



IE2080

Database Systems Administration

2nd Year, Semester I

Assignment

Practical Based Assignment

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

10/18/2024

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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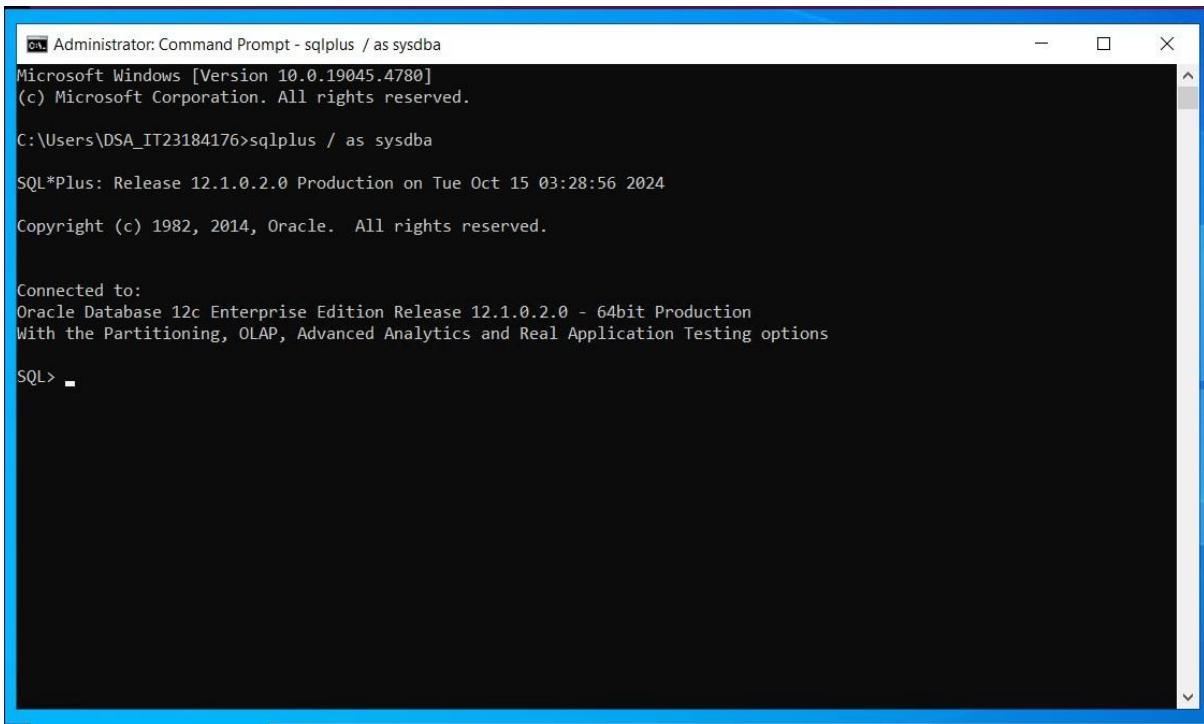
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A) Installation Steps followed

- 1) Creating a virtual machine and install Windows 10 in the Azure portal provided for the SLIIT students.
- 2) Installing Oracle 12C in the virtual machine using interactive mode.
- 3) Setting a password for SYS and SYSTEM users in password management at the end of the installation.
- 4) Login to EM express using <https://localhost:5500/em>
- 5) Assigning port number 5501 for container DB and 5502 for Pluggable DB by login to the database using the SYSDBA account.

B) Created a PDB by using Database Configuration Assistant (DBCA)

- 1) Log in to Oracle server using sqlplus (command prompt).



```
Administrator: Command Prompt - sqlplus / as sysdba
Microsoft Windows [Version 10.0.19045.4780]
(c) Microsoft Corporation. All rights reserved.

C:\Users\DSA_IT23184176>sqlplus / as sysdba

SQL*Plus: Release 12.1.0.2.0 Production on Tue Oct 15 03:28:56 2024

Copyright (c) 1982, 2014, Oracle. All rights reserved.

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> ■
```

Figure B.1.Logging to oracle server(sqlplus):

- 2) Running DBCA utility provided by Oracle to create a new pluggable database.



```
C:\Users\DSA_IT23184176>dbca
■
```

Figure B. 2.1.Running dbca:

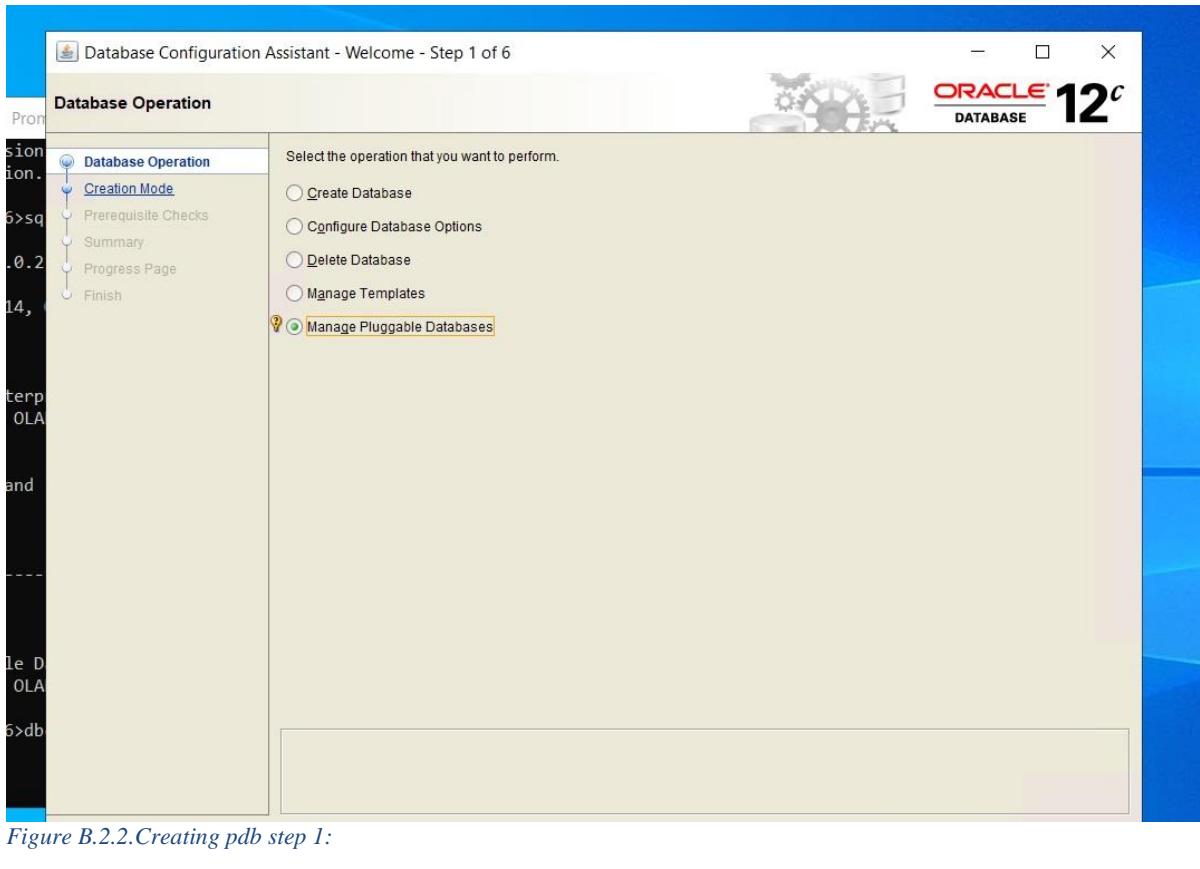


Figure B.2.2. Creating pdb step 1:

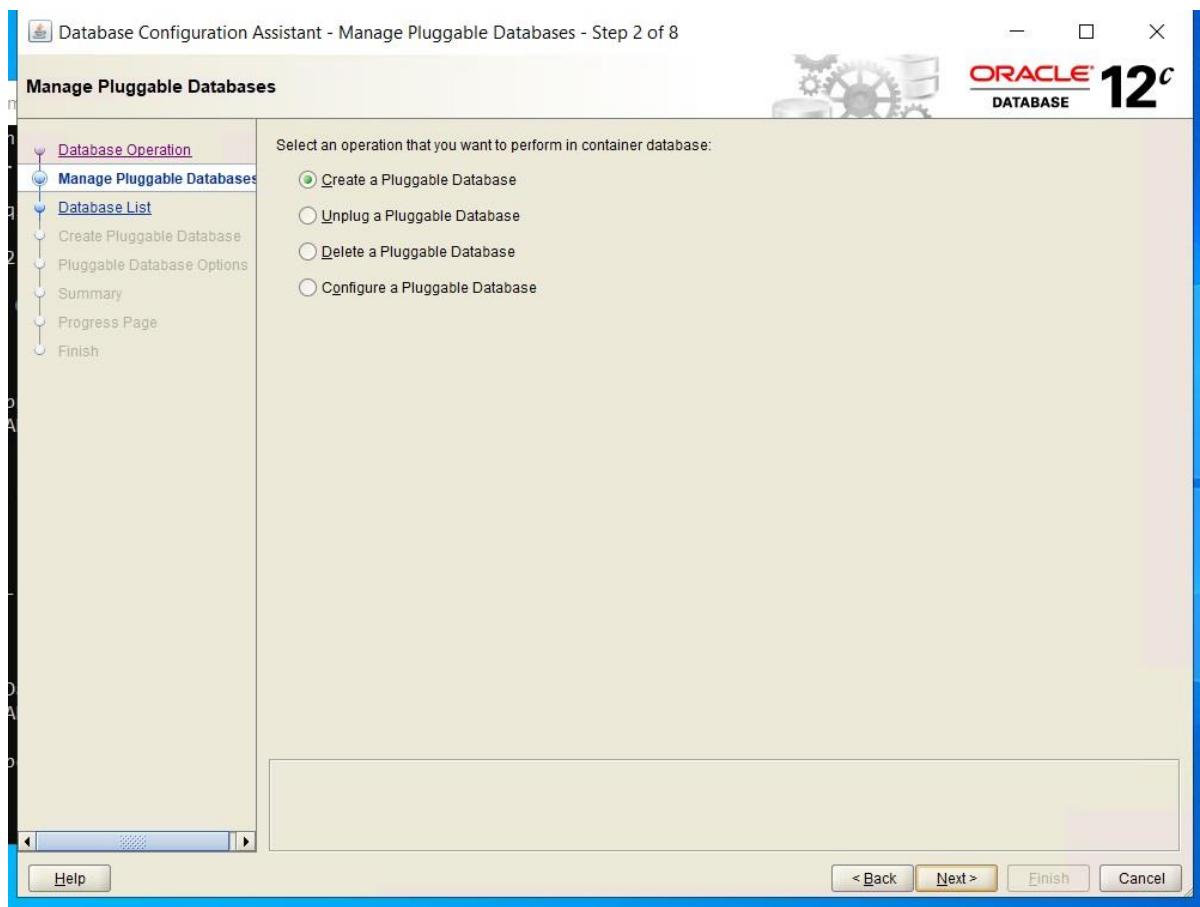


Figure B.2.3. Creating pdb step 2:

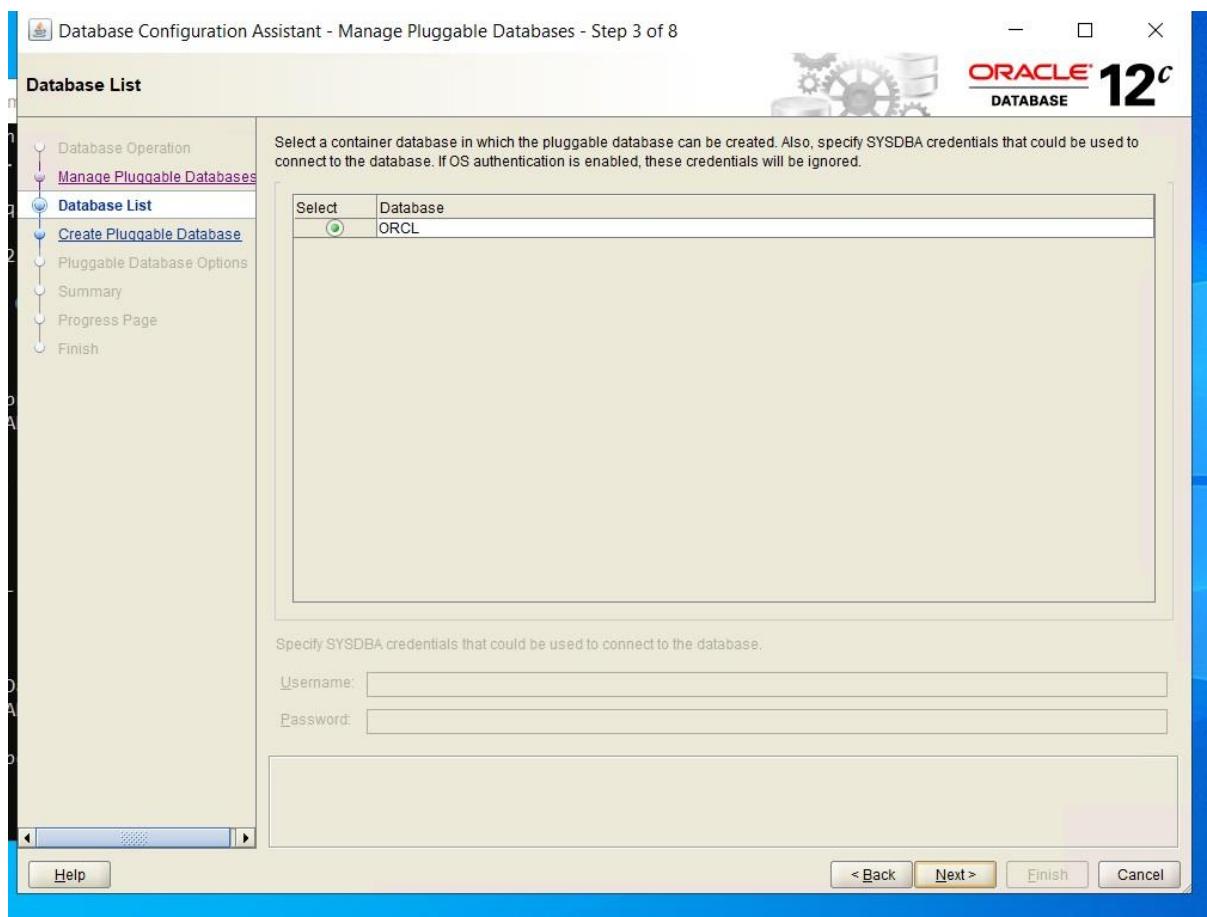


Figure B.2.4. Creating pdb step 3:

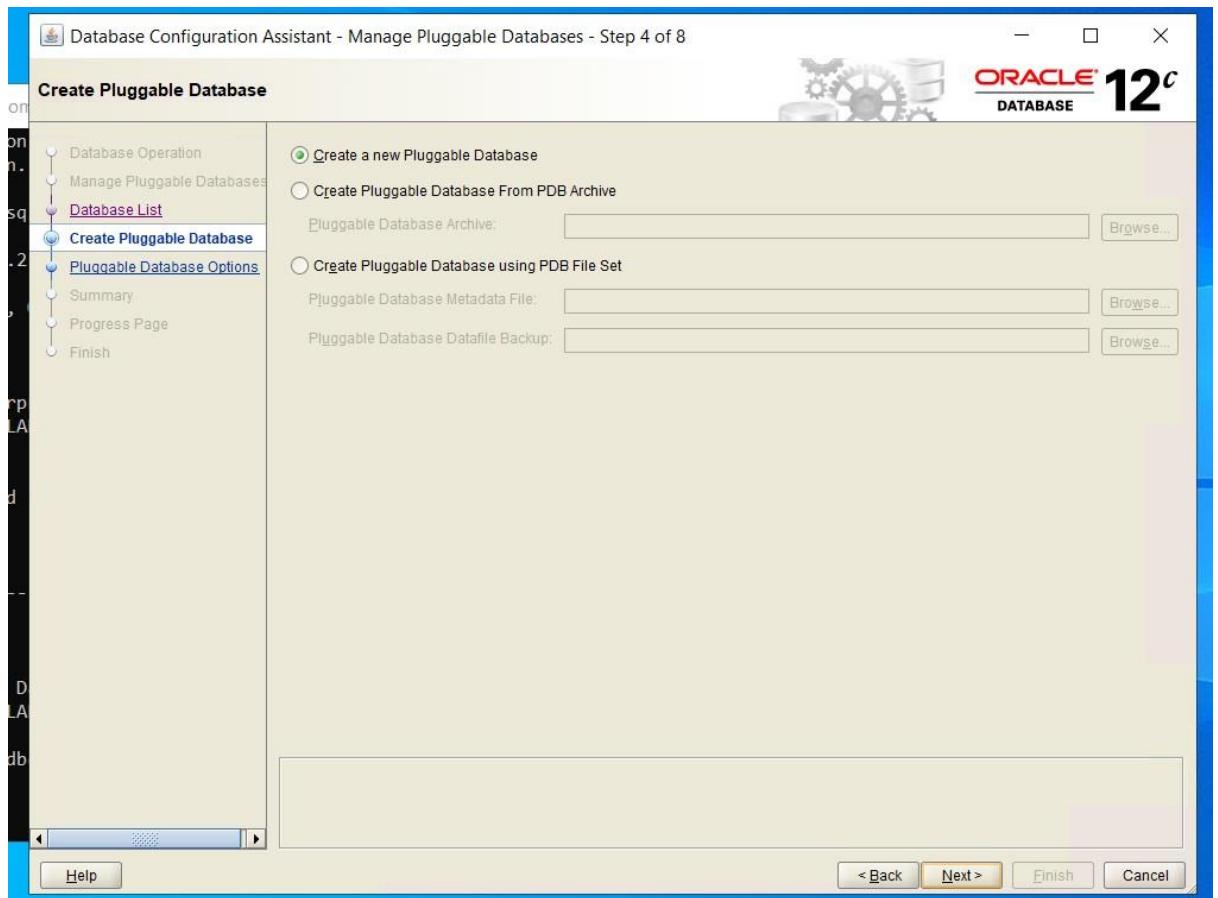


Figure B.2.5. Creating pdb step 4:

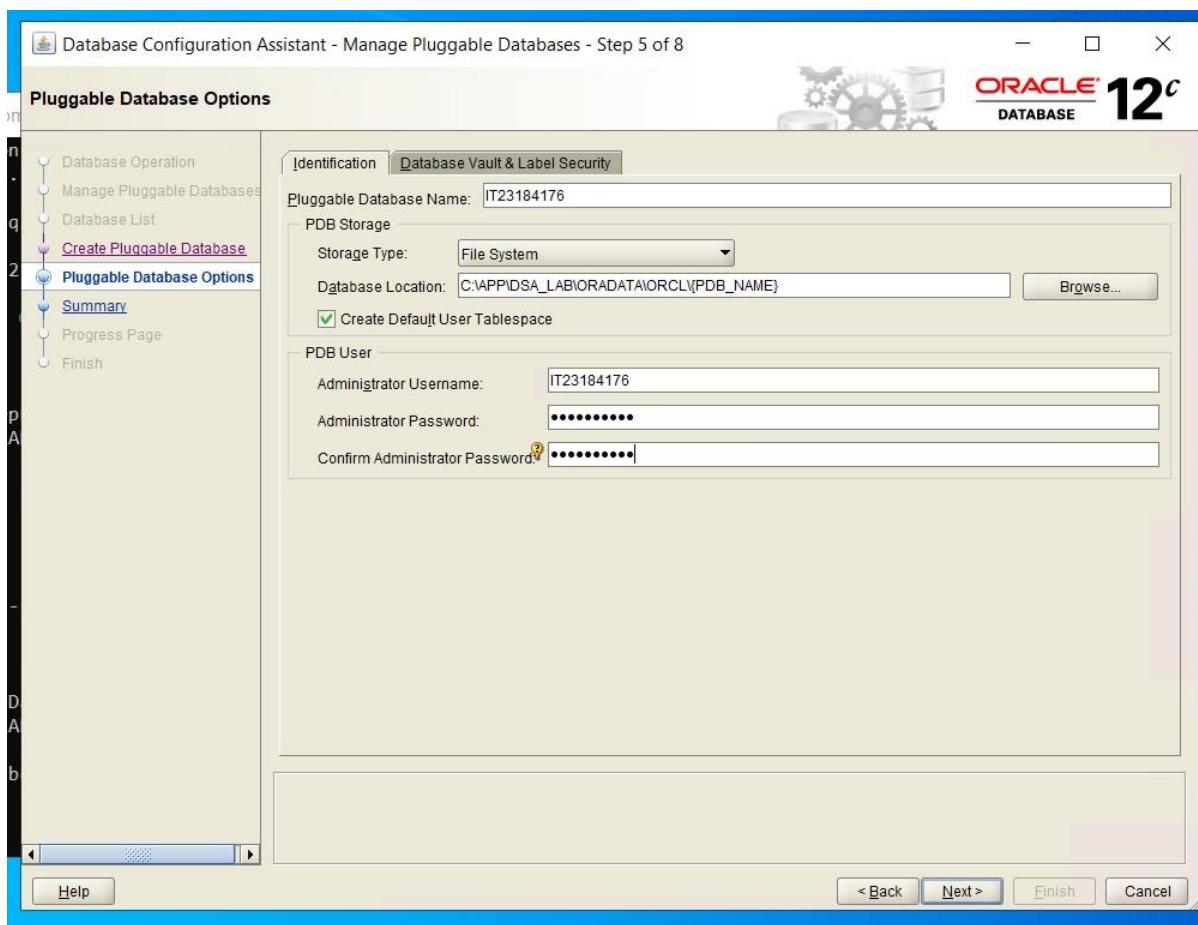


Figure B.2.6. Creating pdb step 5:

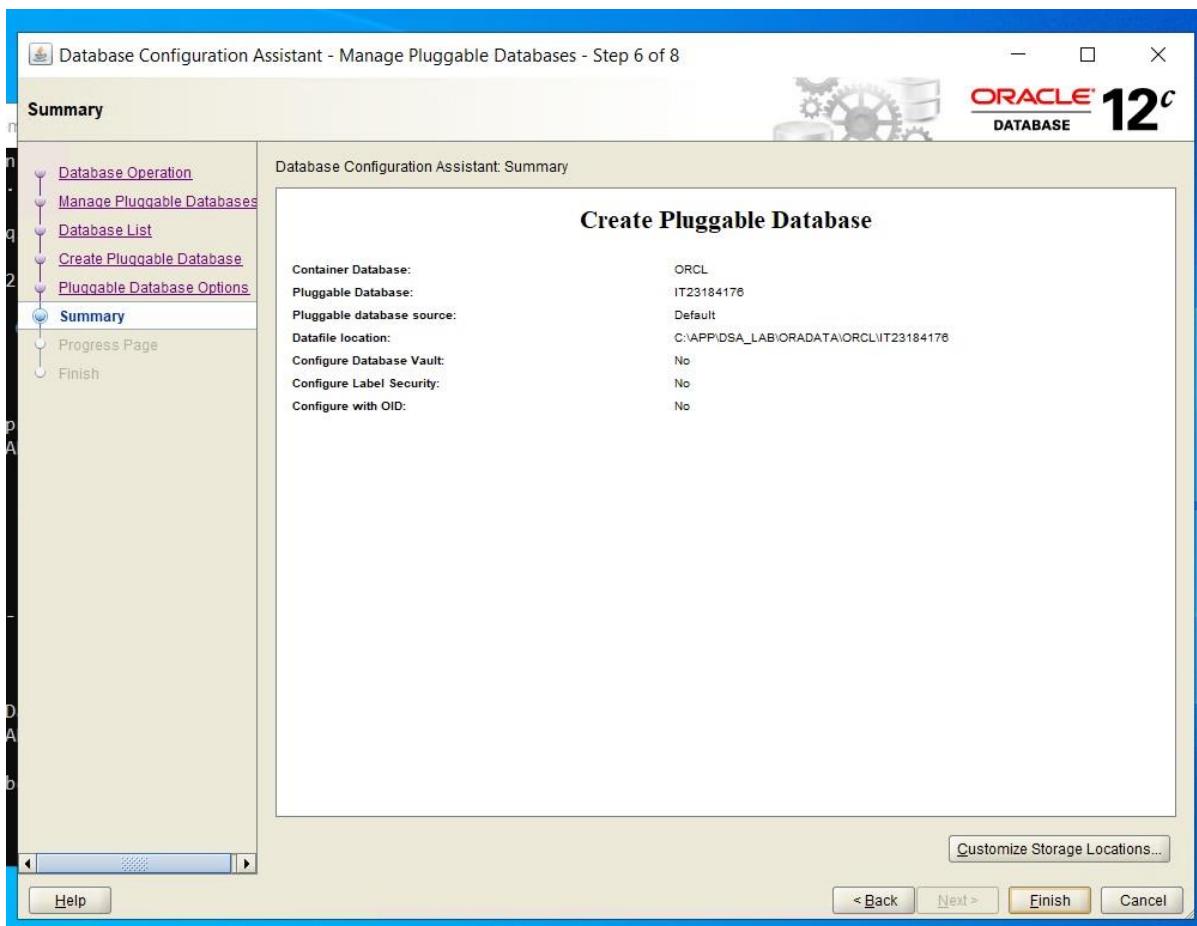


Figure B.2.7. Creating pdb step 6:

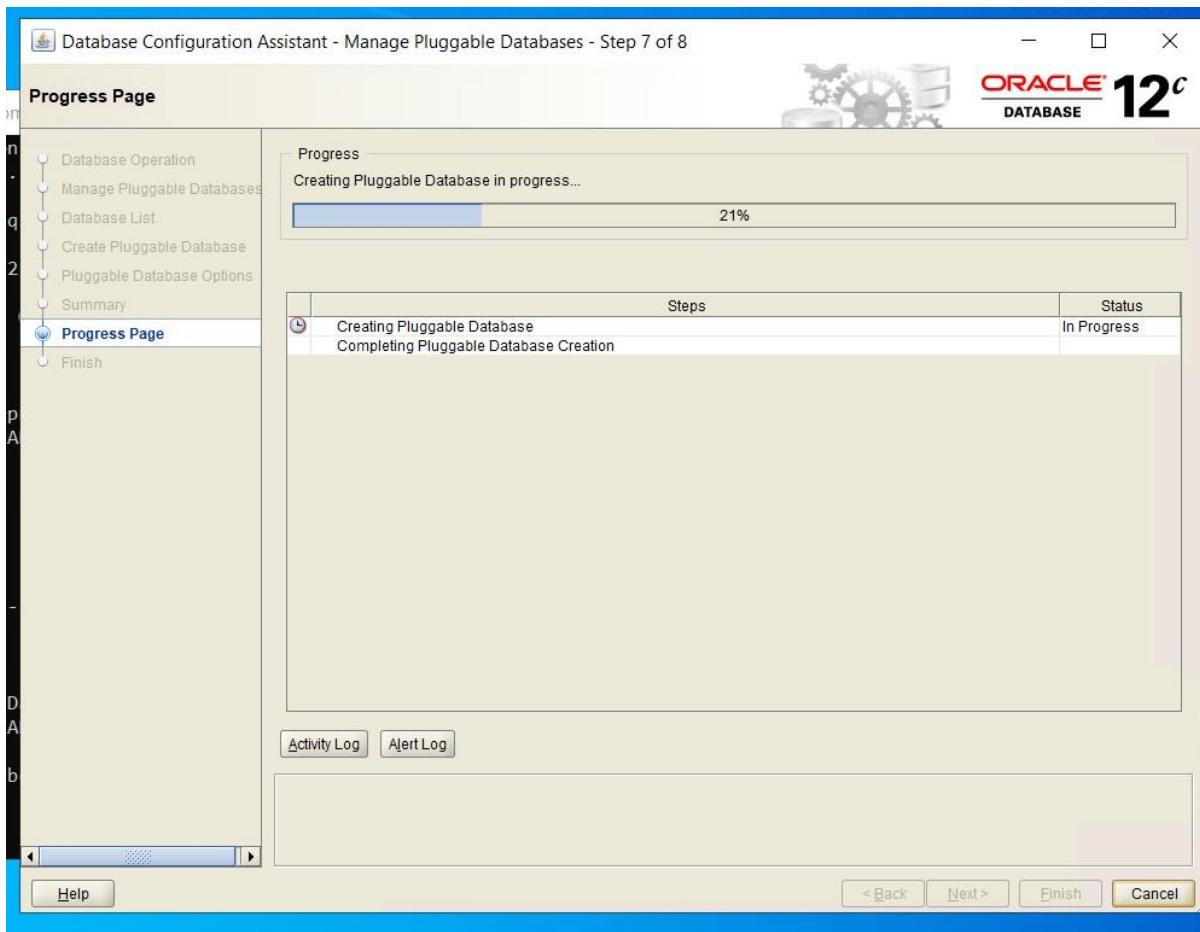


Figure B.2.8. Creating pdb step 7:

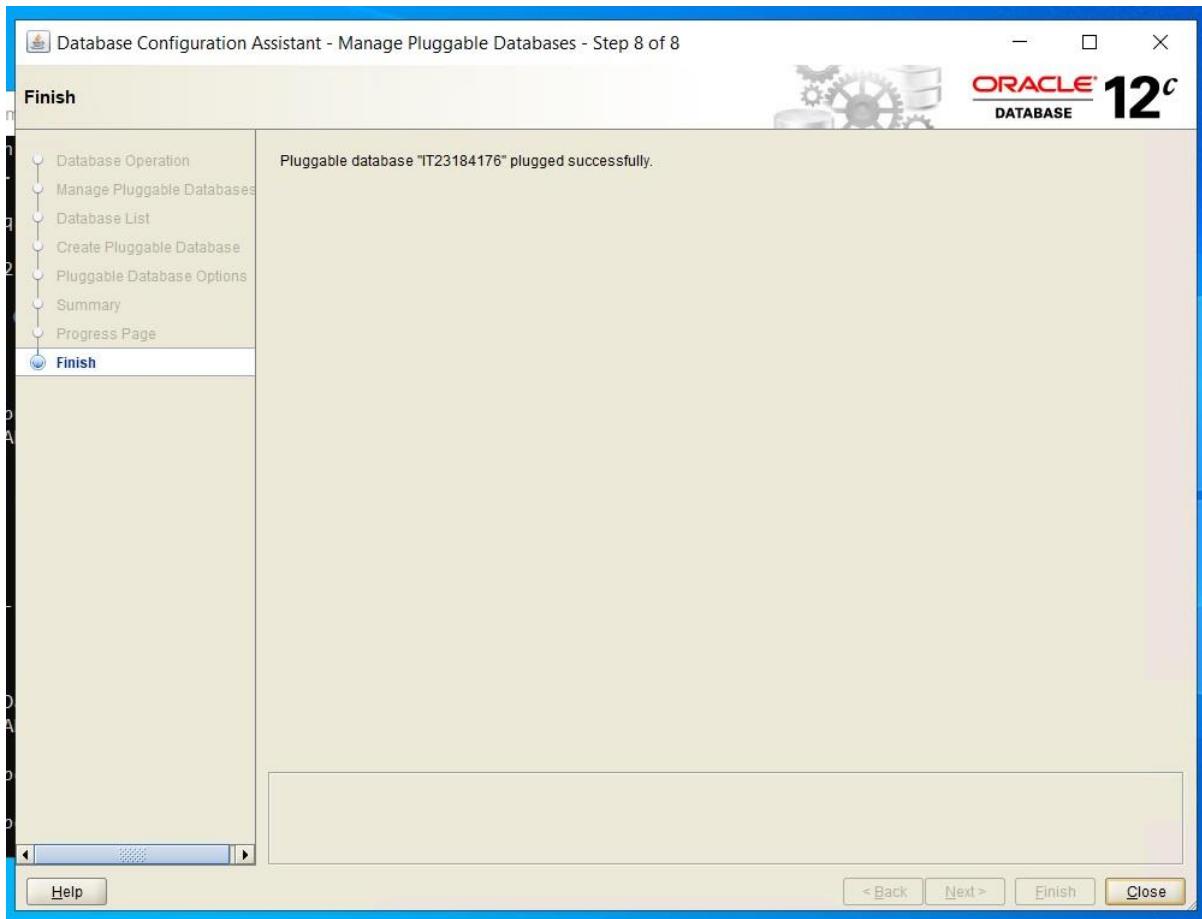


Figure B.2.9. Creating pdb step 8:

```
C:\Users\DSA_IT23184176>sqlplus / as sysdba
SQL*Plus: Release 12.1.0.2.0 Production on Tue Oct 15 03:34:23 2024
Copyright (c) 1982, 2014, Oracle. All rights reserved.

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> show pdbs
CON_ID CON_NAME          OPEN MODE  RESTRICTED
----- -----
  2 PDB$SEED            READ ONLY  NO
  3 PDBORCL             MOUNTED
  4 IT23184176          READ WRITE NO
SQL>
```

Figure B.2.10. Checking whether pdb is created:

C)Providing user administration and security.

1) Creating profile

```
SQL>
SQL>
SQL>
SQL> alter session set container=IT23184176
  2  ;
Session altered.

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

Profile created.

SQL> ■
```

Figure C.1.Crating profile:

2) Creating default table space

```
SQL> CREATE TABLESPACE ChalukaTS
  2  DATAFILE 'Chaluka_perm.dat'
  3  SIZE 100M
  4  REUSE
  5  AUTOEXTEND ON NEXT 10M  MAXSIZE 200M
  6  ;

Tablespace created.

SQL> ■
```

Figure C.2.Creating default table space:

3) Creating temporary table space

```
SQL> CREATE TEMPORARY TABLESPACE ChalukaTEMP  
2  TEMPFILE 'Chaluka_temp.dbf'  
3  SIZE 100M  
4  AUTOEXTEND ON  
5 ;  
  
Tablespace created.
```

Figure C.3.Creating temp tablespace:

4) Creating role.

```
c:\ Administrator: Command Prompt - sqlplus / as sysdba  
SQL> CREATE ROLE Receptionist;  
Role created.  
SQL> GRANT CONNECT,RESOURCE,DBA TO Receptionist;  
Grant succeeded.  
SQL> GRANT CREATE SESSION TO Receptionist;  
Grant succeeded.  
SQL> GRANT CREATE TABLE,  
2  CREATE VIEW,  
3  CREATE ANY PROCEDURE,  
4  CREATE SESSION,  
5  CREATE TRIGGER,  
6  CREATE SYNONYM to Receptionist;  
Grant succeeded.
```

Figure C.4.Creating role:

5) Creating user

```
SQL> CREATE USER Chaluka IDENTIFIED BY Chaluka123
  2  DEFAULT TABLESPACE ChalukaTS
  3  TEMPORARY TABLESPACE ChalukaTEMP
  4  QUOTA 50M ON ChalukaTS
  5  PROFILE Receptionist;

User created.

SQL> GRANT Receptionist to Chaluka;

Grant succeeded.

SQL>
```

Figure C.5.Creating user:

6) Connecting to user account that I have created in step 5 .

```
SQL> show pdbs

  CON_ID CON_NAME           OPEN MODE  RESTRICTED
----- -----
        4 IT23184176          READ WRITE NO
SQL> connect Chaluka/Chaluka123@localhost/IT23184176;
Connected.
SQL>
```

Figure C.6.Connecting to user account:

D) Managing Schema Objects.

- 1) Create Database connection in SQL developer. (Use the newly created pluggable DB name as the service name)

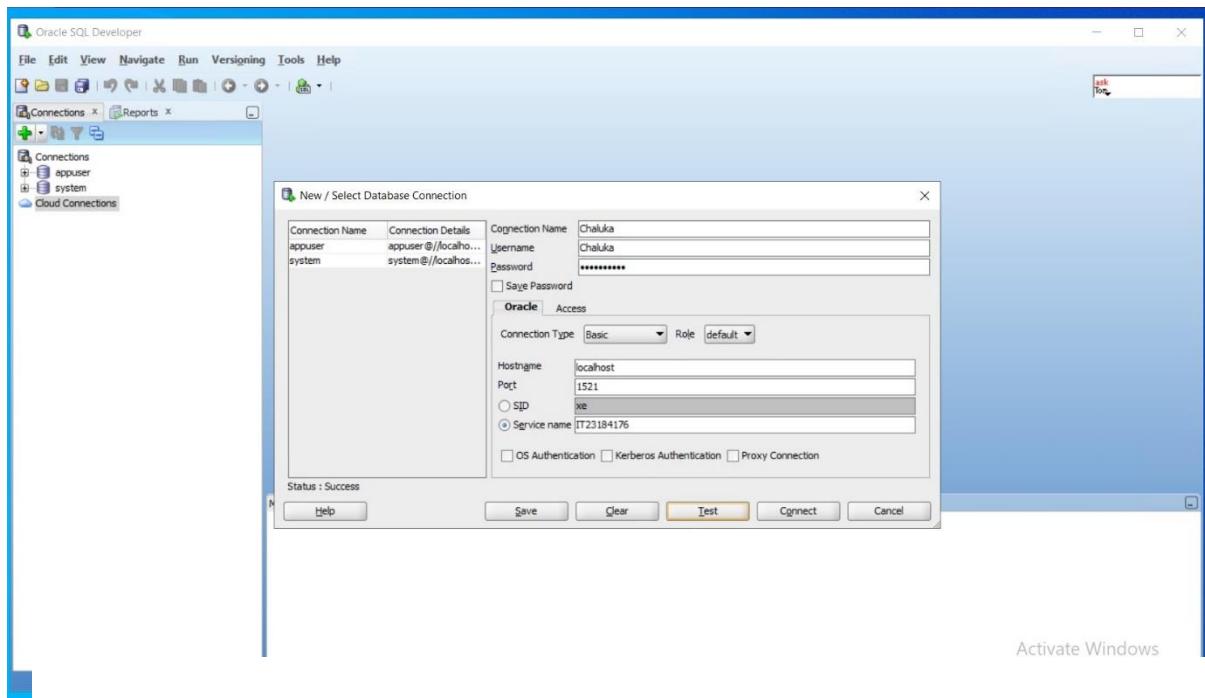


Figure D.1.creating db connection:

- 2) Checking whether the user created in part C is available in the users list.

