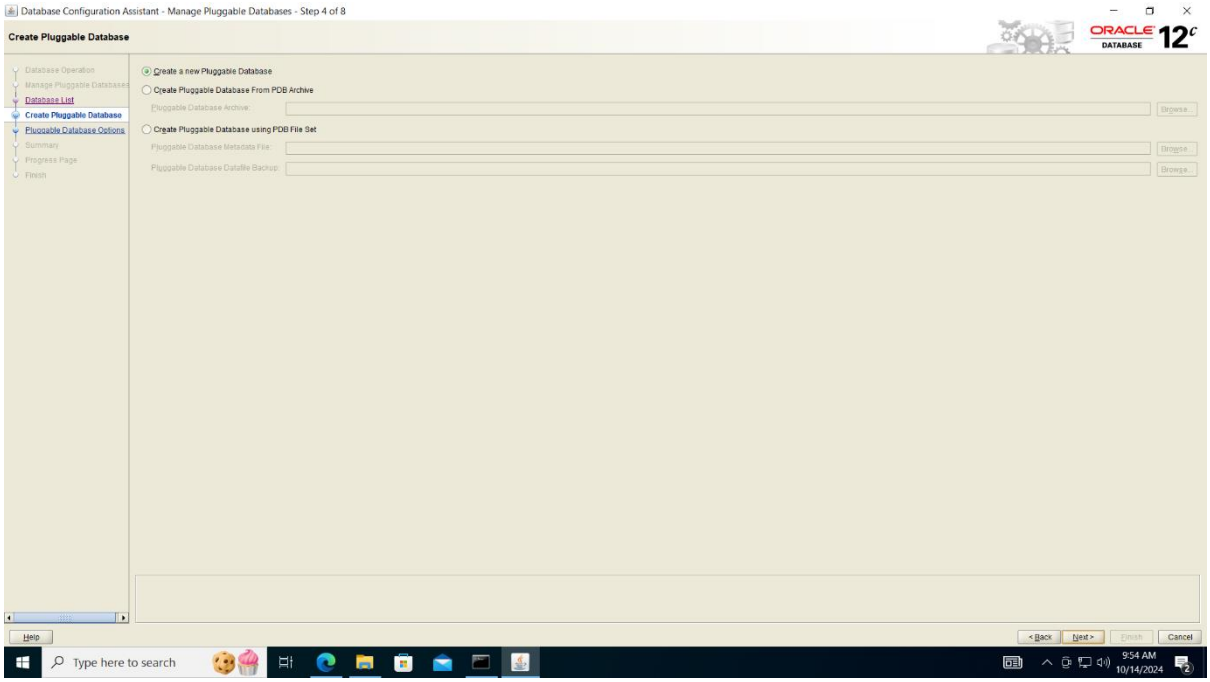

Figure 1.5 – Creating new PDB

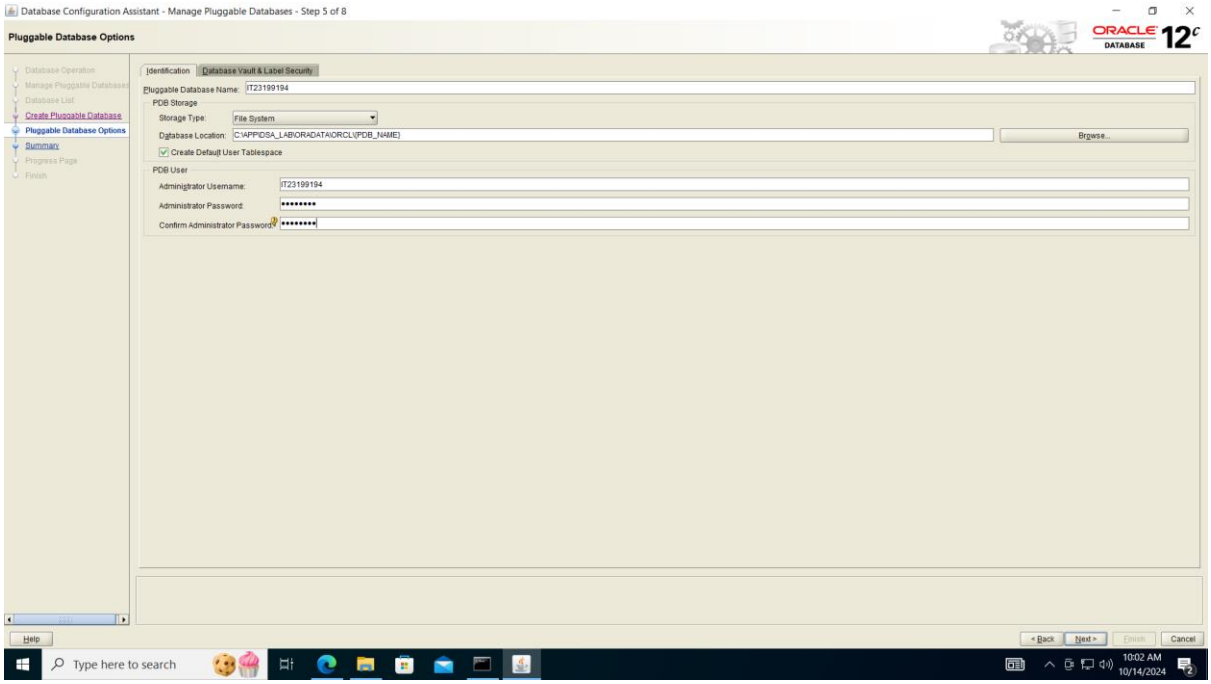

Figure 1.6 – Provide relevant details

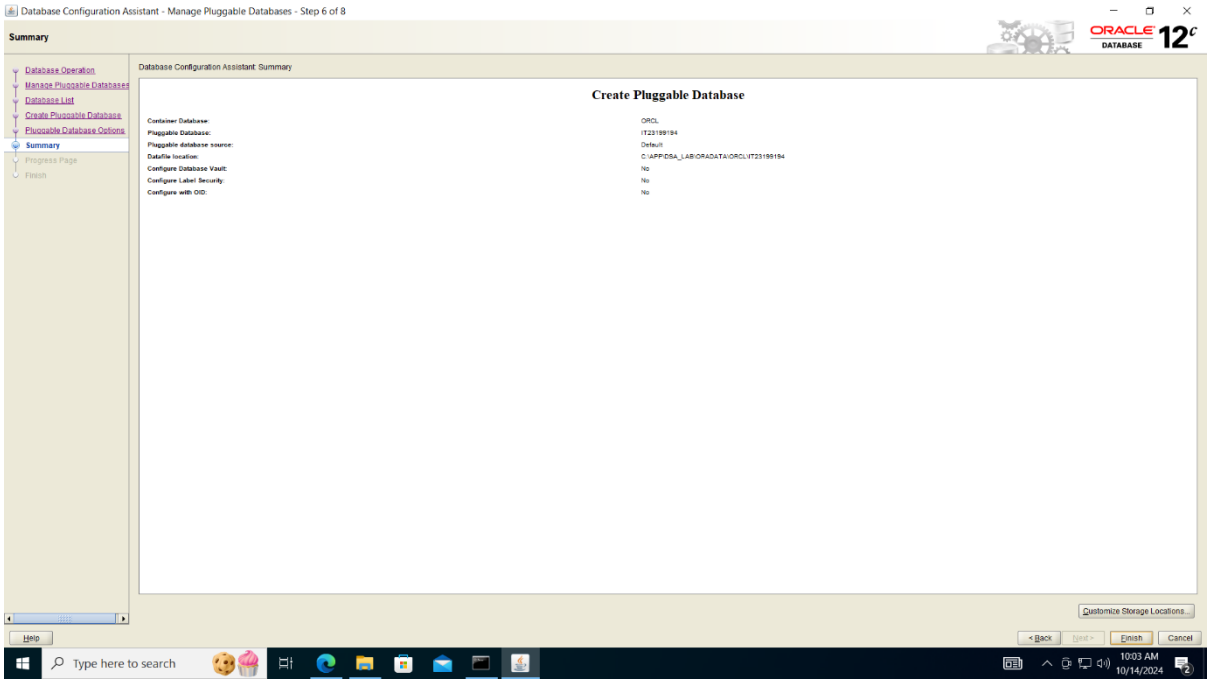

Figure 1.7 – New pluggable database

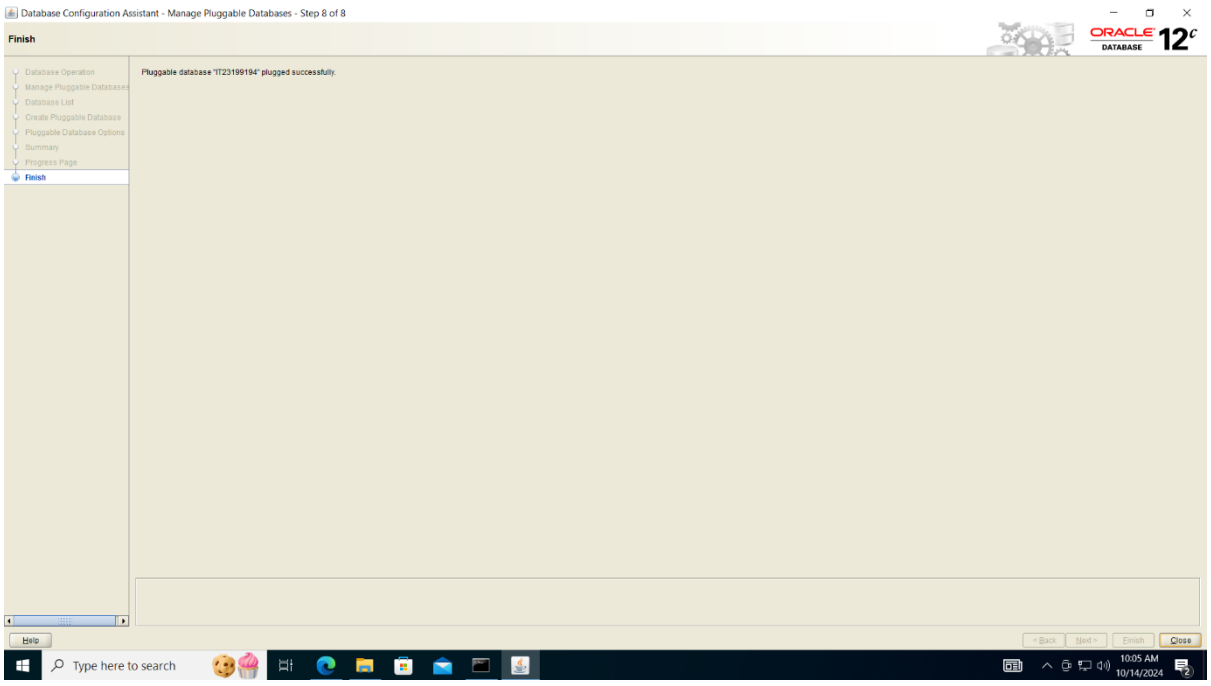

Figure 1.8 – Completion message

Part B : Provide user administration and security using SQLPLUS

1. Checking newly created pluggable database.
2. Alter the session and set the container to the new PDB.
3. Creating a new user profile.
4. Creating a new tablespace.
5. Creating a new temporary tablespace.
6. Creating the new role ‘Receptionist’.
7. Granting privileges to the role ‘Receptionist’.
8. Creating a new user ‘Dinidu’.
9. Connecting to the new PDB using the above user account.

