IE2080
Database Systems Administration
2nd Year, Semester I

Individual Assignment

Practical Based Assignment - Part 1

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

18/10/2024

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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Terms and References

As students of the BSc. (Hons) in Information Technology - Computer Systems and Network Engineering specialization program at SLIIT, we were given an assignment by our lecturer; Mrs. Narmada Gamage, for the module Database Systems Administration. This is an individual assignment provided for us to explore Oracle12C and SQL Developer platforms.

Abstract

This assignment is about Installation, Configuration and Basic Management of Oracle 12c on Windows operating system which could be beneficial to those studying BSc (Hons) in Information Technology completing module “Database Architecture”. This exam covers the installation of Oracle 12c, using SQL commands to manage pluggable databases PDBs and general user administration features. The install is implemented at an Azure virtual machine running with Windows 10 created in the portal, which will give you basic skills of configuring and managing your database.

The tasks require configuring an Oracle 12c instance with recommended parameters, creating PDBs using Database Configuration Assistant (DBCA), and managing users profiles and roles through SQL commands. Involves the creation of a user profile stipulating details such as default session, CPU and password policies alongside assignment of roles & privileges for secure access to databases.

After that, a few more activities via SQL Developer about schema object management tables creation, Data load and do indexing operations The final part of the task is to document every step with screenshots so a complete report can be compiled showing exactly what took place.

The assignment counts for a large chunk of the final grade in this class, and underscores how critical it is to get hands on experience with database systems administration. Oracle database management, user security and efficient data storage (these are essential skills every student needs to have, which theoretically strengthen their practical capacity as well) prepare them for real-world enterprise tasks.

Acknowledgement

We would like to express our deepest appreciation to the Sri Lanka Institute of Information Technology for providing us with the responsibility to complete this report. In addition, we would like to thank Mrs. Narmada Gamage, our DSA lecturer who played a great role in providing the necessary guidelines to complete this report. We would like to express our thanks to all the people who provided support us in finishing this project.

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Part B:

Create a PDB by using Database Configuration Assistant (DBCA)

Step 1 - Log in to Oracle server using SQL plus (command prompt)