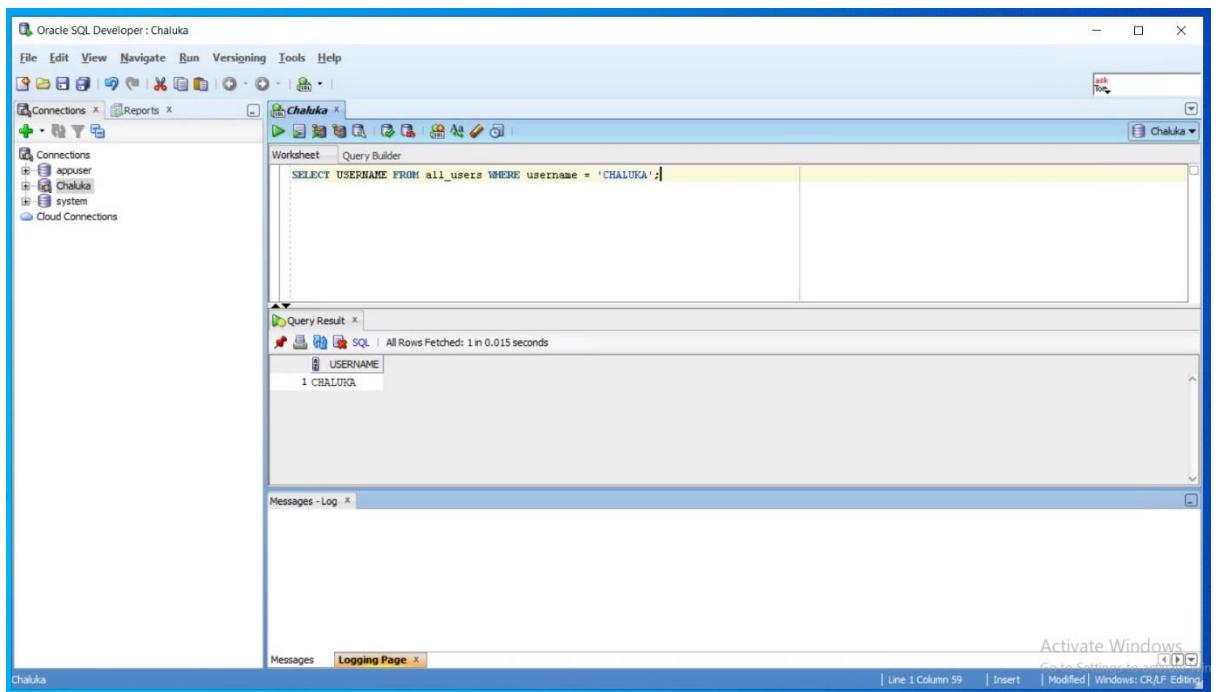


Figure D.2.Checking user creation:

- 3) Create a new table to save the “HotelReservations” dataset given in the courseweb.

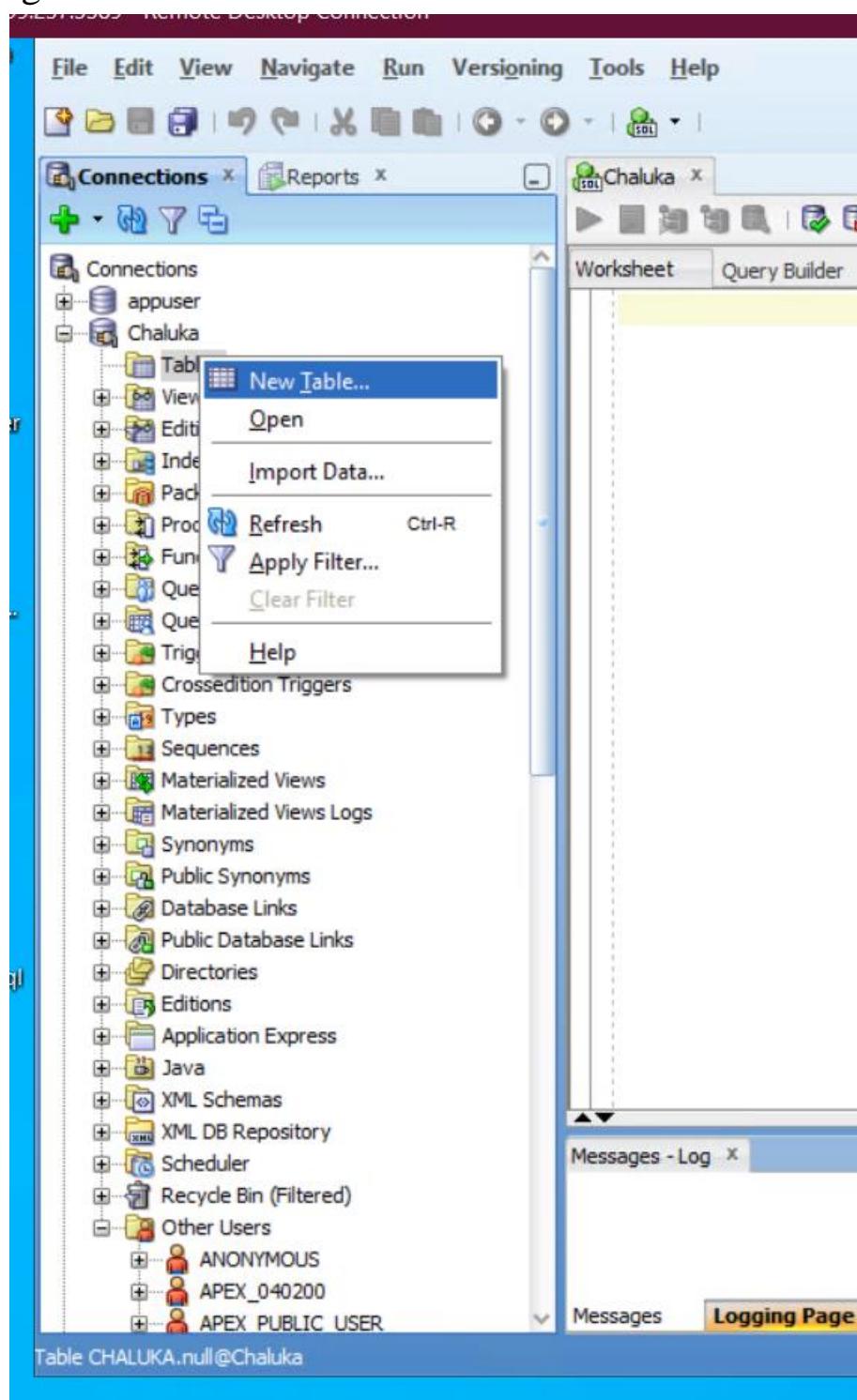


Figure D.3.1.Creating new table step 1:

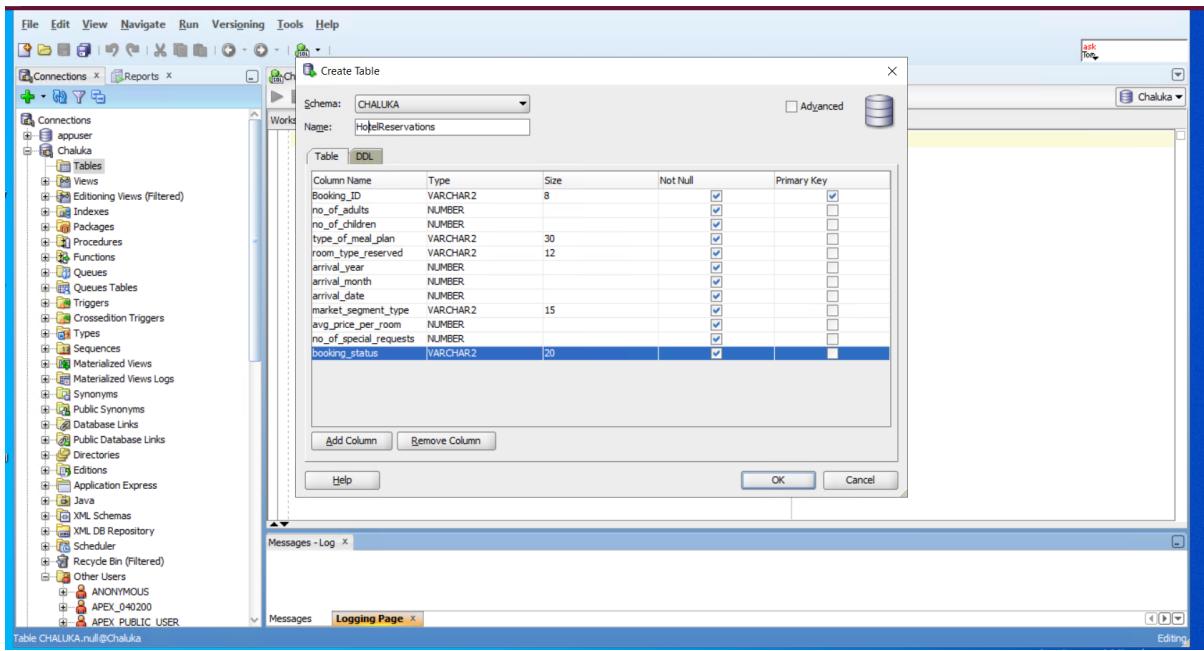


Figure D.3.2. Creating new table step 2:

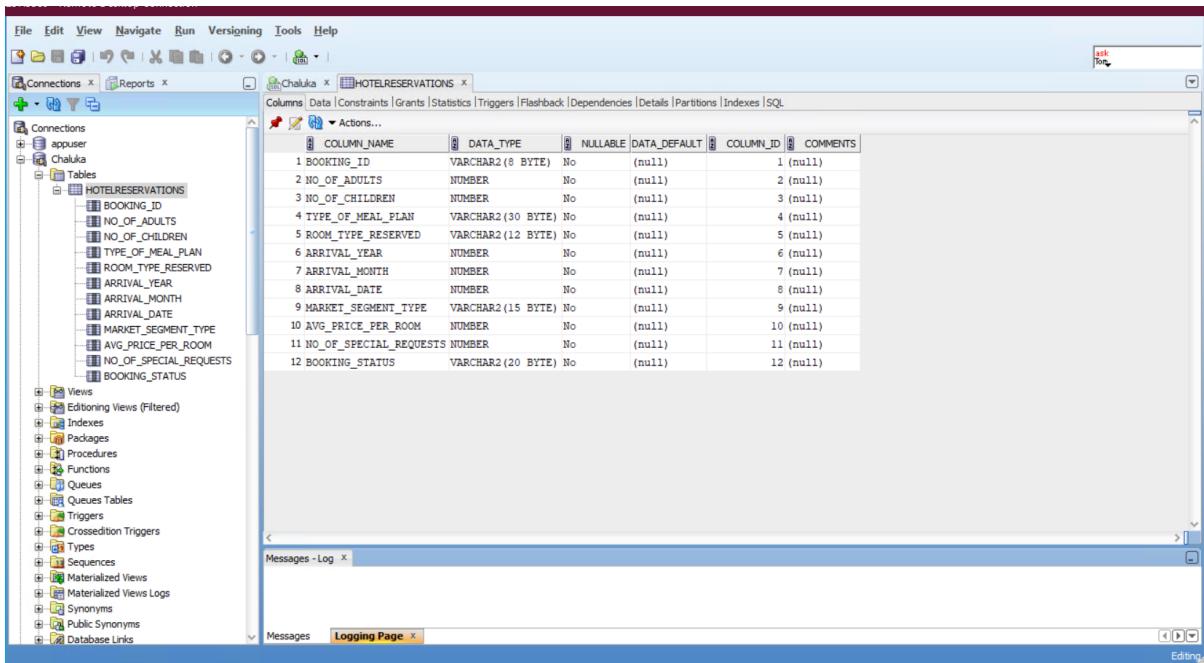


Figure D.3.3.Table created:

4) Load the HotelReservations data into the newly created table.

The screenshot shows the Oracle SQL Developer interface. In the left sidebar, under 'Tables' for the 'HOTELRESERVATIONS' table, the 'Import Data...' option is highlighted in a context menu. The main pane displays the table's columns and their definitions:

COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
BOOKING_ID	VARCHAR2(8 BYTE)	No	(null)	1	(null)
NO_OF_ADULTS	NUMBER	No	(null)	2	(null)
NO_OF_CHILDREN	NUMBER	No	(null)	3	(null)
TYPE_OF_MEAL_PLAN	VARCHAR2(30 BYTE)	No	(null)	4	(null)
ROOM_TYPE_RESERVED	VARCHAR2(12 BYTE)	No	(null)	5	(null)
ARRIVAL_YEAR	NUMBER	No	(null)	6	(null)
ARRIVAL_MONTH	NUMBER	No	(null)	7	(null)
ARRIVAL_DATE	NUMBER	No	(null)	8	(null)
MARKET_SEGMENT_TYPE	VARCHAR2(15 BYTE)	No	(null)	9	(null)
AVG_PRICE_PER_ROOM	NUMBER	No	(null)	10	(null)
NO_OF_SPECIAL_REQUESTS	NUMBER	No	(null)	11	(null)
BOOKING_STATUS	VARCHAR2(20 BYTE)	No	(null)	12	(null)

Figure D.4.1 Loading data step 1:

The screenshot shows the 'Open' dialog box from Oracle SQL Developer. The 'Location:' field is set to 'C:\Users\DSA_IT23184176\Desktop'. The file 'HotelReservations.csv' is selected in the list. The 'File name:' field contains 'HotelReservations.csv' and the 'File type:' dropdown is set to 'Microsoft Excel(.xls), Microsoft Excel(.xlsx), CSV (.csv), Text (.tsv) and DSV (.dsv) ...'. The 'Open' and 'Cancel' buttons are at the bottom right.

Figure D.4.2 loading data step 2:

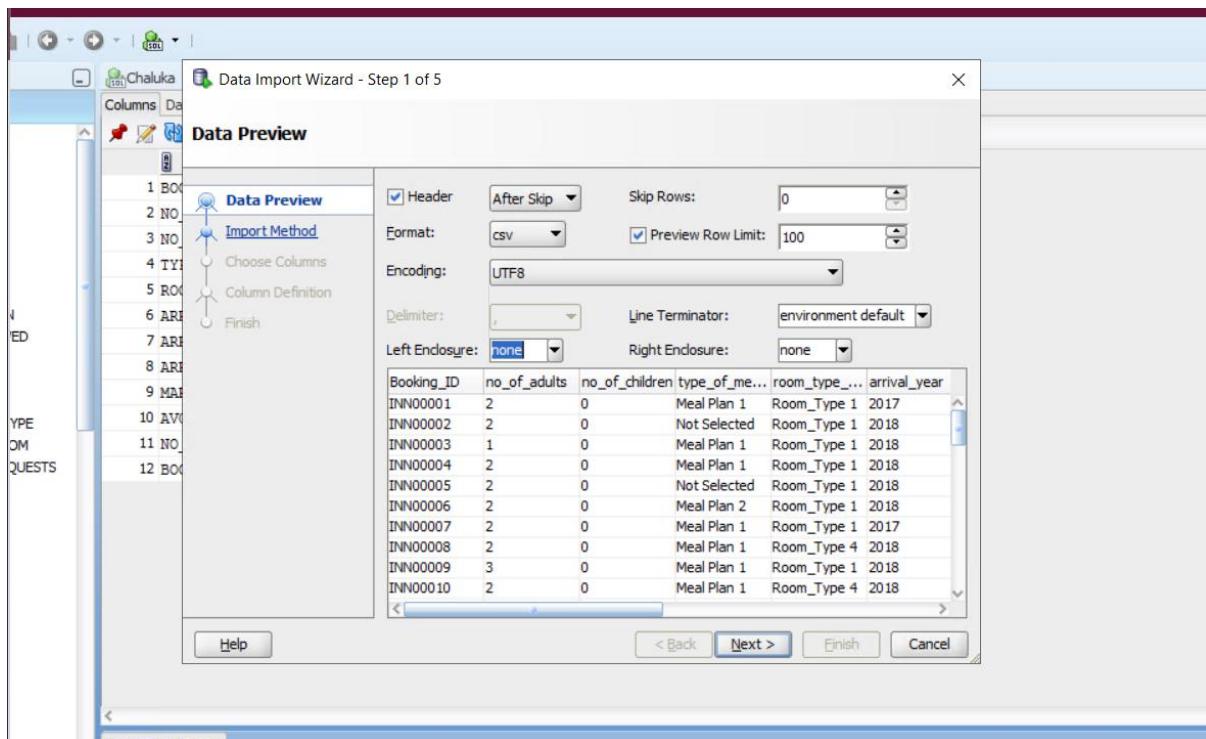


Figure D.4.3>Loading data step 3:

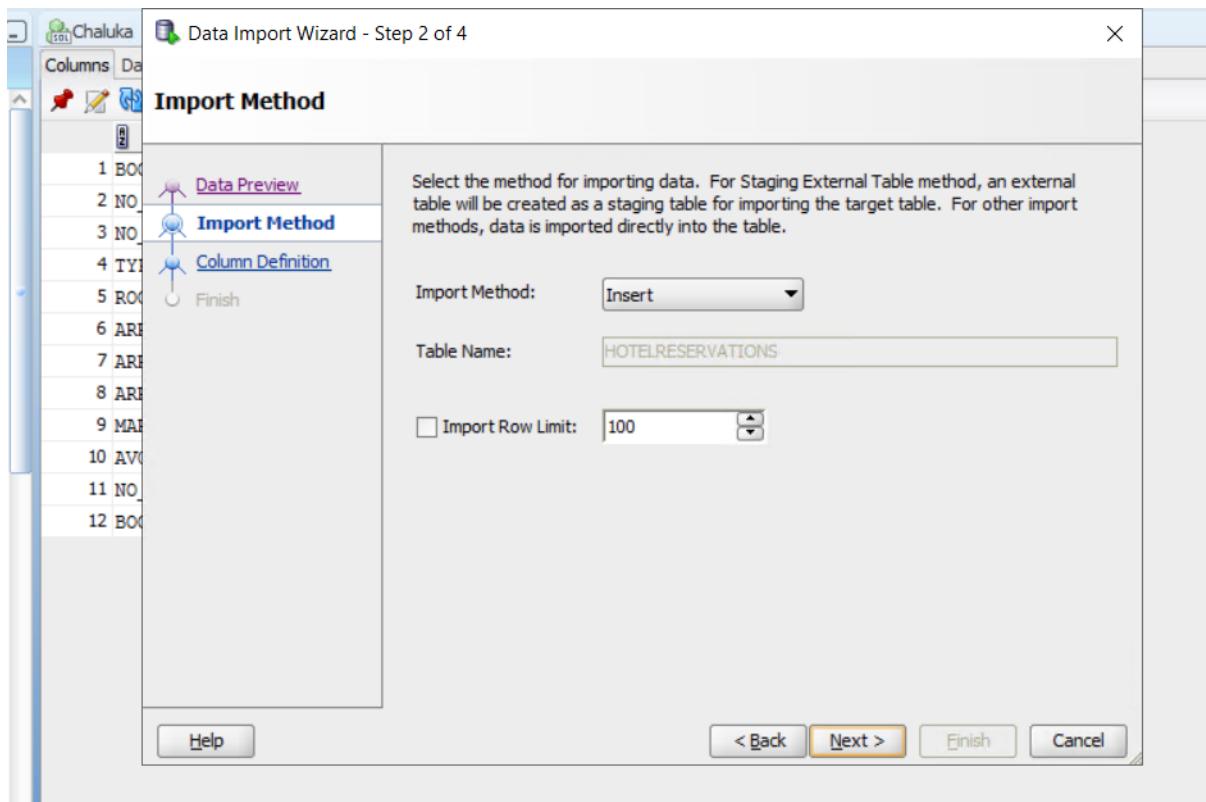


Figure D.4.4>Loading data step 4:

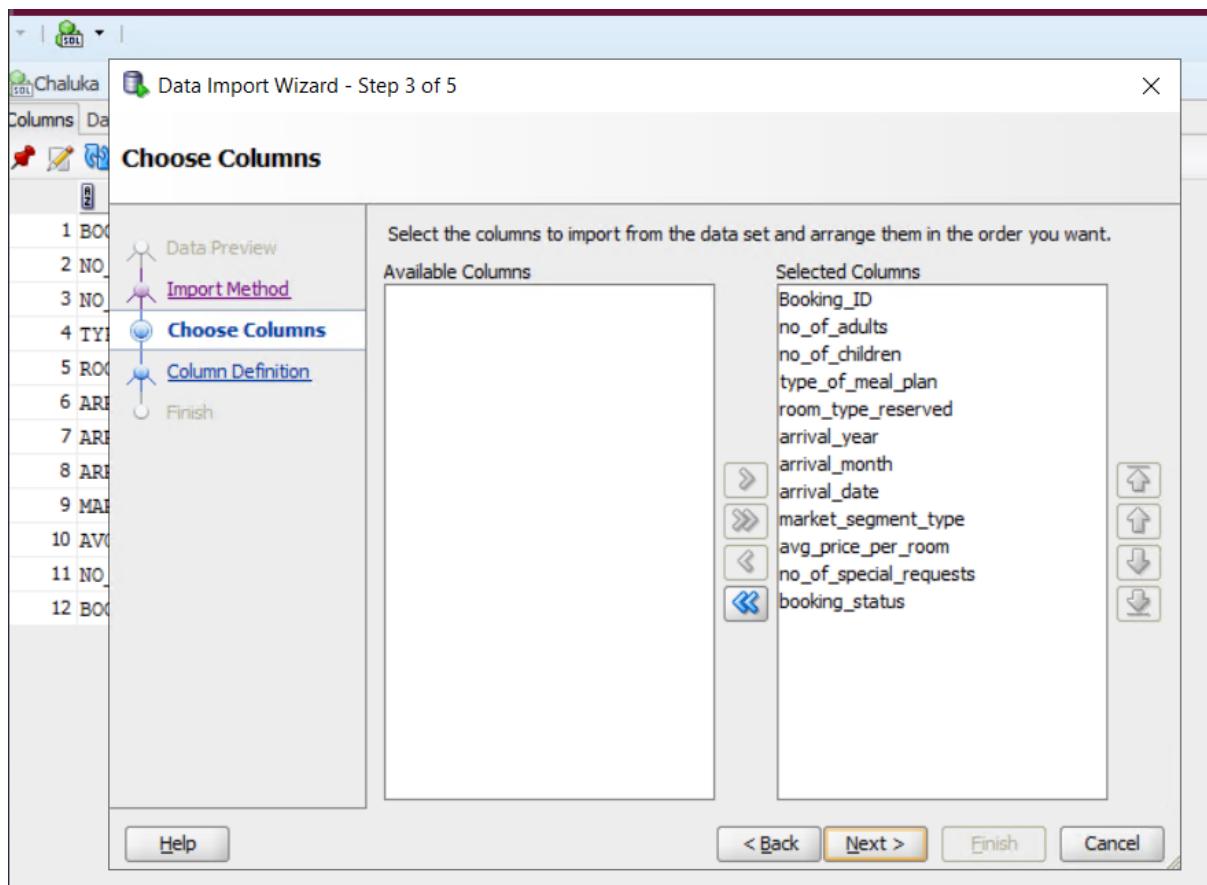


Figure D.4.5>Loading data step 5:

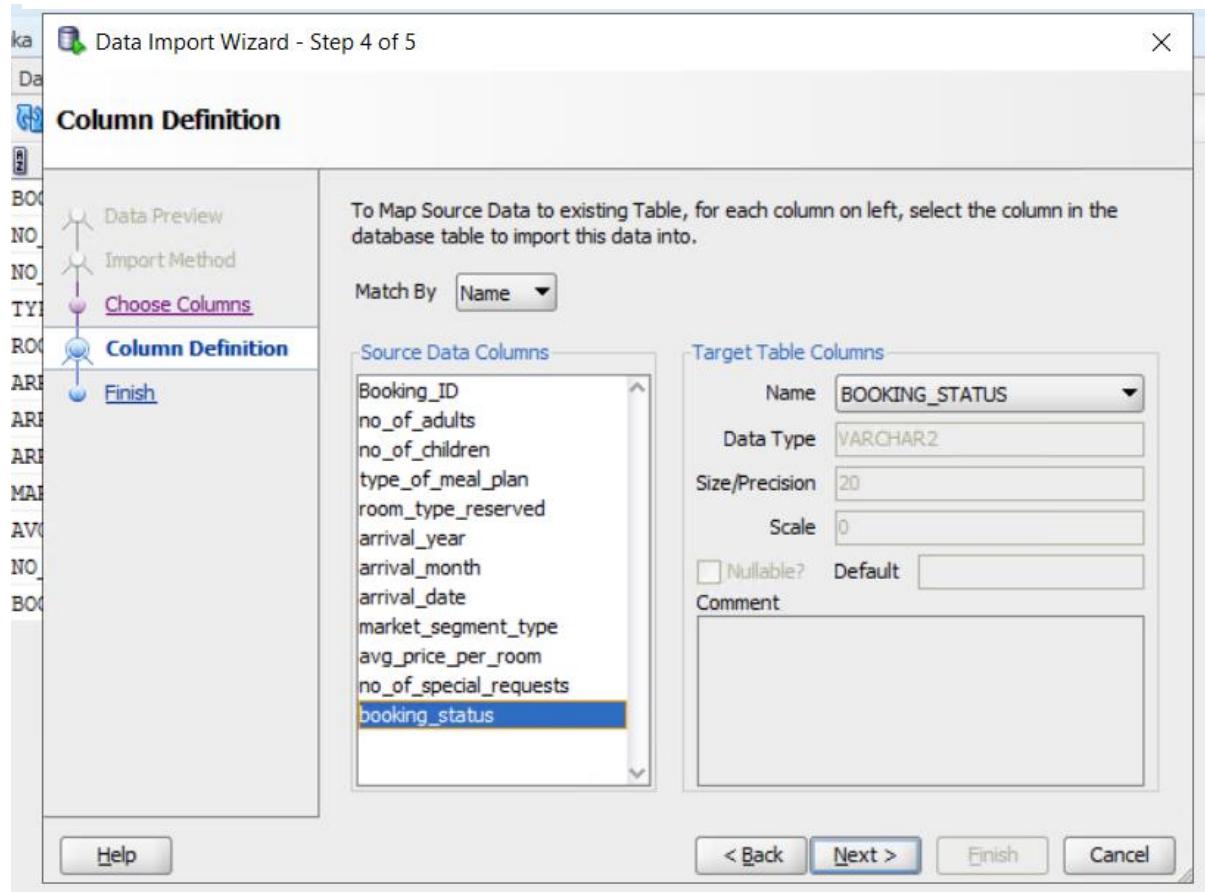


Figure D.4.6>Loading data step 6:

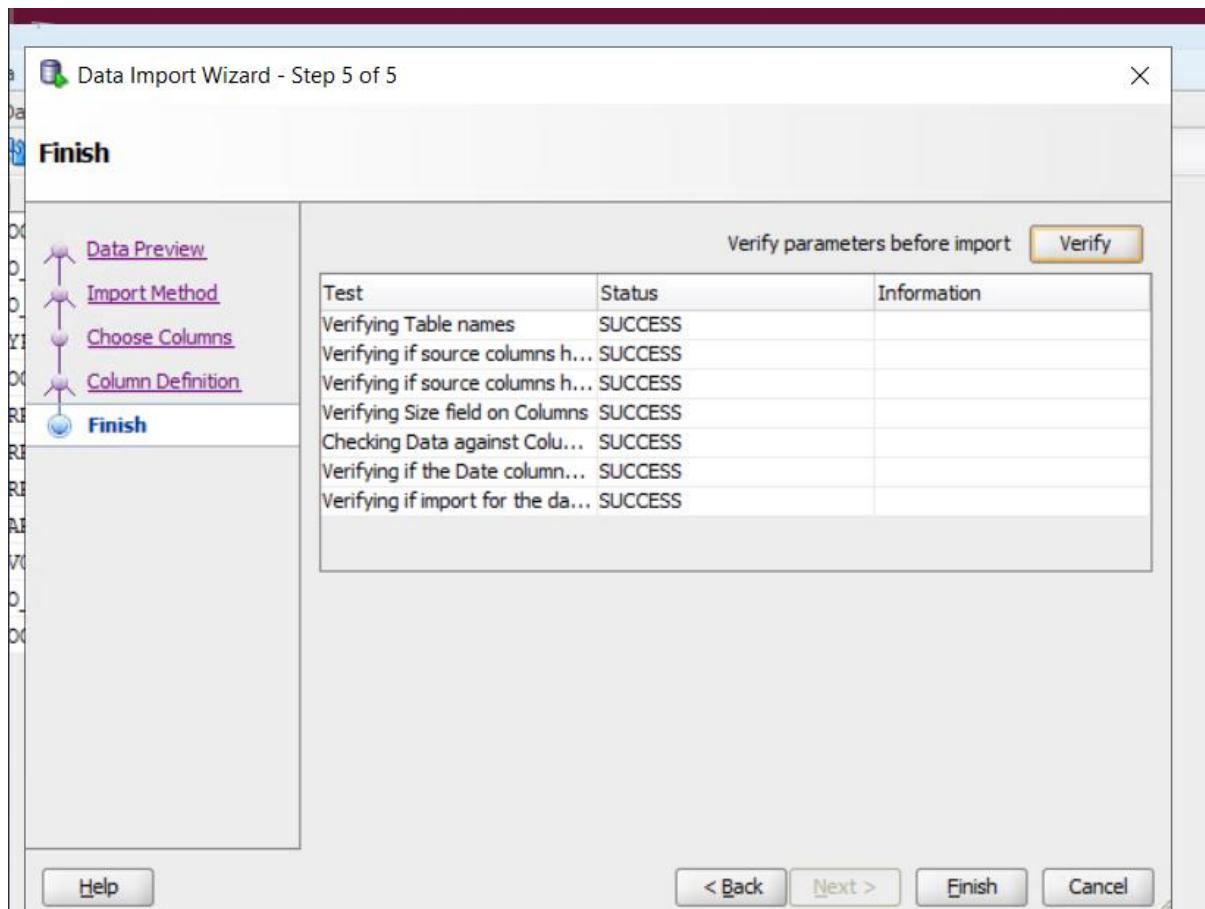


Figure D.4.5>Loading data step 7:

Actions...					
COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	CO
F_ID	VARCHAR2(8 BYTE)	No	(null)	1	(null)
F_ADULTS					(null)
F_CHILDREN					(null)
F_MEAL_PLAN					(null)
TYPE_RESERVED					(null)
VAL_YEAR					(null)
VAL_MONTH					(null)
VAL_DATE					(null)
ST_SEGMENT_TYPE	VARCHAR2(15 BYTE)	No	(null)	9	(null)
PRICE_PER_ROOM	NUMBER	No	(null)	10	(null)
F_CREDIT_DETECTED_NUMBER					(null)

Import Data

Import Data into table HOTELRESERVATIONS from file HotelReservations.csv . Task successful and import committed.