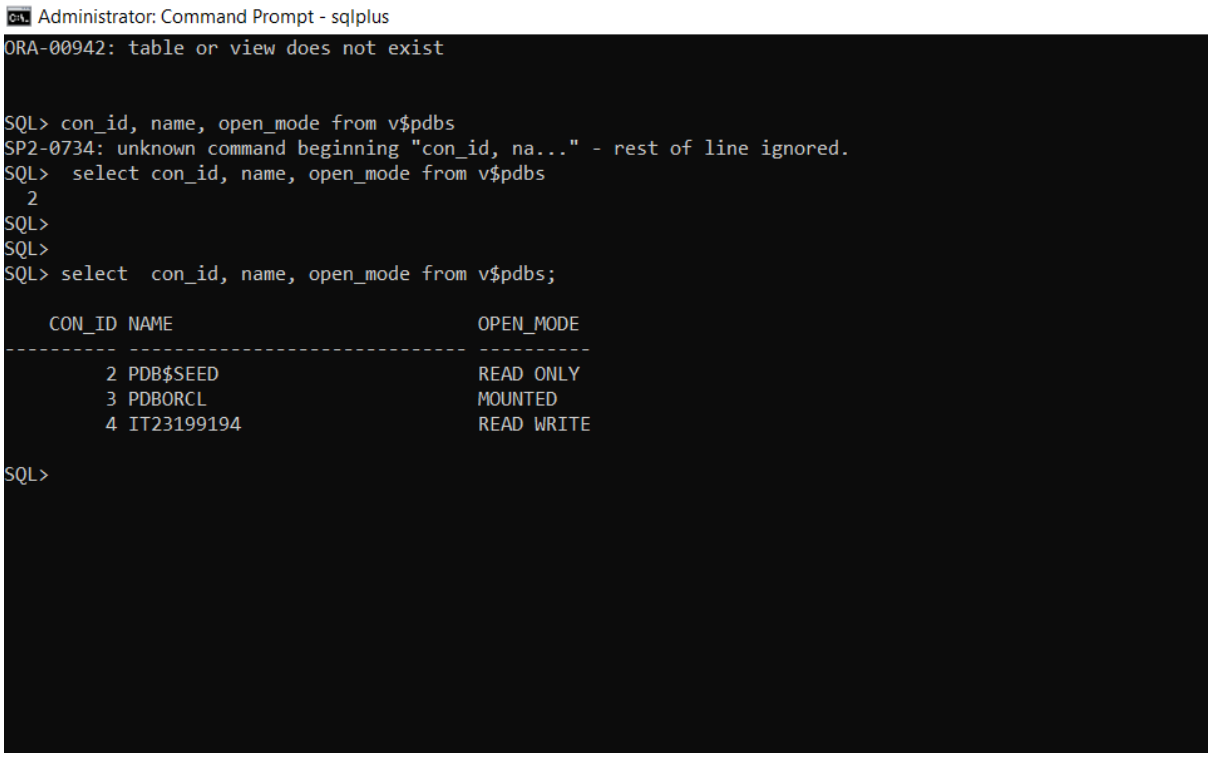

Figure 2.1 – Checking the newly created pluggable database

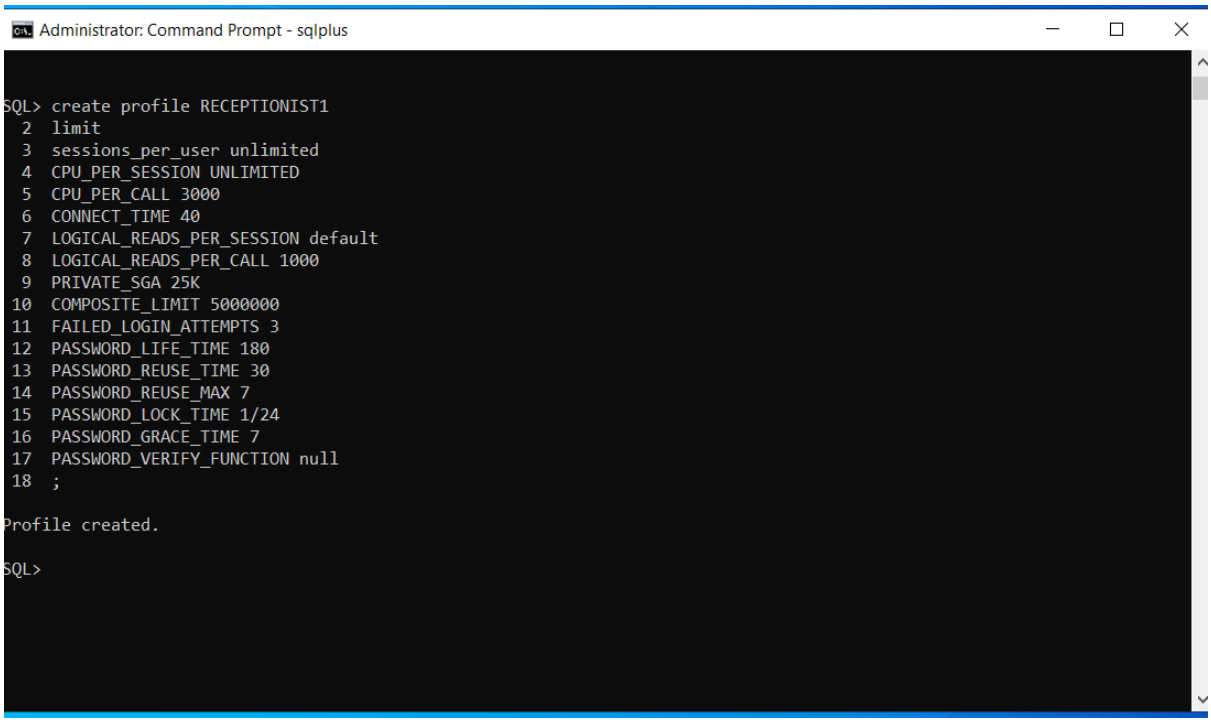

Figure 2.2 - Altering the session and setting the container for the new PDB

```
SQL> create tablespace DiniduTS
  2  datafile 'Dinidu_perm.dat'
  3  size 100M
  4  reuse
  5  autoextend on next 10M MAXSIZE UNLIMITED;

Tablespace created.

SQL>
```

Figure 2.4 – Creating a new tablespace ‘DiniduTS’

```
SQL>
SQL>
SQL> create temporary tablespace DiniduTEMP
  2  tempfile 'Dinidu_temp.dbf'
  3  size 10M
  4  autoextend ON;

Tablespace created.
```

Figure 2.5 - Creating a new temporary tablespace ‘DiniduTEMP’

```
SQL>
SQL> create role RECEPTIONIST;

Role created.

SQL> grant connect, resource,dba to RECEPTIONIST;

Grant succeeded.
```

Figure 2.6 - Creating a new role ‘Receptionist’

```
SQL>
SQL>
SQL> grant
  2  CREATE TABLE,
  3  CREATE VIEW,
  4  CREATE PROCEDURE,
  5  CREATE SESSION,
  6  CREATE TRIGGER,
  7  CREATE SYNONYM to Receptionist;

Grant succeeded.
```

Figure 2.7 - Granting privileges to newly created role ‘Receptionist’

```
SQL> CREATE USER Dinidu
  2  IDENTIFIED BY Oracle_1
  3  DEFAULT TABLESPACE DiniduTS
  4  TEMPORARY TABLESPACE DiniduTEMP
  5  PROFILE Receptionist1;

User created.
```

Figure 2.8 - Creating a new user ‘Dinidu’

```
SQL> CONNECT SYS/Oracle_1@localhost/IT23199194 as sysdba
Connected.
SQL> GRANT CREATE SESSION to DINIDU;

Grant succeeded.

SQL> connect DINIDU/Oracle_1@localhost/IT23199194;
Connected.
SQL>
```

Figure 2.9 - Connecting to the new PDB using the user account ‘Dinidu’

Part C : Managing schema objects using SQL developer.

1. Creating a database connection in SQL developer for the newly created pluggable database.
2. Checking whether the new user ‘Dinidu’ is available in the users list.
3. Creating a new table named as “Hotel Reservations”
4. Importing the data for the new table from the file ‘HotelReservations.csv’
5. Inserting the data into the table.
6. Creating an index for a column within the table.
7. Check whether the index is created successfully.