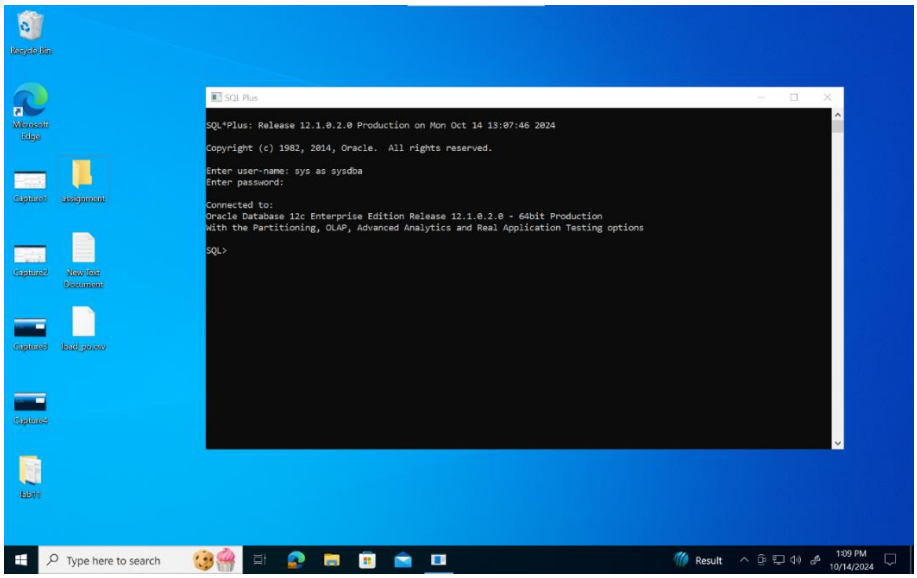

Figure 1.1

Step 2 - Creating the database

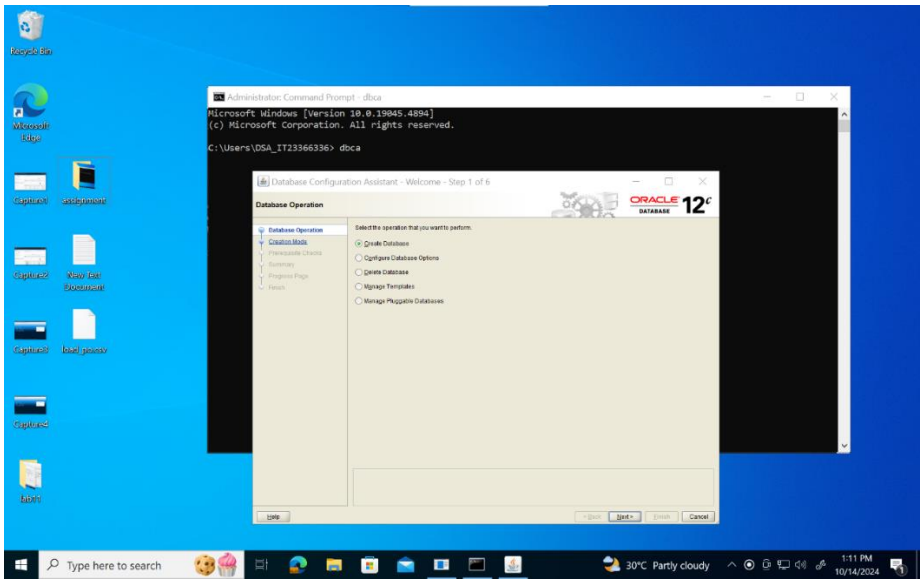

Figure 1.2

Step 3 - Manage the pluggable database

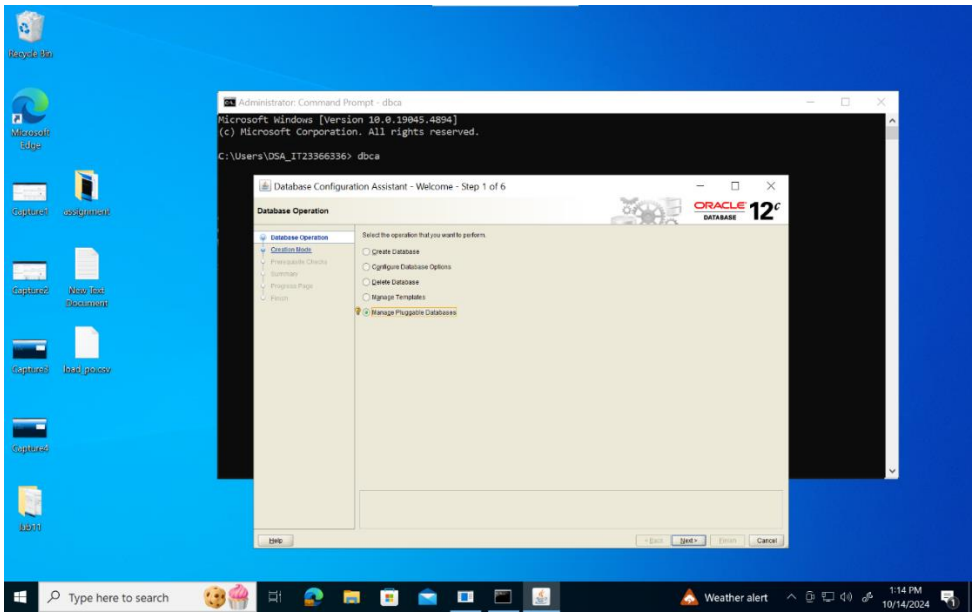

Figure 1.3

Step 4 - Create the pluggable database

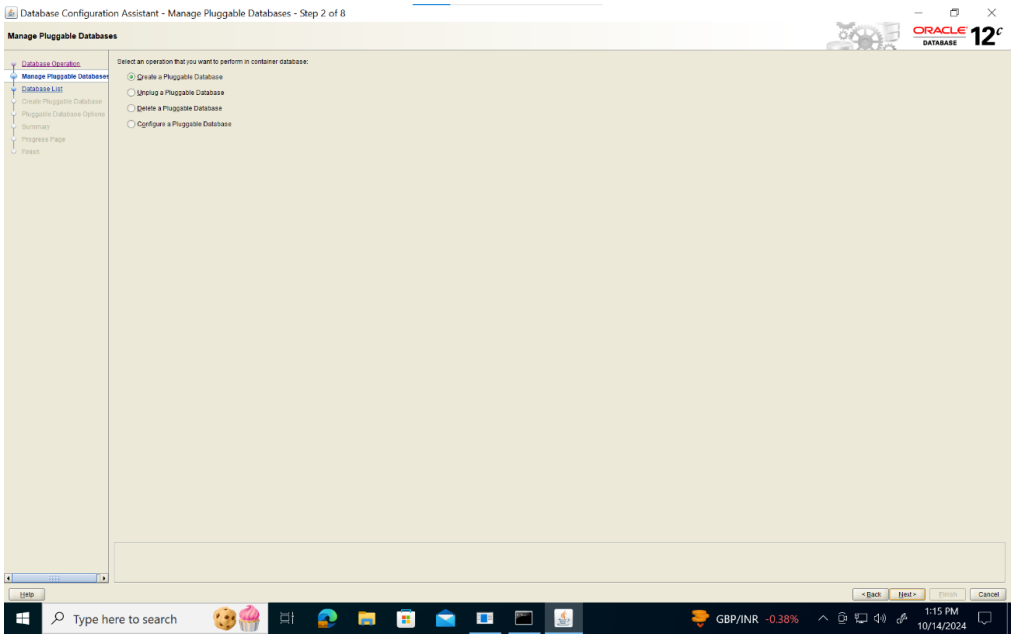

Figure 1.4

Step 5 - Selecting CDB for the PDB