OK

Figure D.4.6>Data imported successed:

File Edit View Navigate Run Versioning Tools Help

Connections Reports Chaluka HOTELRESERVATIONS

Columns Data Constraints Grants Statistics Triggers Flashback Dependencies Details Partitions Indexes SQL

Actions... Sort... Filter...

HOTELRESERVATIONS

	BOOKING_ID	NO_OF_ADULTS	NO_OF_CHILDREN	TYPE_OF_MEAL_PLAN	ROOM_TYPE_RESERVED	ARRIVAL_YEAR	ARRIVAL_MONTH	ARRIVAL_DATE	MARKET
1	INN00001	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Offline
2	INN00002	2	0	Not Selected	Room_Type 1	2018	11	2018-11-01	Online
3	INN00003	1	0	Meal Plan 1	Room_Type 1	2018	2	2018-02-01	Online
4	INN00004	2	0	Meal Plan 1	Room_Type 1	2018	5	2018-05-01	Online
5	INN00005	2	0	Not Selected	Room_Type 1	2018	4	2018-04-01	Online
6	INN00006	2	0	Meal Plan 2	Room_Type 1	2018	9	2018-09-01	Online
7	INN00007	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Online
8	INN00008	2	0	Meal Plan 1	Room_Type 4	2018	12	2018-12-01	Online
9	INN00009	3	0	Meal Plan 1	Room_Type 1	2018	7	2018-07-01	Offline
10	INN00010	2	0	Meal Plan 1	Room_Type 4	2018	10	2018-10-01	Online
11	INN00011	1	0	Not Selected	Room_Type 1	2018	9	2018-09-01	Online
12	INN00012	1	0	Meal Plan 1	Room_Type 4	2018	4	2018-04-01	Online
13	INN00013	2	0	Not Selected	Room_Type 1	2018	11	2018-11-01	Online
14	INN00014	1	0	Meal Plan 1	Room_Type 1	2018	11	2018-11-01	Online
15	INN00015	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Online
16	INN00016	2	0	Meal Plan 2	Room_Type 1	2018	6	2018-06-01	Online
17	INN00017	1	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Offline
18	INN00018	2	0	Not Selected	Room_Type 1	2017	8	2017-08-01	Online
19	INN00019	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Online
20	INN00020	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Offline
21	INN00021	2	0	Meal Plan 1	Room_Type 1	2017	10	2017-10-01	Online

Messages - Log X
Executing insert for rows 1 through 49

Figure D.4.7. Viewing loaded data:

5) Creating an index to the table based on the “avg_price_per_room” column in the data sheet.

The screenshot shows the Oracle SQL Developer interface. On the left, the Connections pane shows a connection to 'Chaluka'. In the center, the 'HOTELRESERVATIONS' table is selected in the 'Tables' section of the Object Navigator. A context menu is open over the table, with the 'Index' option highlighted. Under 'Index', three options are visible: 'Create Index...', 'Drop...', and 'Rebuild...'. The 'Create Index...' option is the target of the mouse cursor. To the right of the table, the data grid displays 21 rows of booking information. At the bottom, the 'Logging Page' tab is active in the message bar.

BOOKING_ID	NO_OF_ADULTS	NO_OF_CHILDREN	TYPE_OF_MEAL_PLAN	ROOM_TYPE_RESERVED	ARRIVAL_DATE
INN00001	2	0	Meal Plan 1	Room_Type 1	
INN00002	2	0	Not Selected	Room_Type 1	
INN00003	1	0	Meal Plan 1	Room_Type 1	
INN00004	2	0	Meal Plan 1	Room_Type 1	
INN00005	2	0	Not Selected	Room_Type 1	
INN00006	2	0	Meal Plan 2	Room_Type 1	
INN00007	2	0	Meal Plan 1	Room_Type 1	
INN00008	2	0	Meal Plan 1	Room_Type 4	
INN00009	3	0	Meal Plan 1	Room_Type 1	
INN00010	2	0	Meal Plan 1	Room_Type 4	
INN00011	1	0	Not Selected	Room_Type 1	
	1	0	Meal Plan 1	Room_Type 4	
	2	0	Not Selected	Room_Type 1	
	1	0	Meal Plan 1	Room_Type 1	
INN00015	2	0	Meal Plan 1	Room_Type 1	
INN00016	2	0	Meal Plan 2	Room_Type 1	
INN00017	1	0	Meal Plan 1	Room_Type 1	
INN00018	2	0	Not Selected	Room_Type 1	
INN00019	2	0	Meal Plan 1	Room_Type 1	
INN00020	2	0	Meal Plan 1	Room_Type 1	
INN00021	2	0	Meal Plan 1	Room_Type 1	

Figure D.5.1.Creating index step 1:

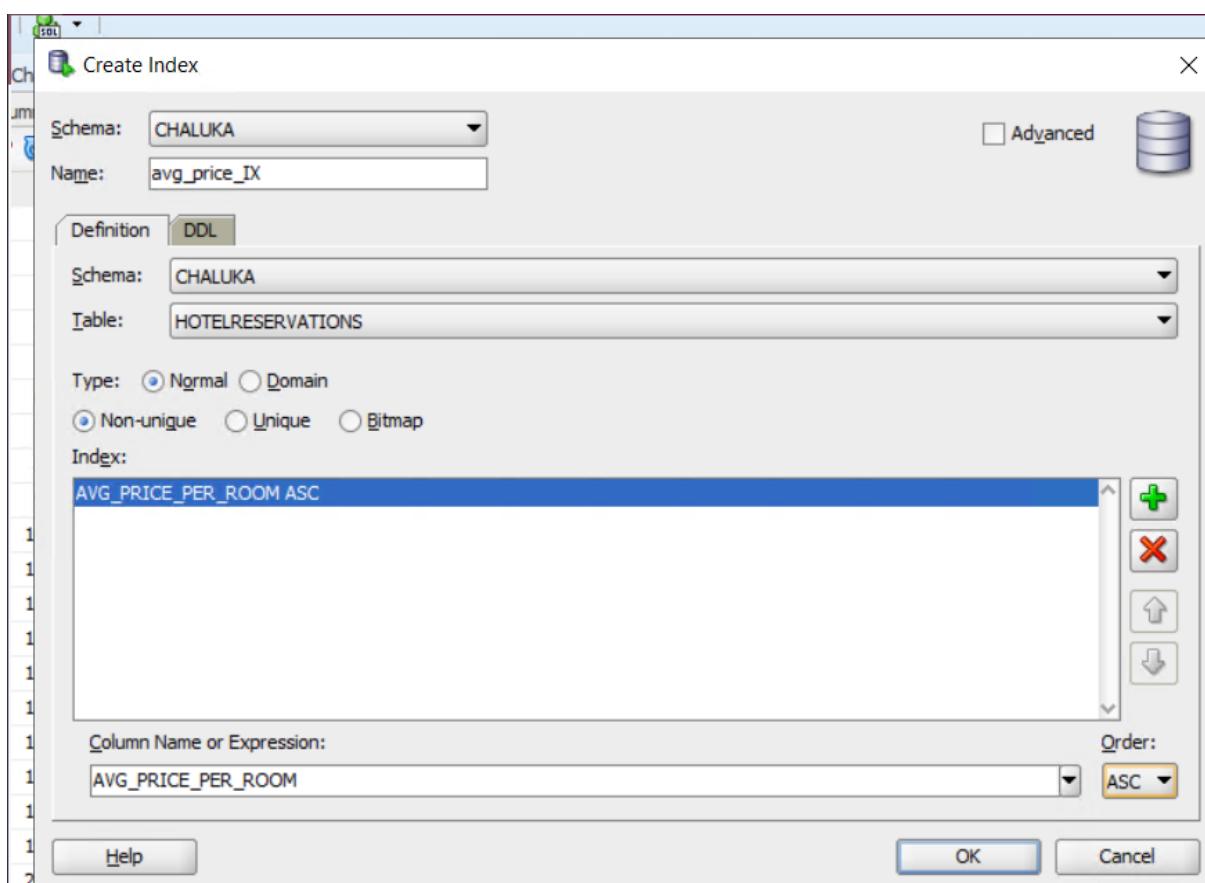


Figure D.5.2. Creating index step 2:

INDEX_OWNER	INDEX_NAME	TABLE_OWNER	TABLE_NAME	COLUMN_NAME	COLUMN_POSITION	DESCEND
CHALUKA	AVG_PRICE_IX	CHALUKA	HOTELRESERVATIONS	AVG_PRICE_PER_ROOM	1	ASC

Figure D.5.3. Viewing created index:

Thank you!