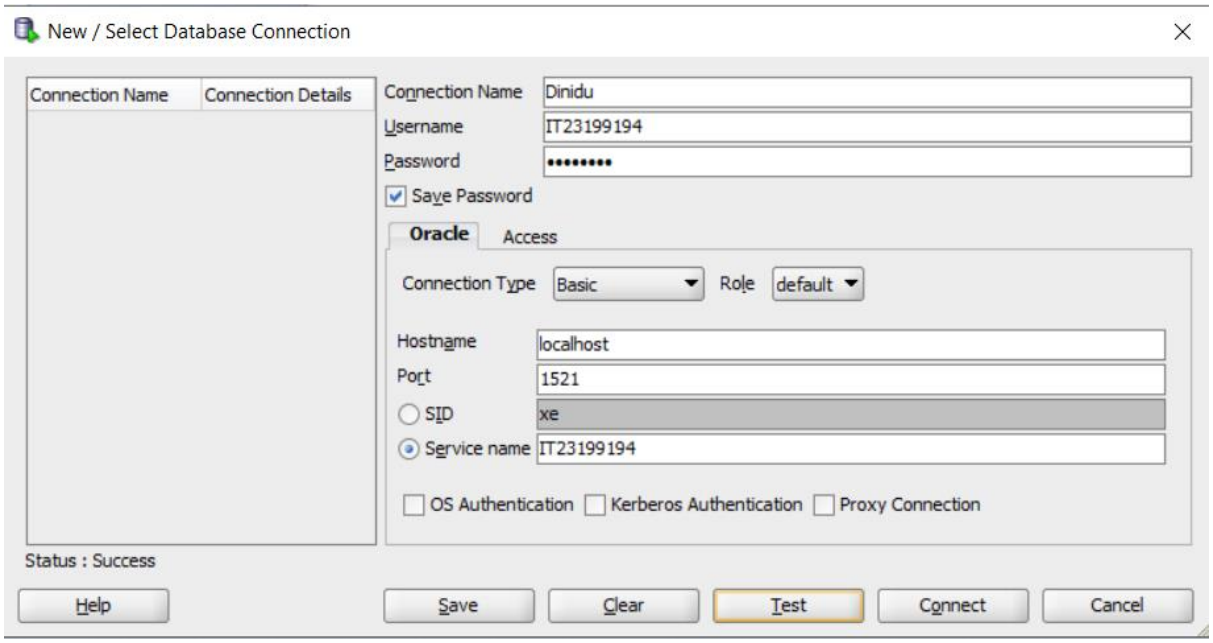

Figure 3.1 – Creating a database connection in SQL Developer the newly created pluggable database

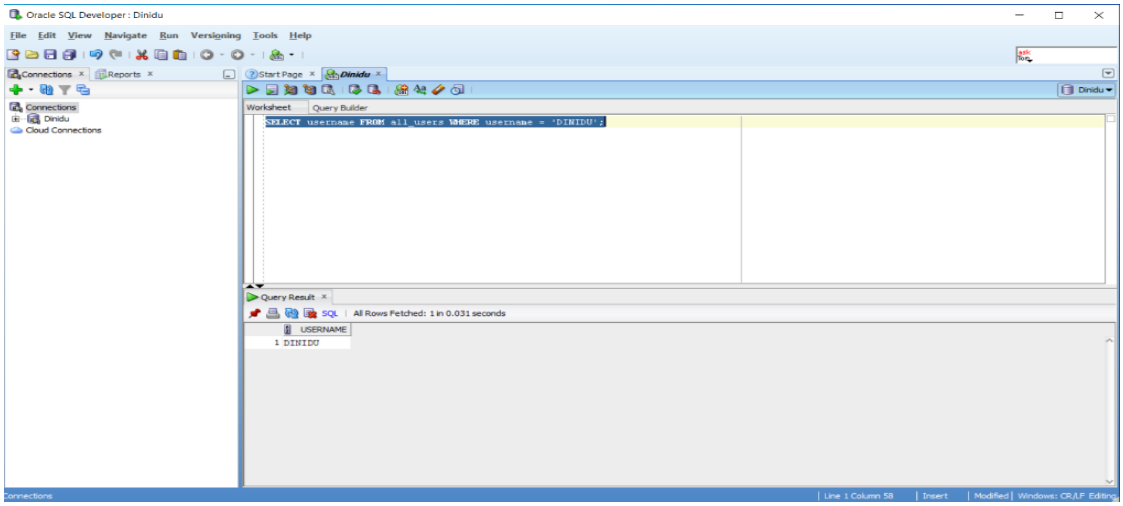

Figure 3.2 – Checking whether the new user ‘Dinidu’ is available in the users list.

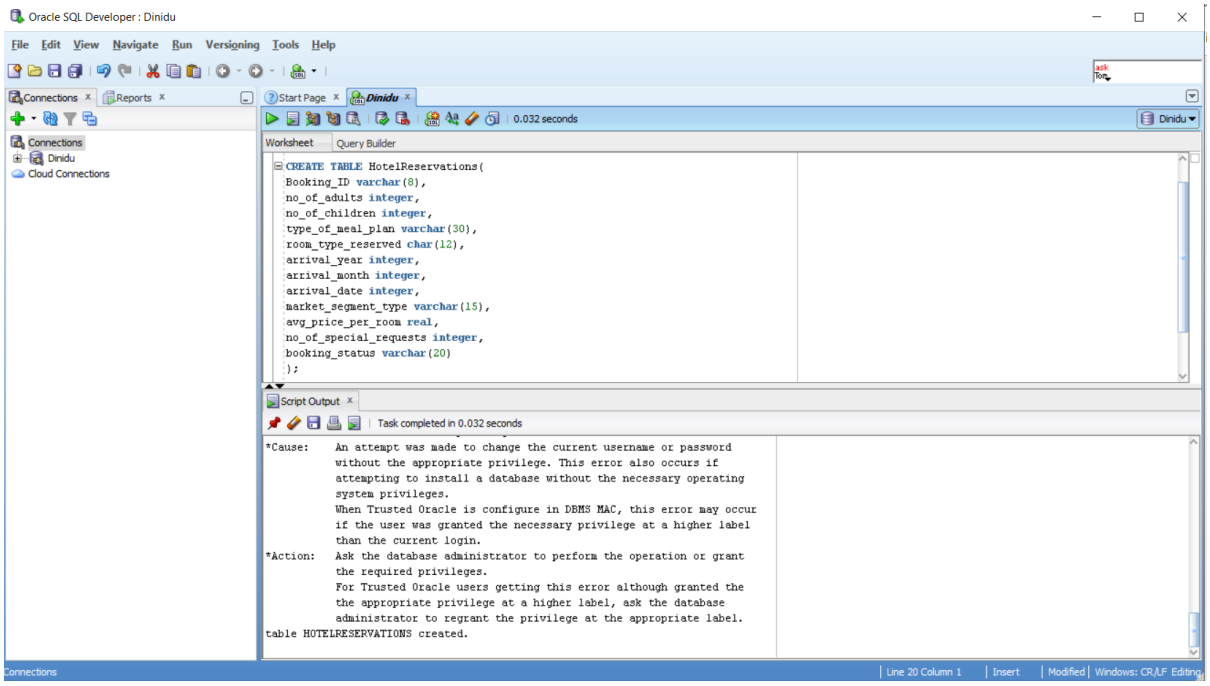

Figure 3.3 – Creating the table ‘HotelReservations’ using appropriate data types for the fields.