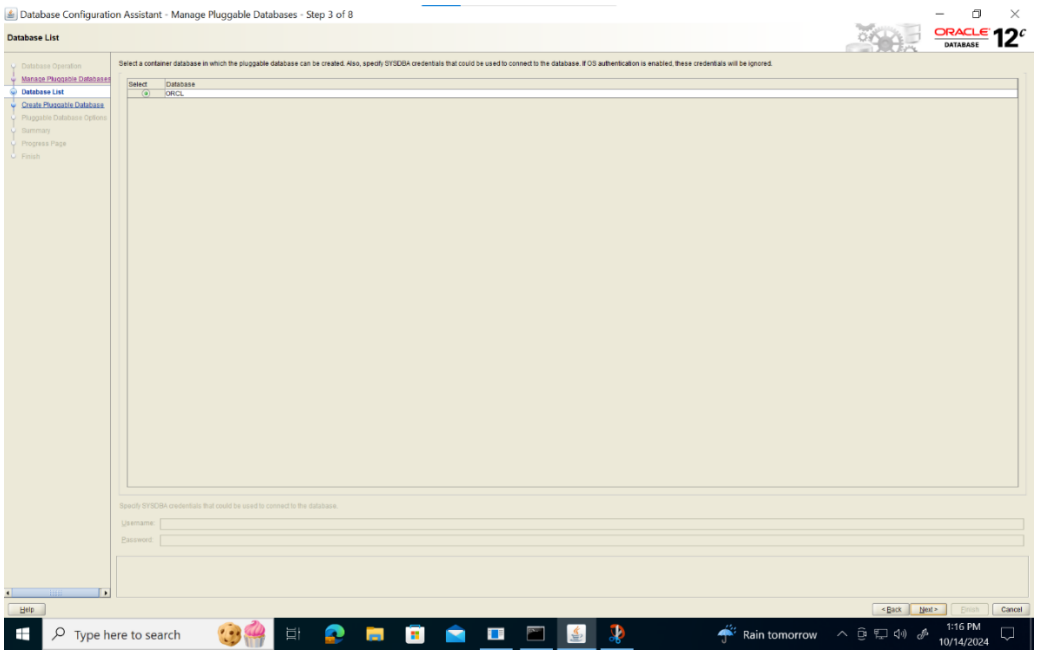

Figure 1.5

Step 6 - Creating a new PDB

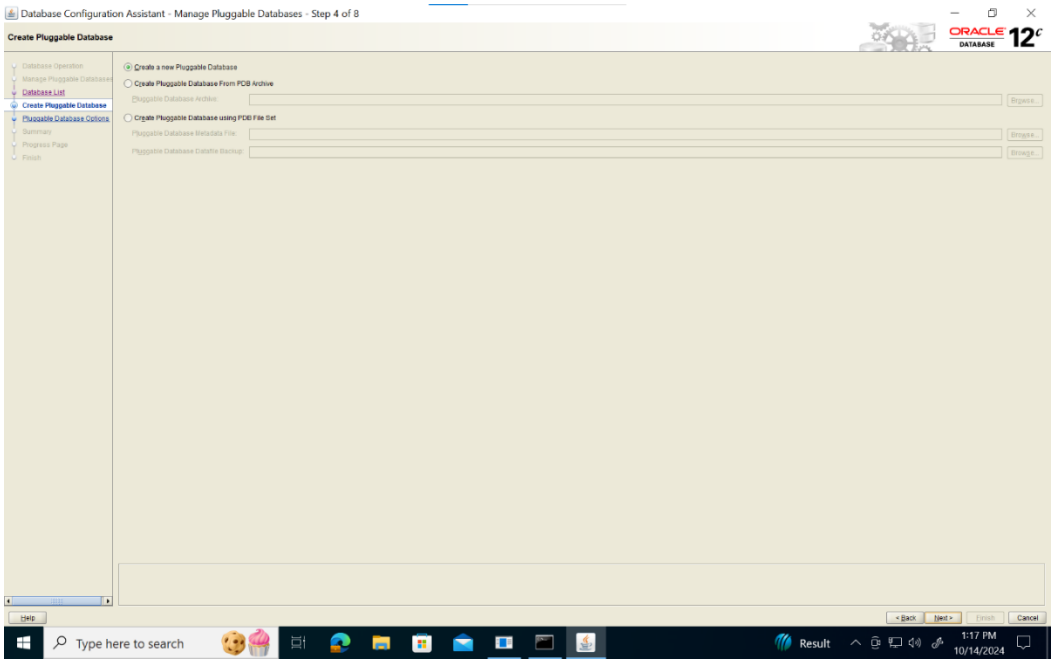

Figure 1.6

Step 7 – Add the necessary details

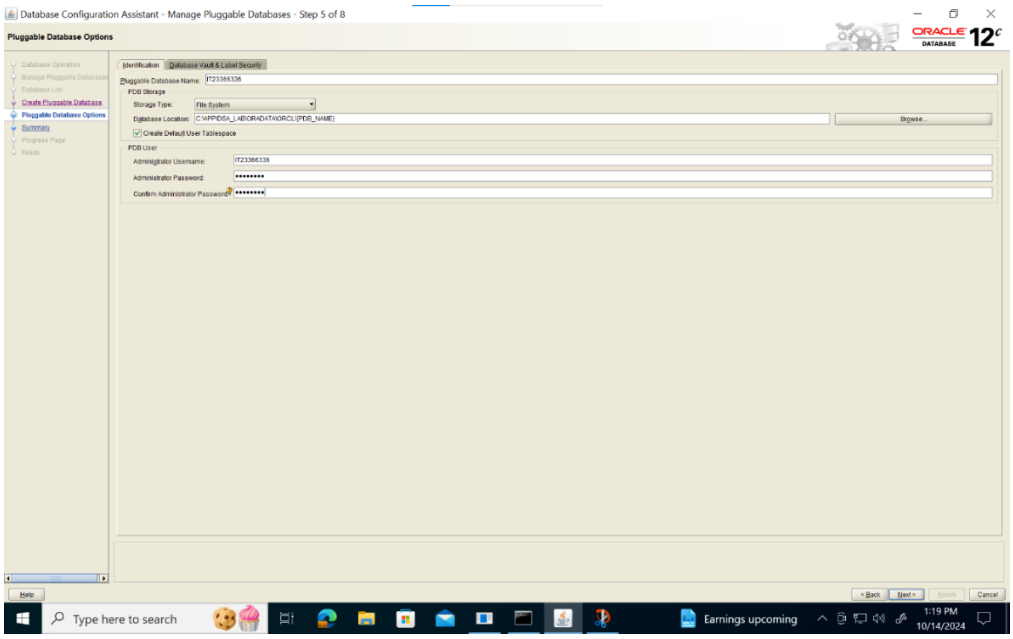

Figure 1.7

Step 8: Summary of the Newly created pluggable database

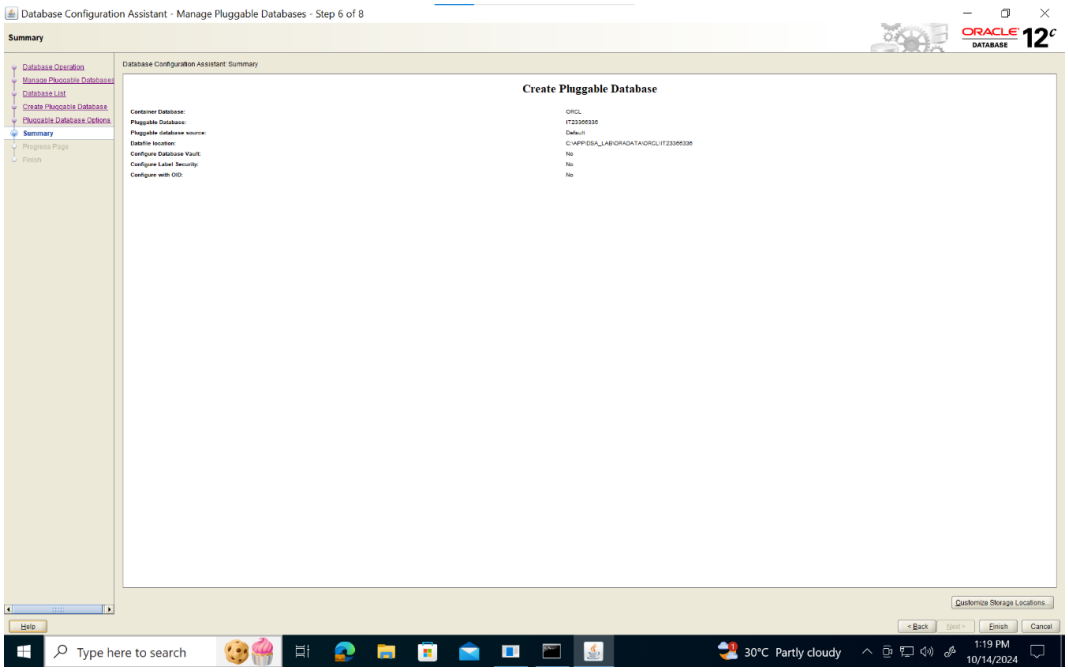

Figure 1.8

In progress….

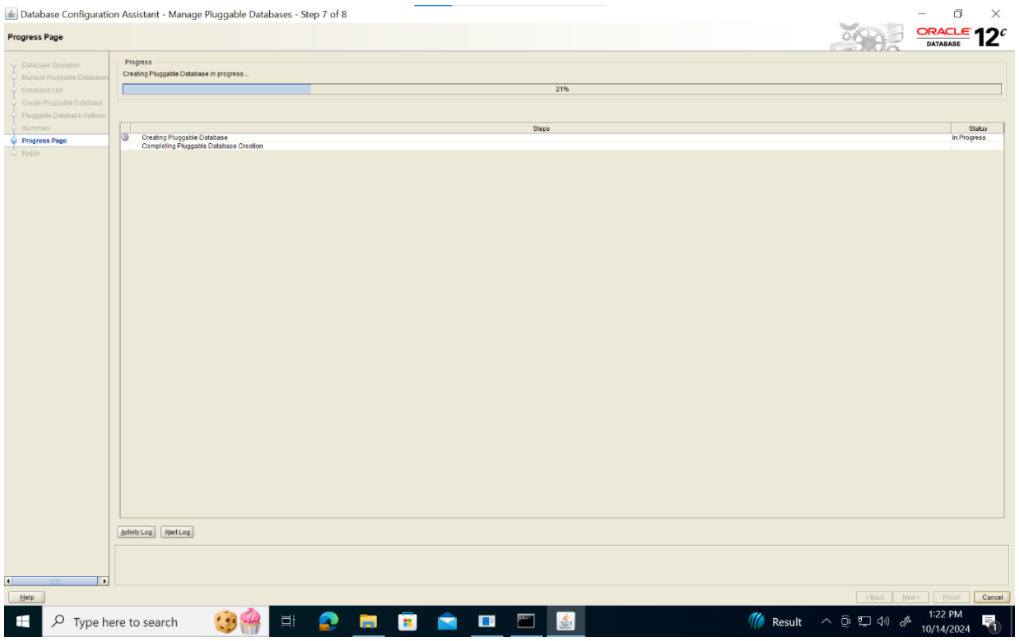

Figure 1.8.1

Step 9 - Receiving successful completion message

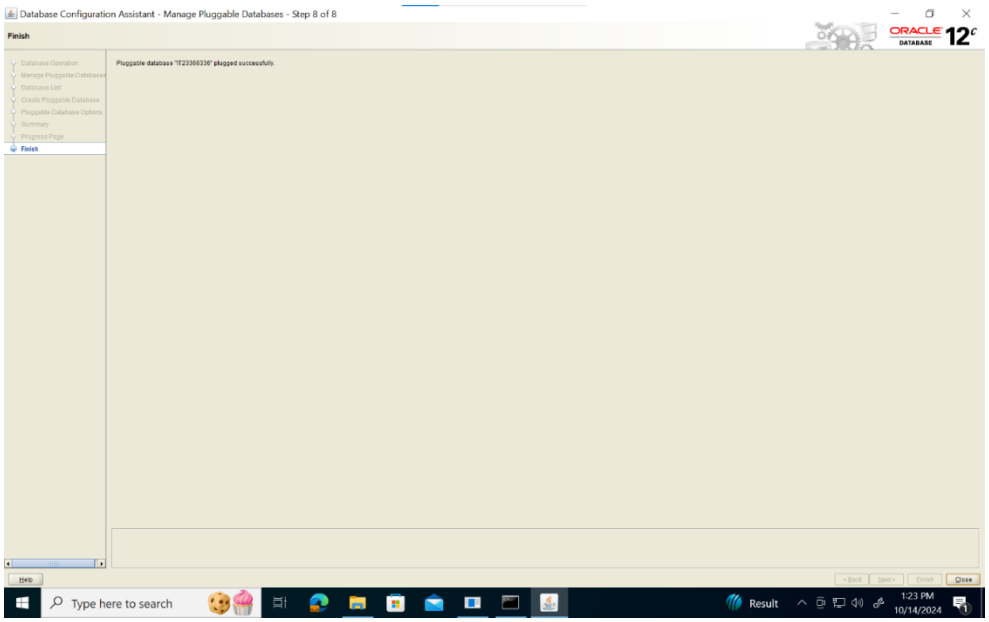

Figure 1.9

Part C:

Provide user administration and security using SQL PLUS

Step 1 - Searching the new PDB

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

    CON_ID NAME                           OPEN_MODE
---------- ------------------------------ ----------
         2 PDB$SEED                       READ ONLY
         3 PDBORCL                        MOUNTED
         4 IT23366336                     READ WRITE
```

Figure 2.1

Step 2 - Altering the session and setting the container for the new PDB

```
SQL> alter pluggable database IT23366336 open;
alter pluggable database IT23366336 open
*
ERROR at line 1:
ORA-65019: pluggable database IT23366336 already open
```

```
SQL> alter session set container = IT23366336;

Session altered.

SQL>
```

Figure 2.2

Step 3 – Creating the Receptionist profile

```
SQL> create profile RECEPTIONIST
  2  limit
  3  sessions_per_user unlimited
  4  CPU_PER_SESSION UNLIMITED
  5  CPU_PER_CALL 3000
  6  CONNECT_TIME 40
  7  LOGICAL_READS_PER_SESSION default
  8  LOGICAL_READS_PER_CALL 1000
  9  PRIVATE_SGA 25K
 10  COMPOSITE_LIMIT 5000000
 11  FAILED_LOGIN_ATTEMPTS 3
 12  PASSWORD_LIFE_TIME 180
 13  PASSWORD_REUSE_TIME 30
 14  PASSWORD_REUSE_MAX 7
 15  PASSWORD_LOCK_TIME 1/24
 16  PASSWORD_GRACE_TIME 7
 17  PASSWORD_VERIFY_FUNCTION null
 18  ;

Profile created.
```

Figure 2.3

Step 4 – Create new tablespace (NishadiTS)

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

Tablespace created.
```

Figure 2.4

Step 5 – Create a new temporary tablespace (NishadiTEMP)

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

Tablespace created.
```

Figure 2.5

Step 6 – Creating a new role called ‘Receptionist’

```
SQL> create role RECEPTIONIST;

Role created.

SQL> grant connect , resource, dba to RECEPTIONIST;

Grant succeeded.
```

Figure 2.6

Step 7 - Grant privilege to the new role Receptionist

```
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

Step 8 – Create a new user (Nishadi)

```
SQL> CREATE USER Nishadi
  2  IDENTIFIED BY Oracle_1
  3  DEFAULT TABLESPACE NishadiTS
  4  TEMPORARY TABLESPACE NishadiTemp
  5  PROFILE Receptionist;

User created.
```

Figure 2.8

Step 9 – Connect the new PDB by using the new user account (Nishadi)

```
SQL> CONNECT SYS/Oracle_1@localhost/IT23366336 as sysdba
Connected.
SQL> GRANT CREATE SESSION to Nishadi;

Grant succeeded.

SQL> connect NISHADI/Oracle_1@localhost/IT23366336;
Connected.
```

Figure 2.9

Part D:

Manage the schema objects using SQL developer

Step 1 – Create the database connection in SQL developer the newly created PDB

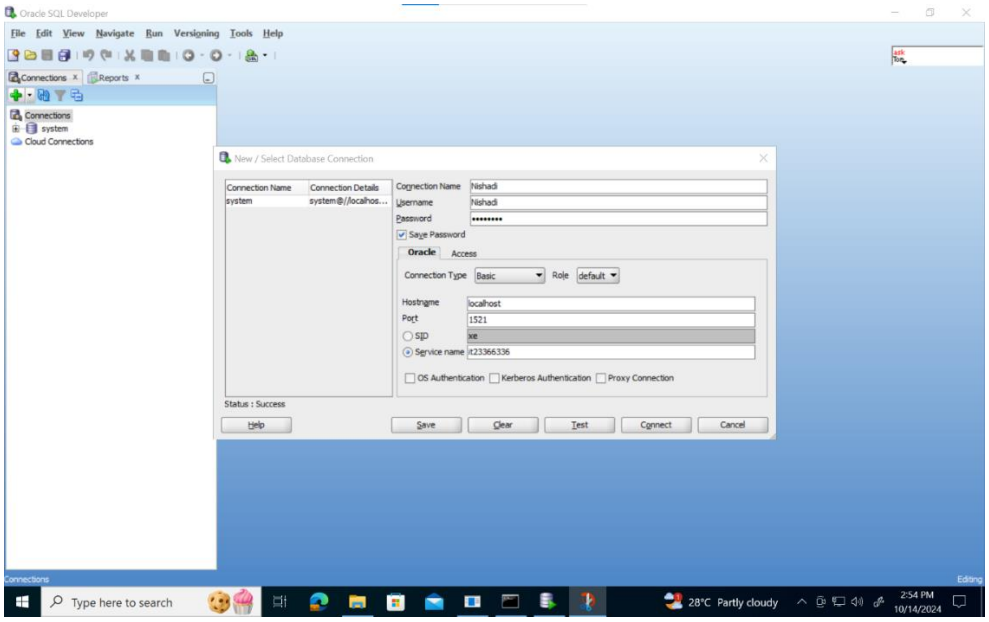

Figure 3.1

Step 2 – Check the new user available in the user list (Nishadi)