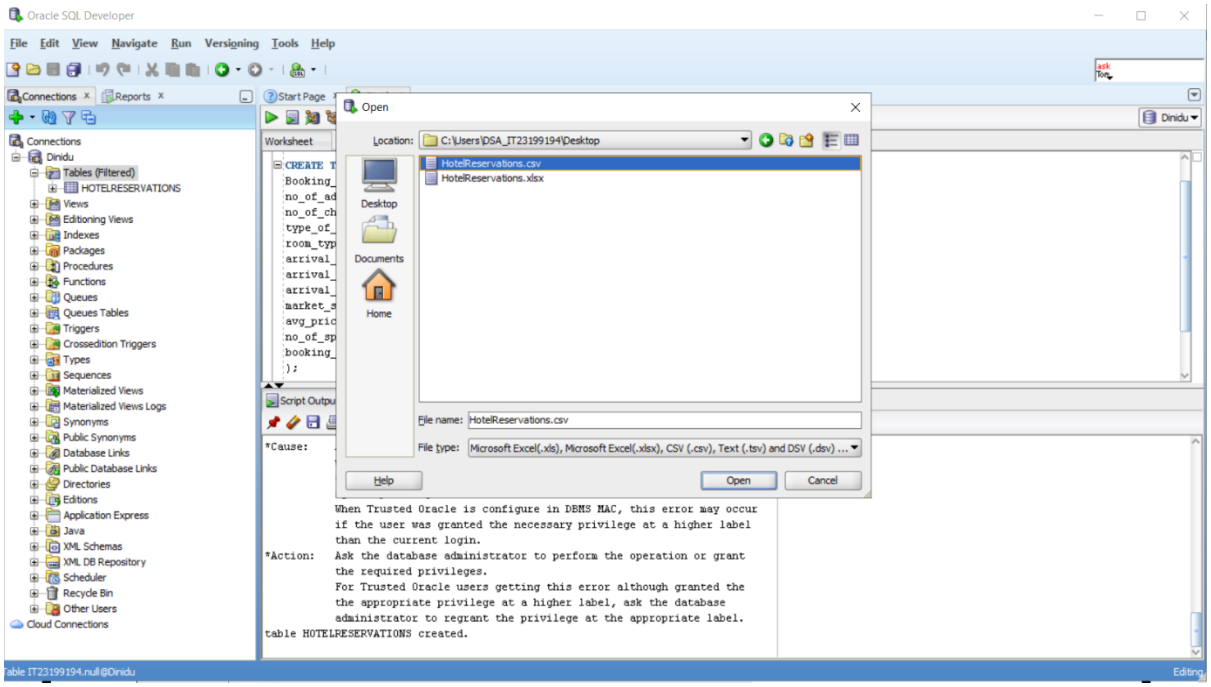

Figure 3.4 – Importing data from the file ‘HotelReservations.csv’ into SQL Developer.