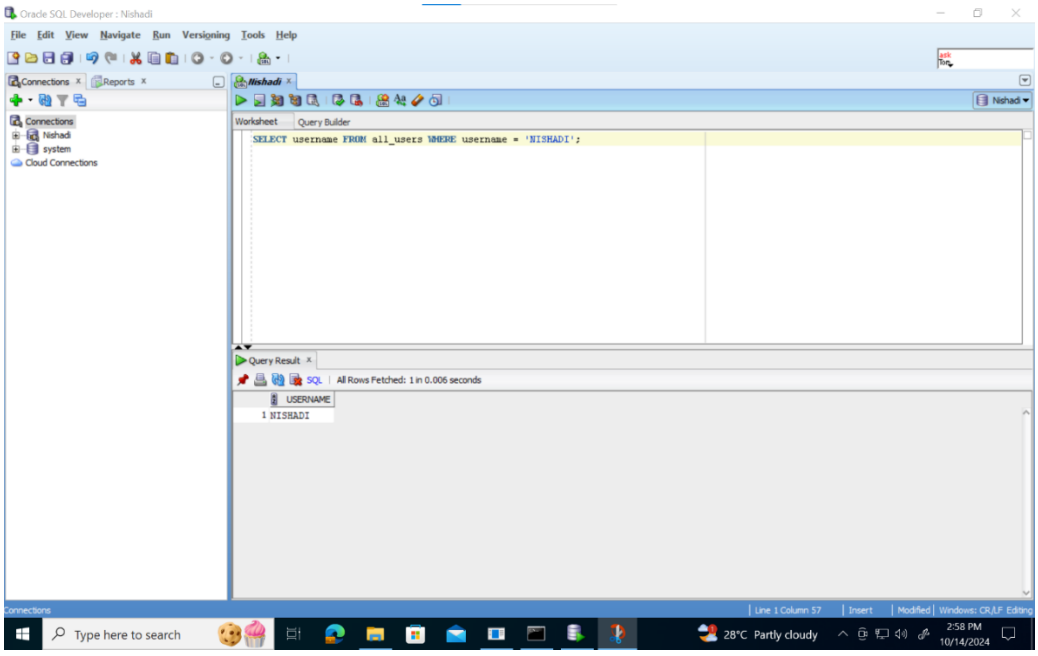

Figure 3.2

Step 3 – Create the table (HotelReservations)

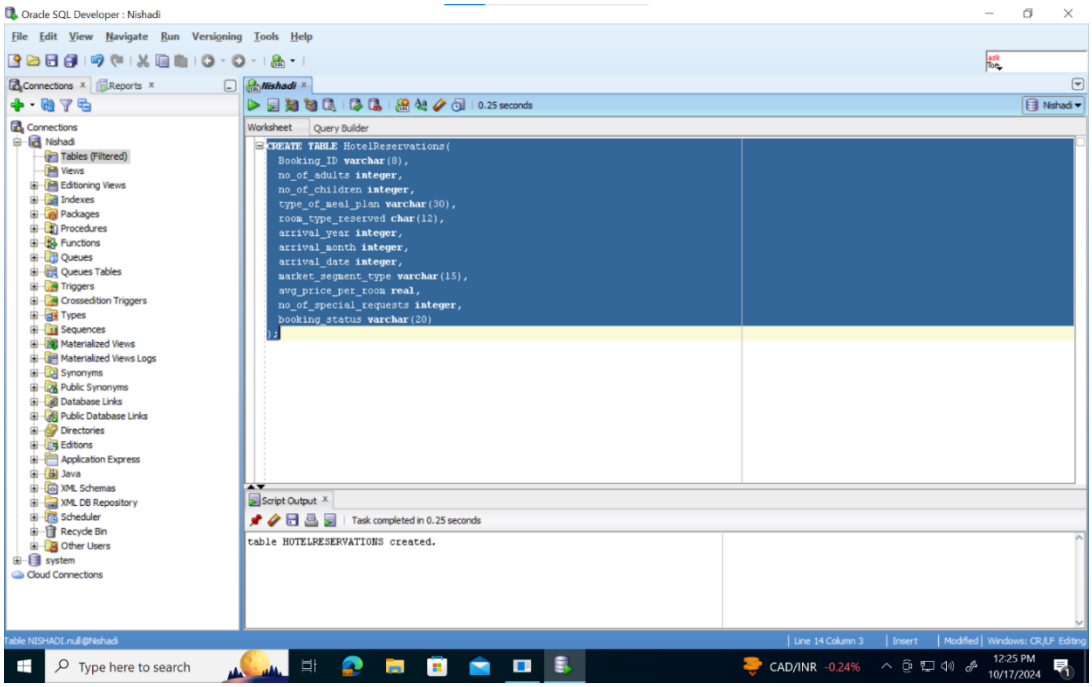

Figure 3.3

Step 4 – Importing Data from the file 'HotelReservations.csv' into SQL Developer

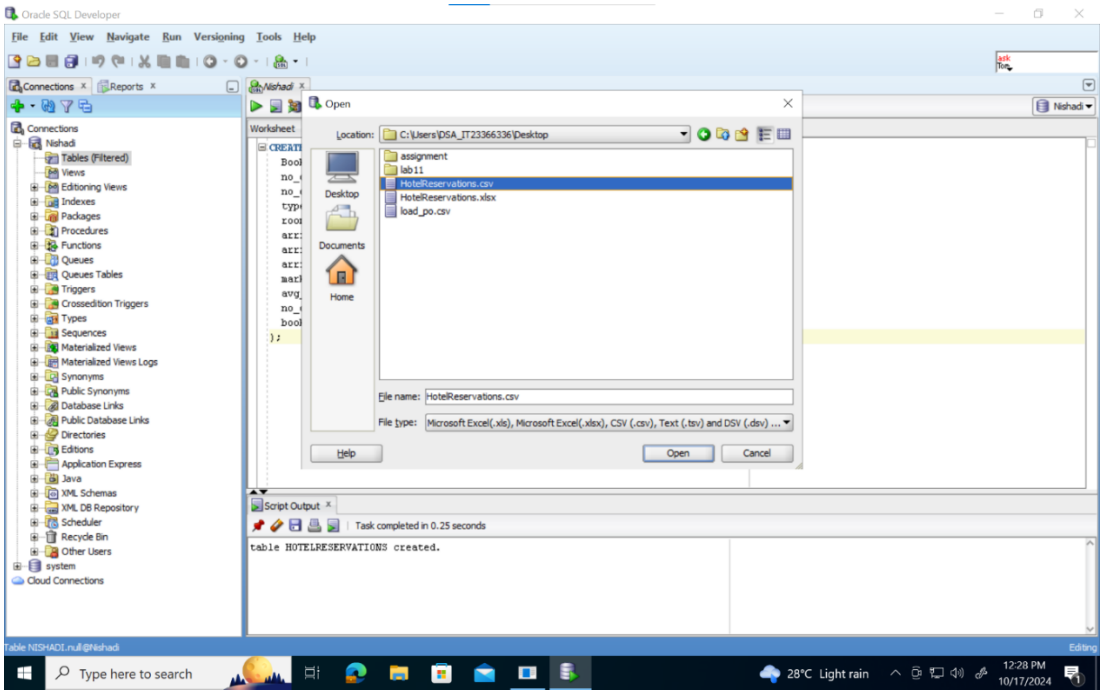

Figure 3.4

Step 5 – Preview

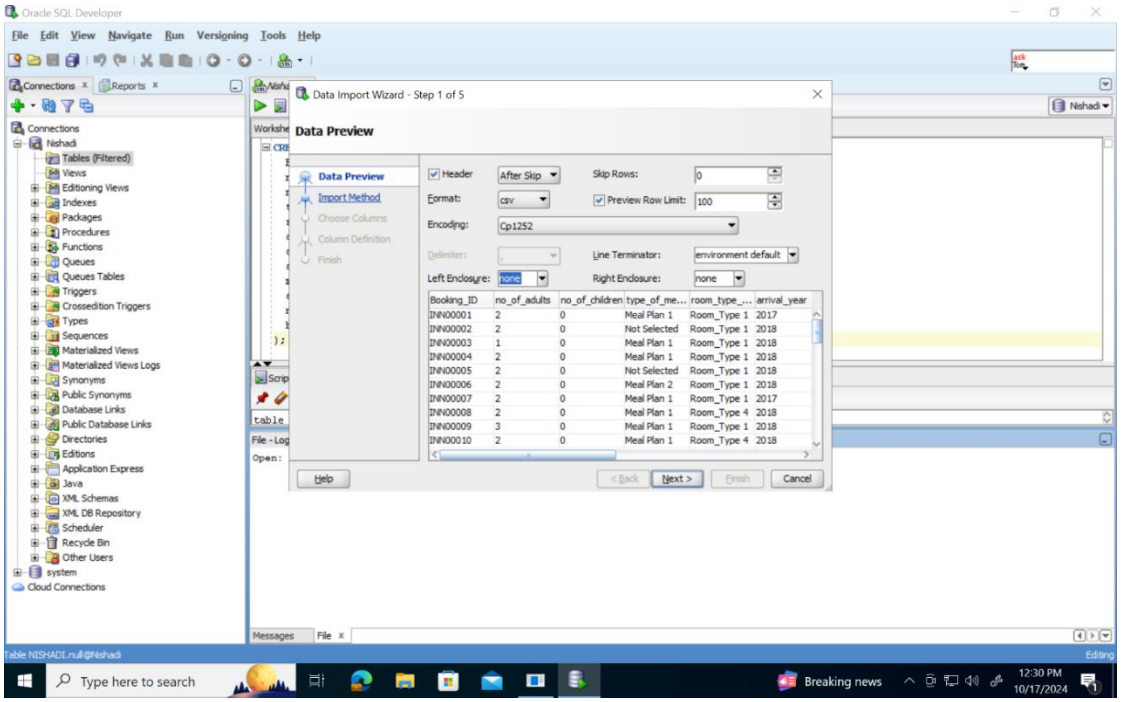

Figure 3.5

Step 6 – Setting import method

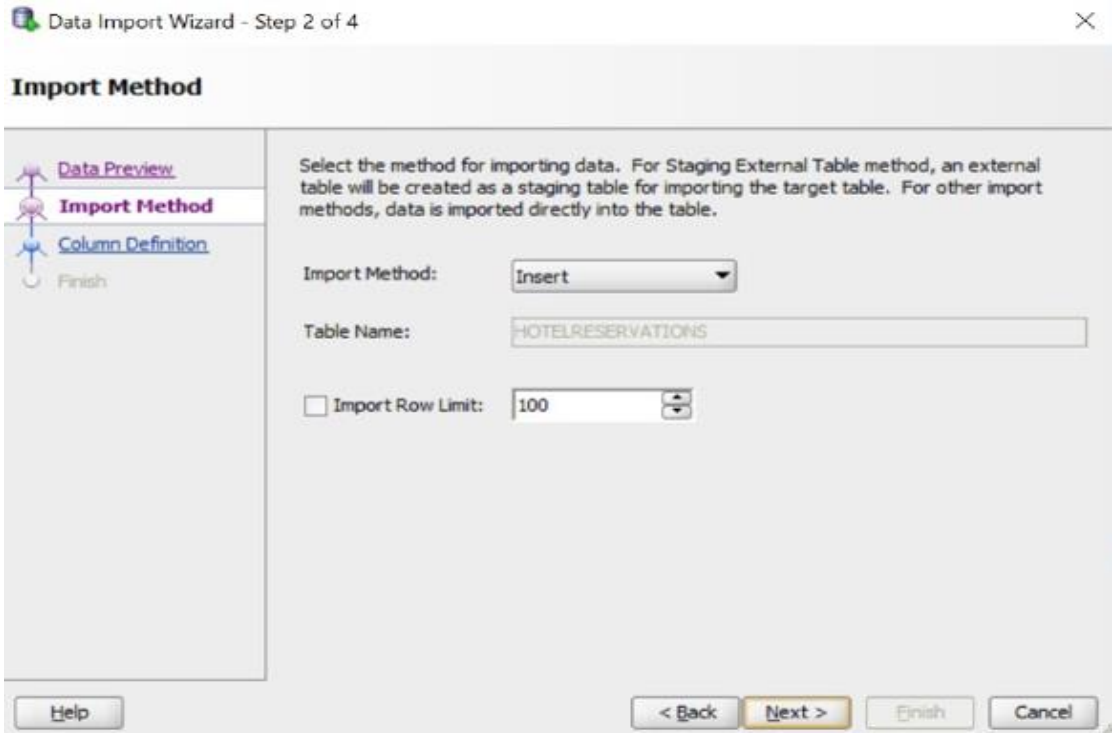

Figure 3.6

Step 7 – Choose Columns