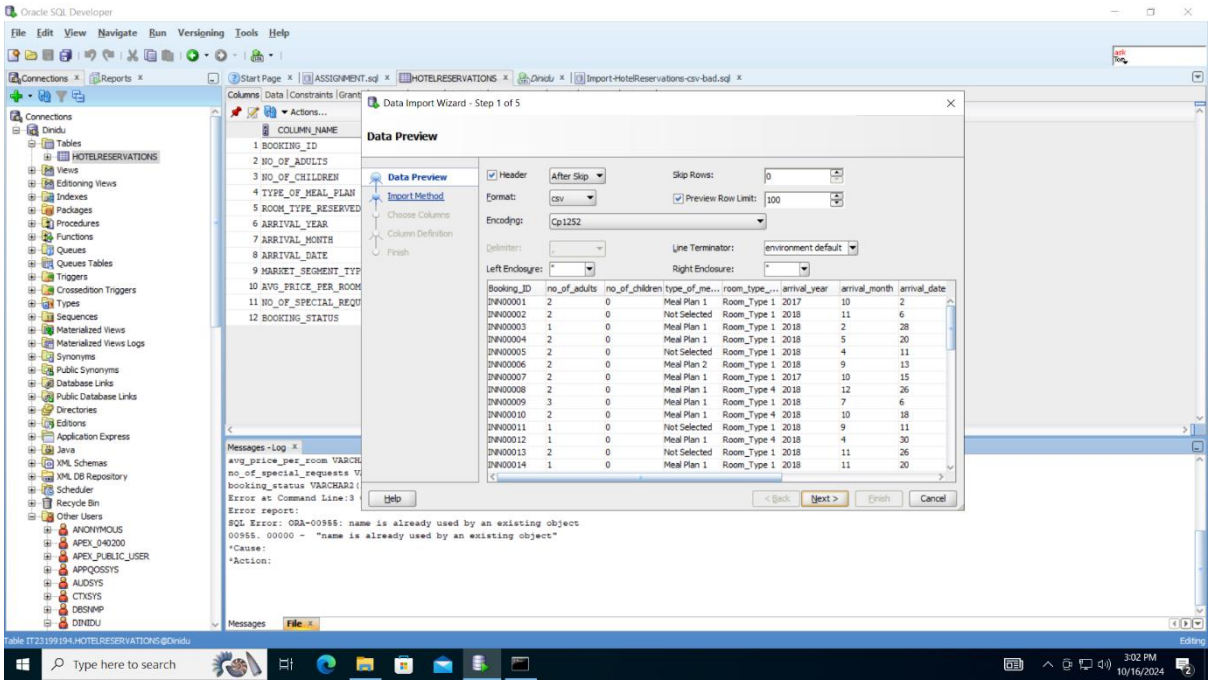

Figure 3.5 – Viewing the preview

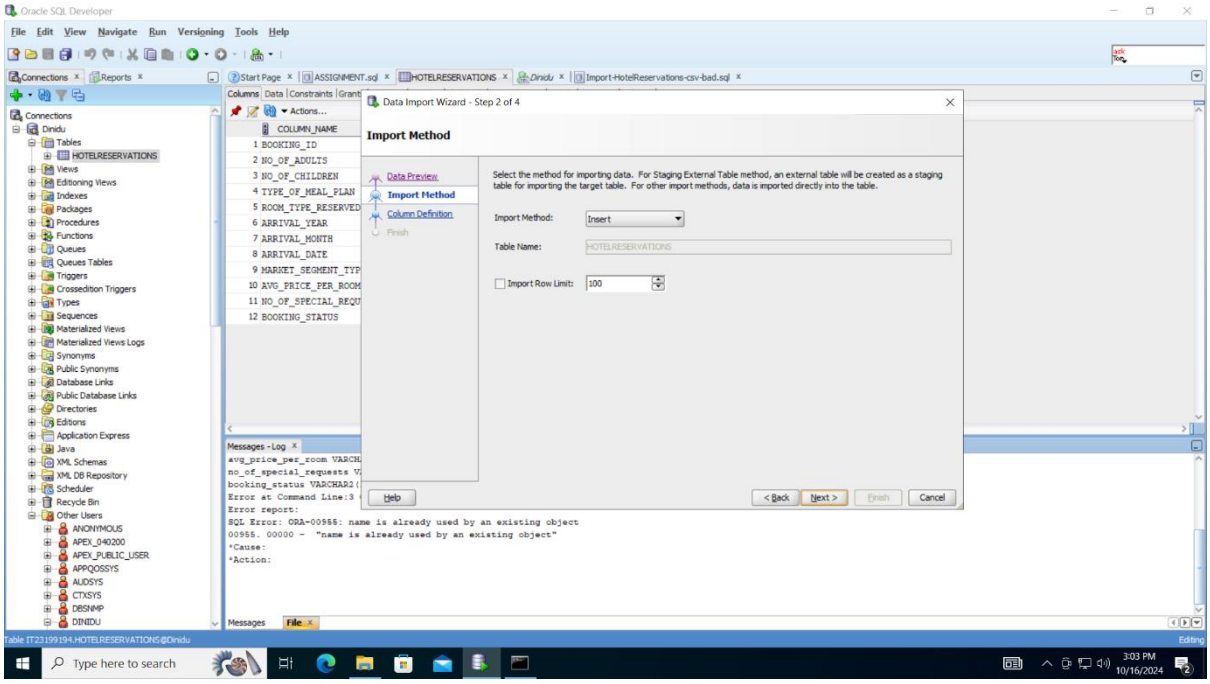

Figure 3.6 – Setting import method

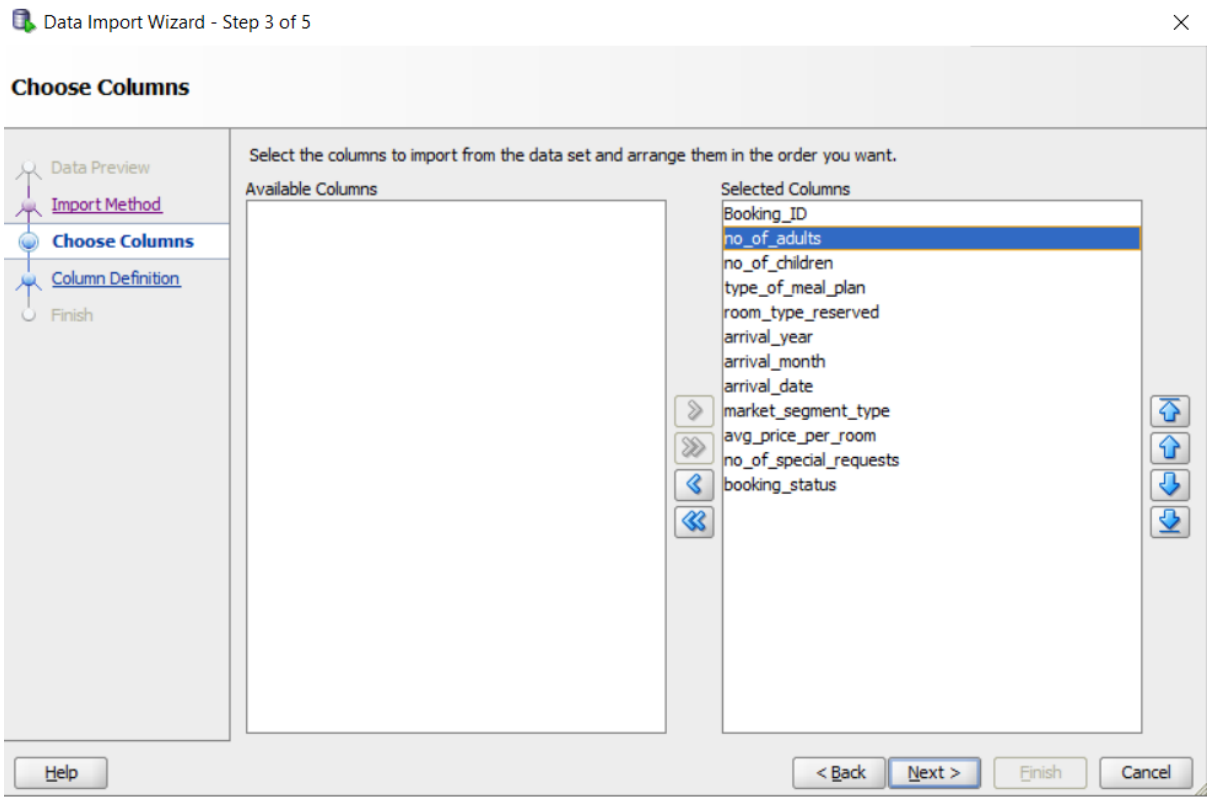

Figure 3.7 – Select columns

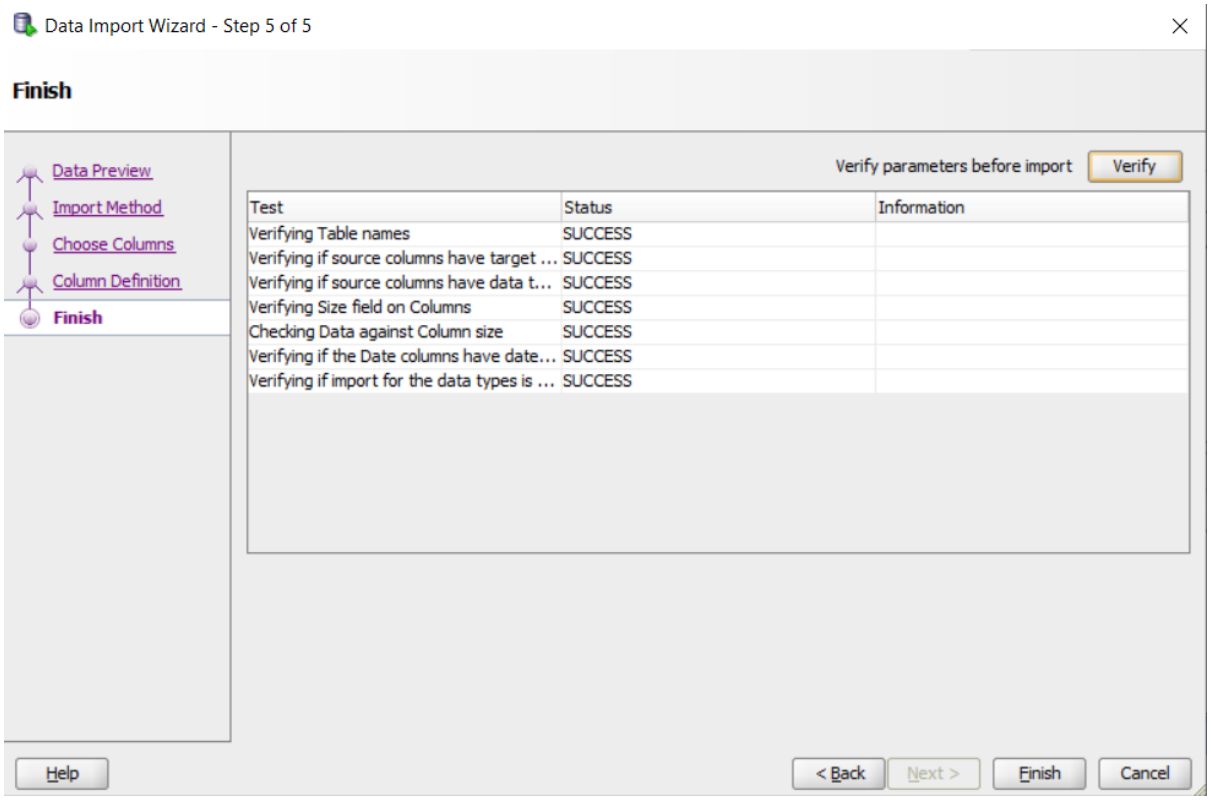

Figure 3.8 – Summary

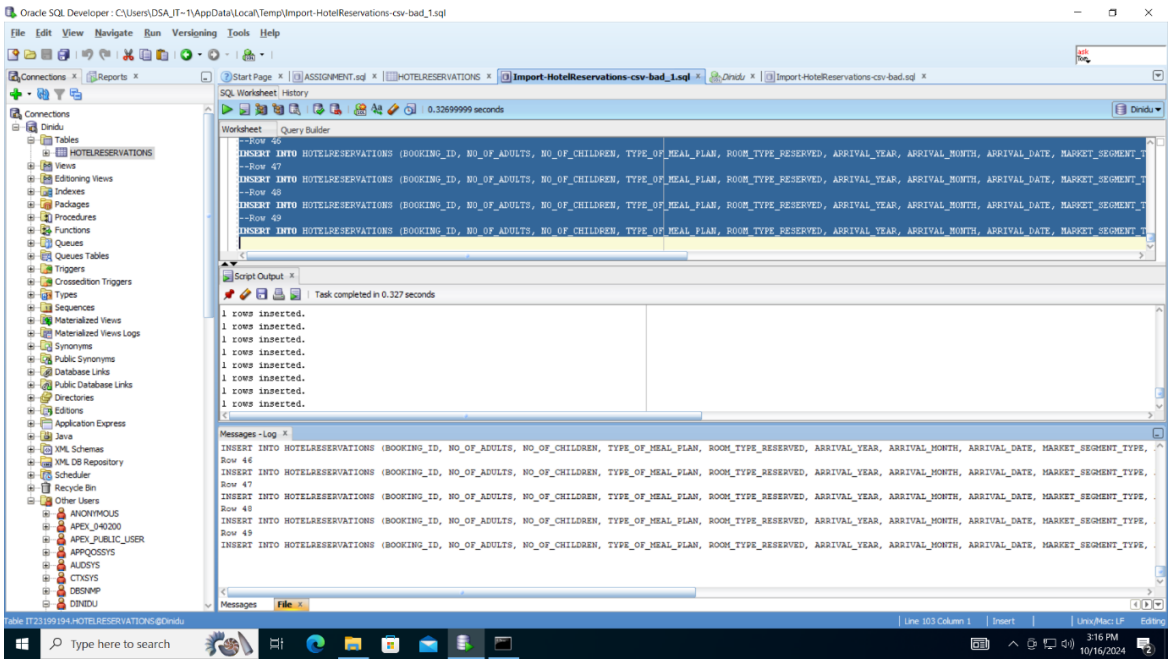