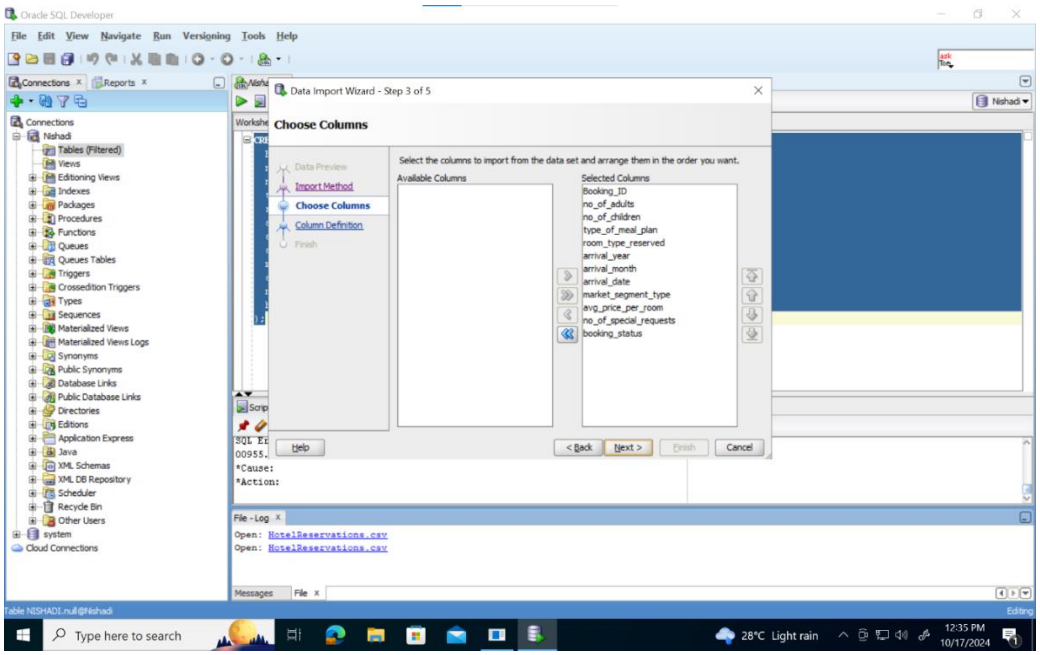

Figure 3.1

Step 8 – Column definition

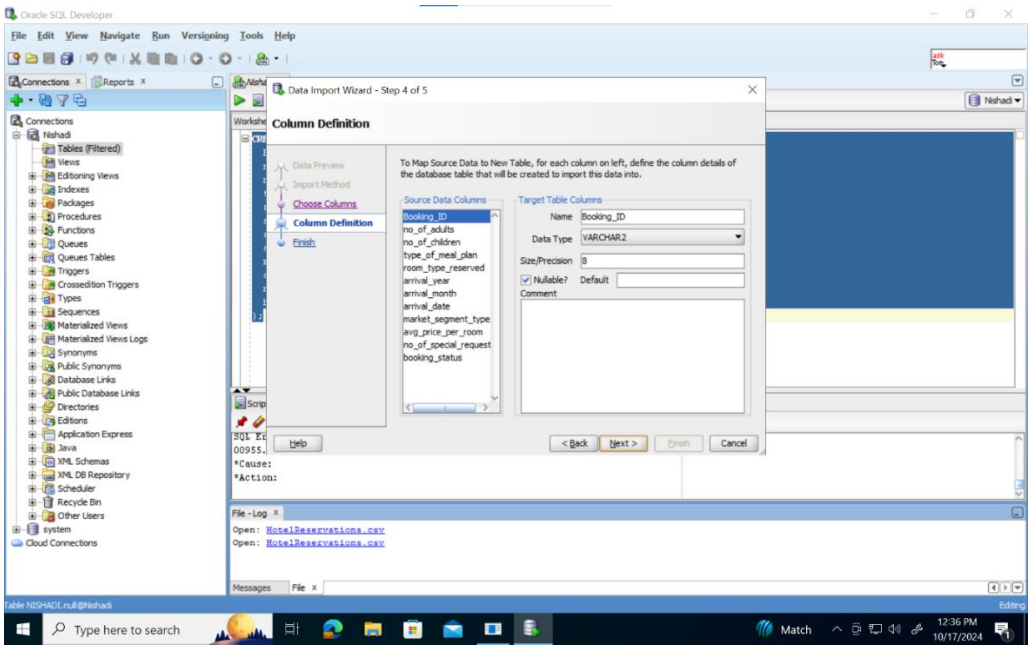

Figure 3.2

Step 9 – Summary

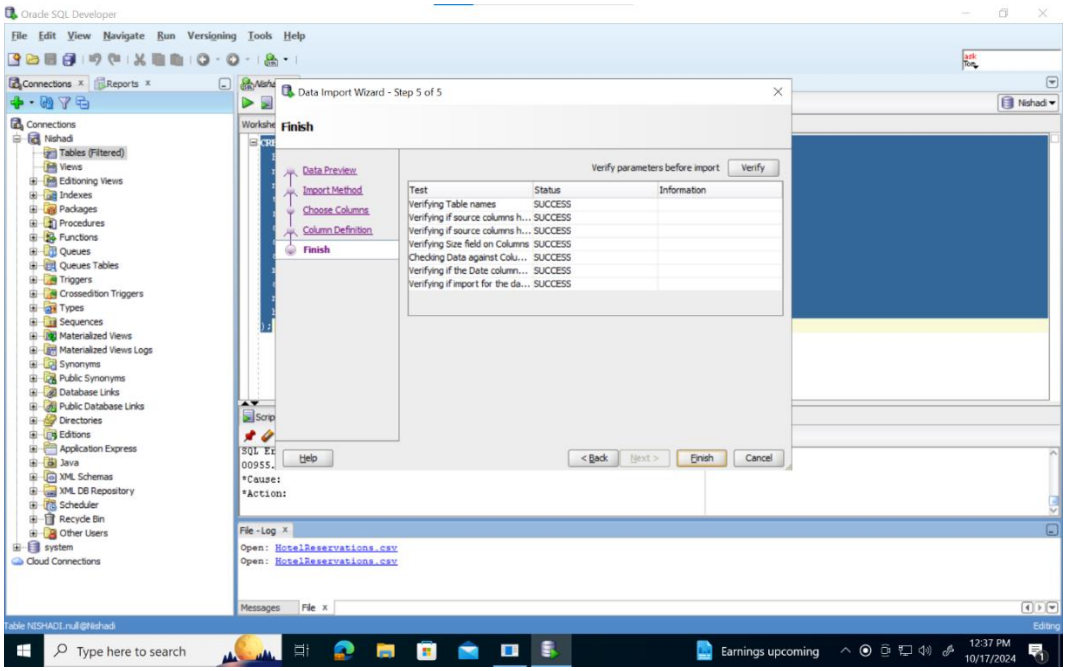

Figure 3.3

Step 10 - Inserting the imported data into the table

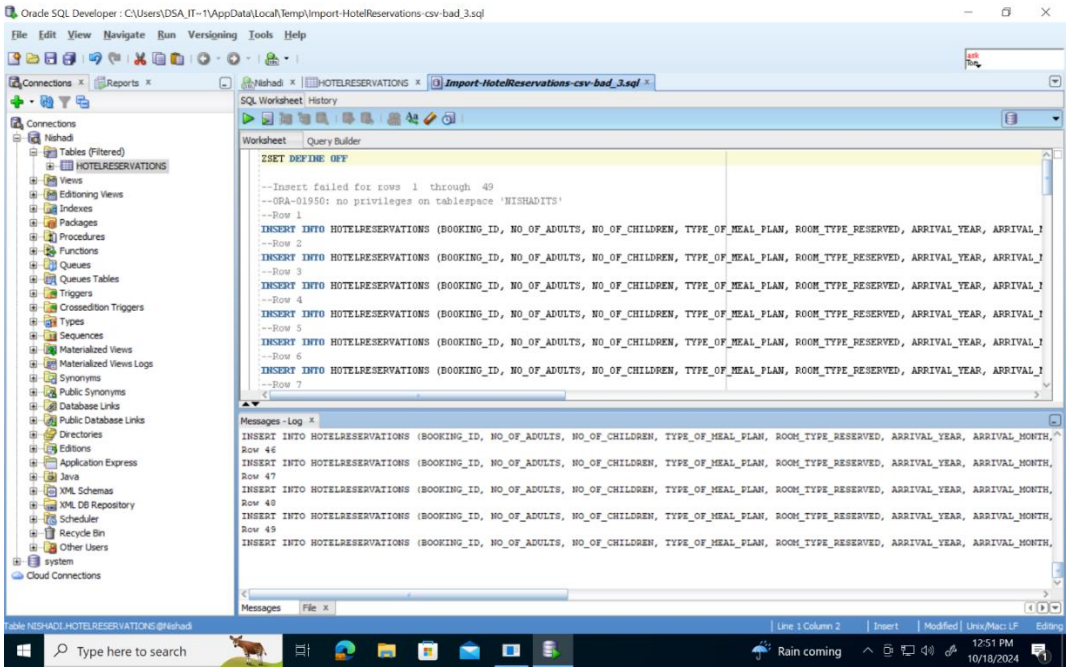

Figure 3.4

Step 11 - All records were inserted successfully

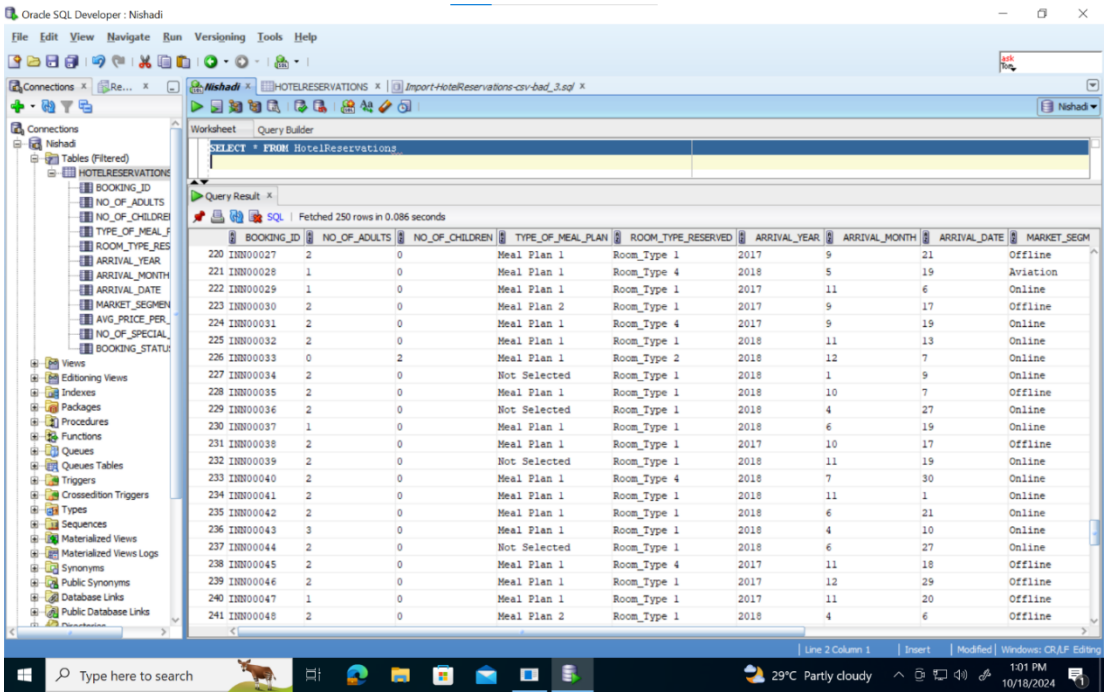

Figure 3.5

Step 12 - Navigating the explorer to create an index for the table

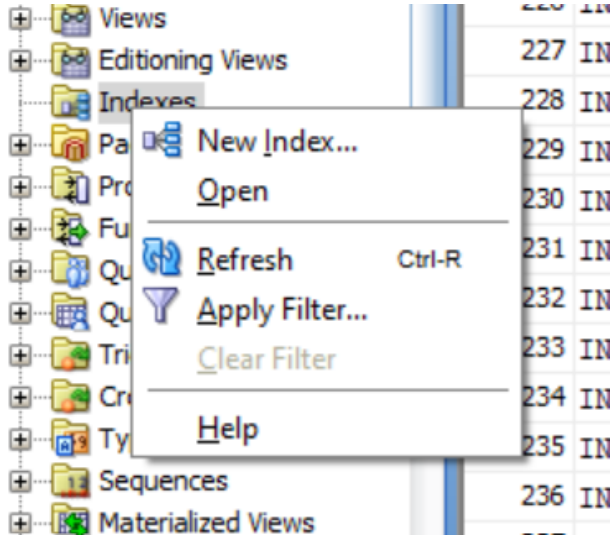

Figure 3.6

Step 13 – Create an index for column ‘AVG_PRICE_PER_ROOM’ and naming the index as ‘AVG_PRICE_IX’

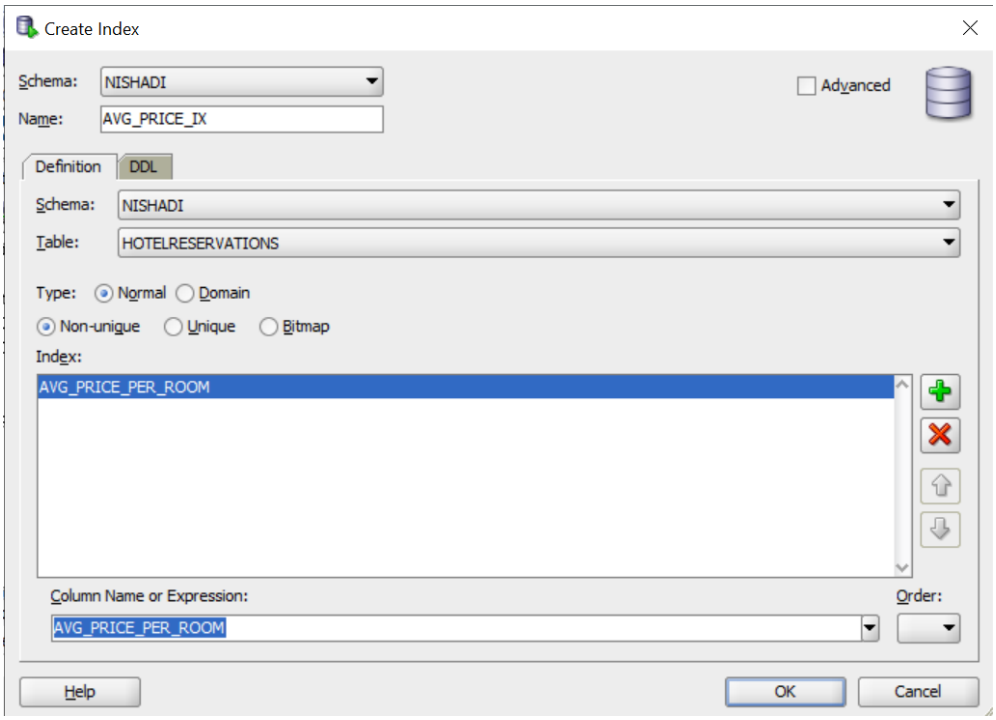

Figure 3.7

Step 14 – Verified the creation.

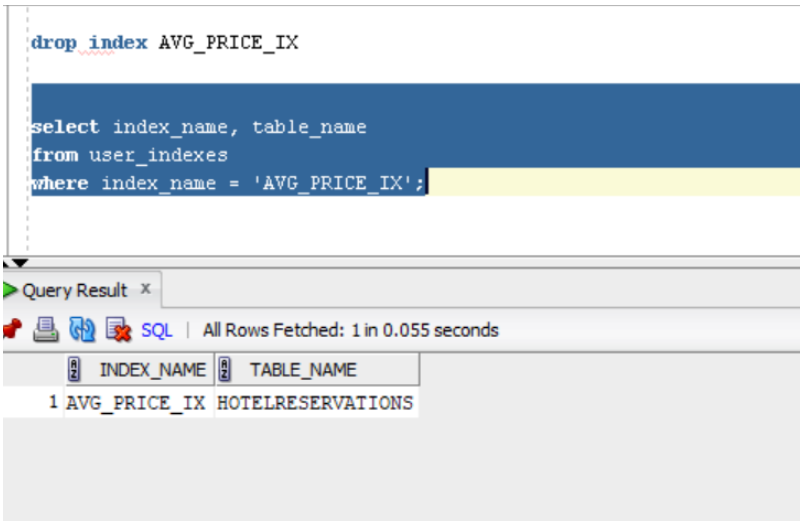

Figure 3.8