Figure 3.9 – Inserting the imported data into the table ‘HotelReservations.csv’. I inserted them by running the insert queries which were automatically generated by the system.

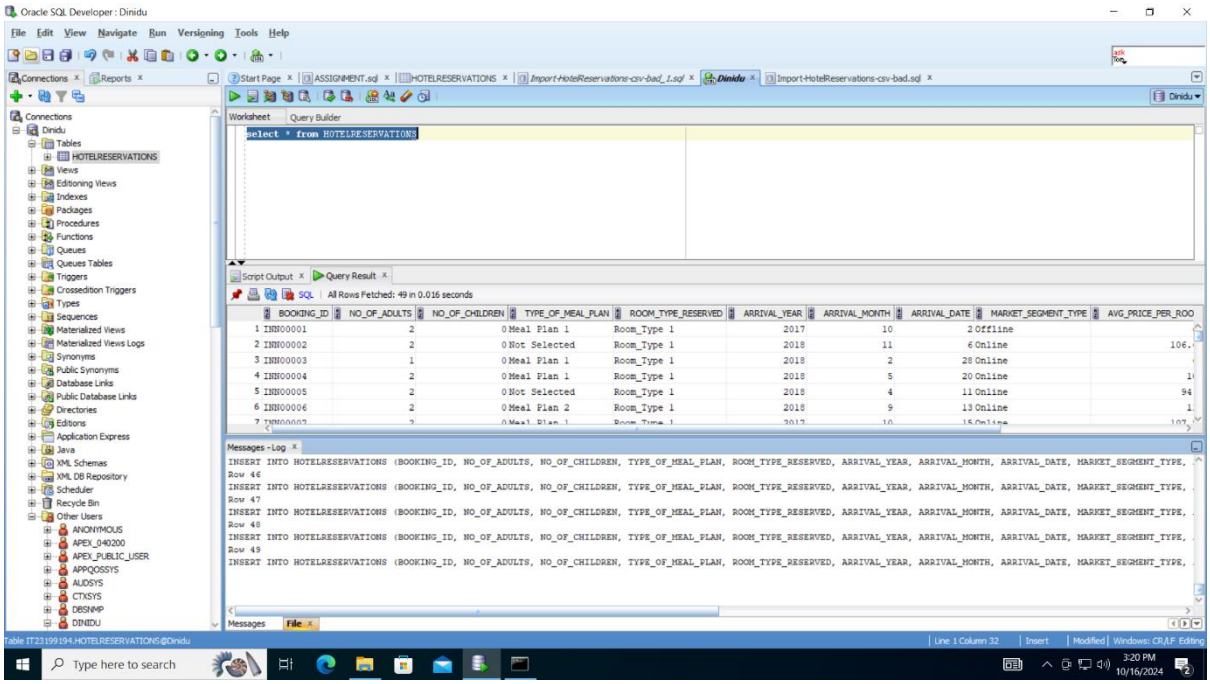

Figure 3.10 – Viewing all the data from the table to checking whether all records were inserted successfully

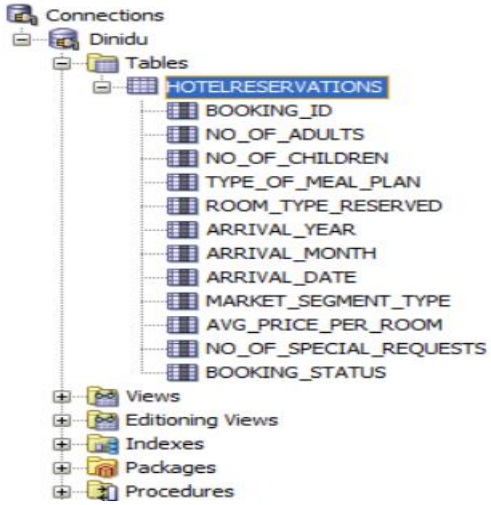

Figure 3.11 – Navigating the explorer to create an index for the table

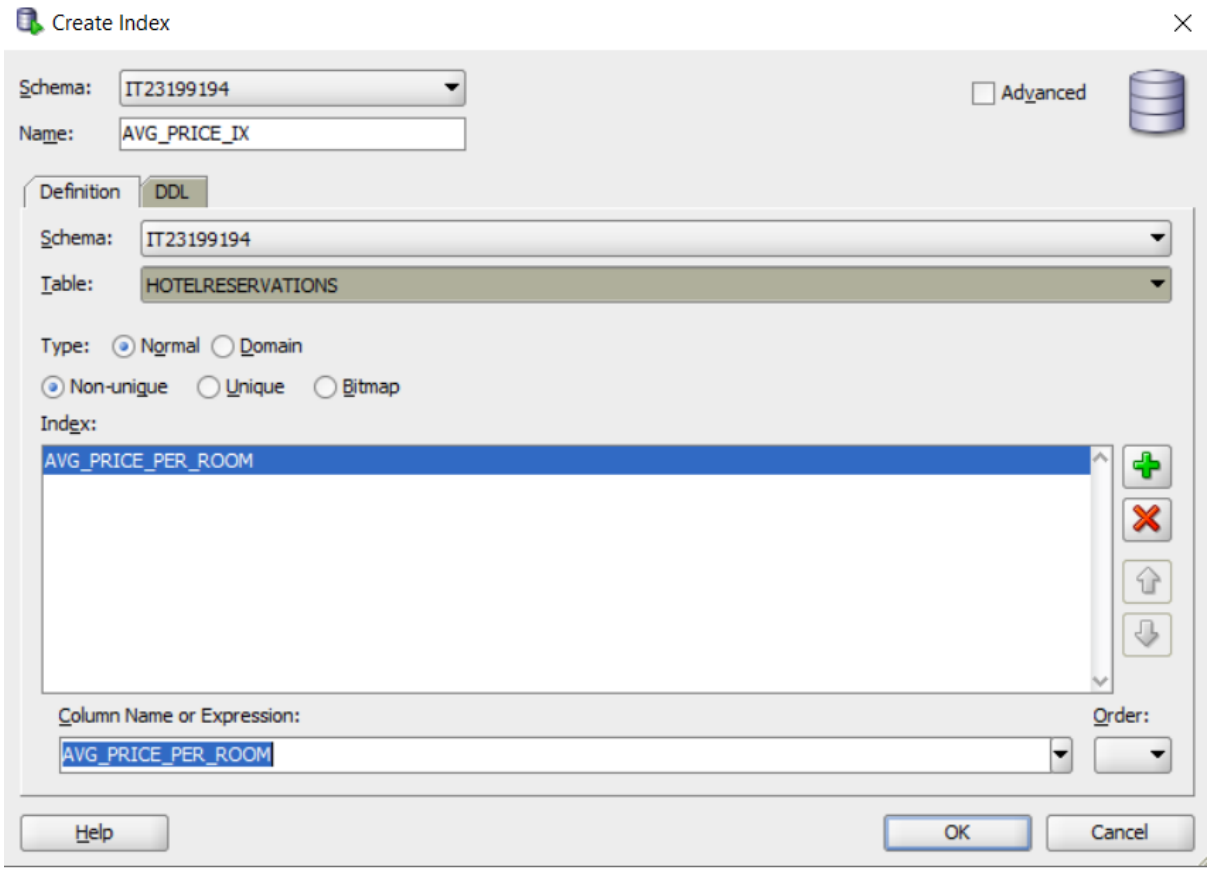

Figure 3.12 – create an index for the table

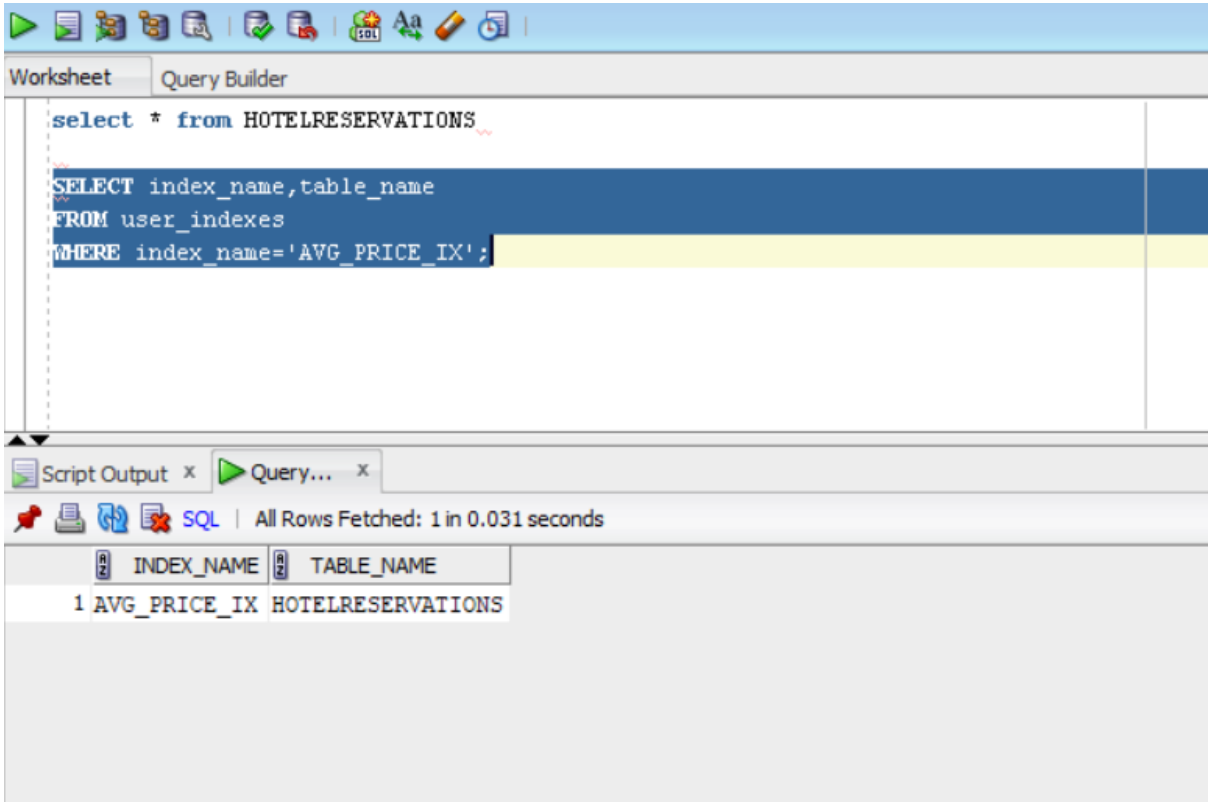

Figure 3.13 – Verification

Discussion

This assignment is divided into several parts that focus on different aspects of database administration. Starting with the creation of a pluggable database (PDB) using the database configuration assistant (DBCA).This project goes through the steps of setting a database,configuration and ensure that this database can perform expected operations.

After that,user administration part and the security part is configured with sqlplus in the command prompt.This section highlights best practices in designing and defining relevant roles and other privileges.

The final part of this assignment is done with sql developer, which is easy to do tasks of managing objects such as tables and indexes.A table is created,data is imported, and indexes are applied to improve performance.Each part is clearly showed in with screenshots.

Conclusion

The completion of this assignment provides practical insights into the critical role of database administrators in setting up, maintaining, and optimizing databases. From creating secure user environments to managing schema objects, the assignment demonstrates the importance of understanding database structures and administration tasks in a real-world setting. Oracle 12C and SQL Developer proved to be powerful tools for managing databases, allowing administrators to efficiently perform necessary tasks while maintaining high standards of security and performance.