PRACTICAL NO 1

Global Schema in DDB

Abhishek Ojha
Seat No 027

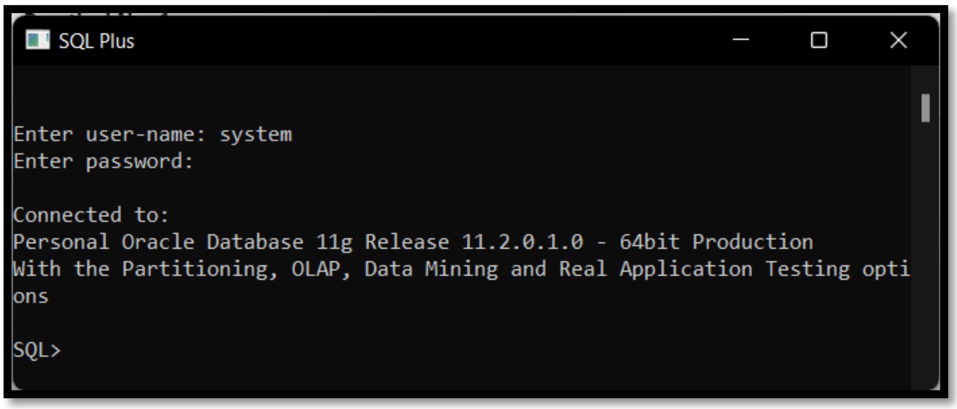
ADVANCED DATABASE

Practical No: 1

Aim: For a given a global conceptual schema, divide the schema into horizontal and vertical fragmentation and place them on different nodes. Execute queries on these fragments that will demonstrate distributed databases environment.

Software Requirement:

Oracle Database 11g

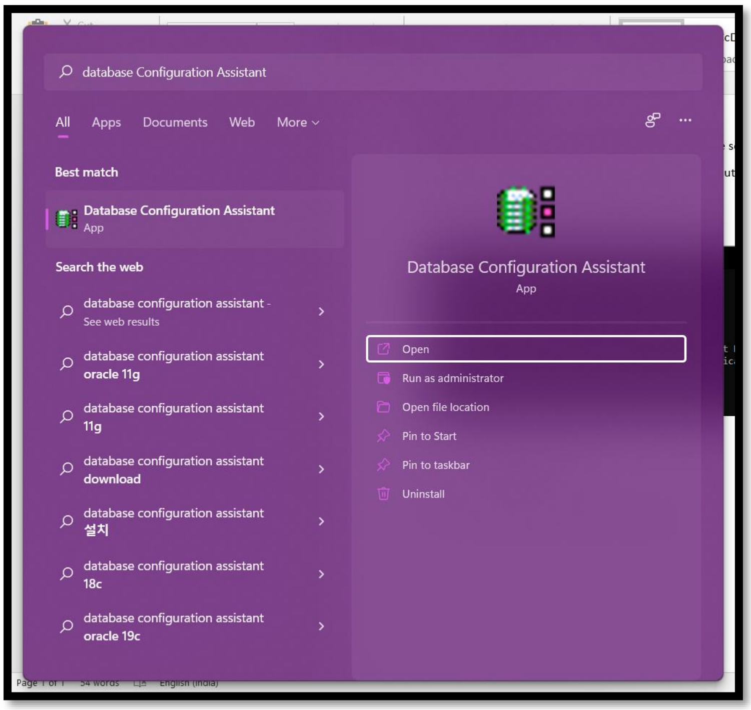


```
Enter user-name: system
Enter password:

Connected to:
Personal Oracle Database 11g Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing opti
ons

SQL>
```

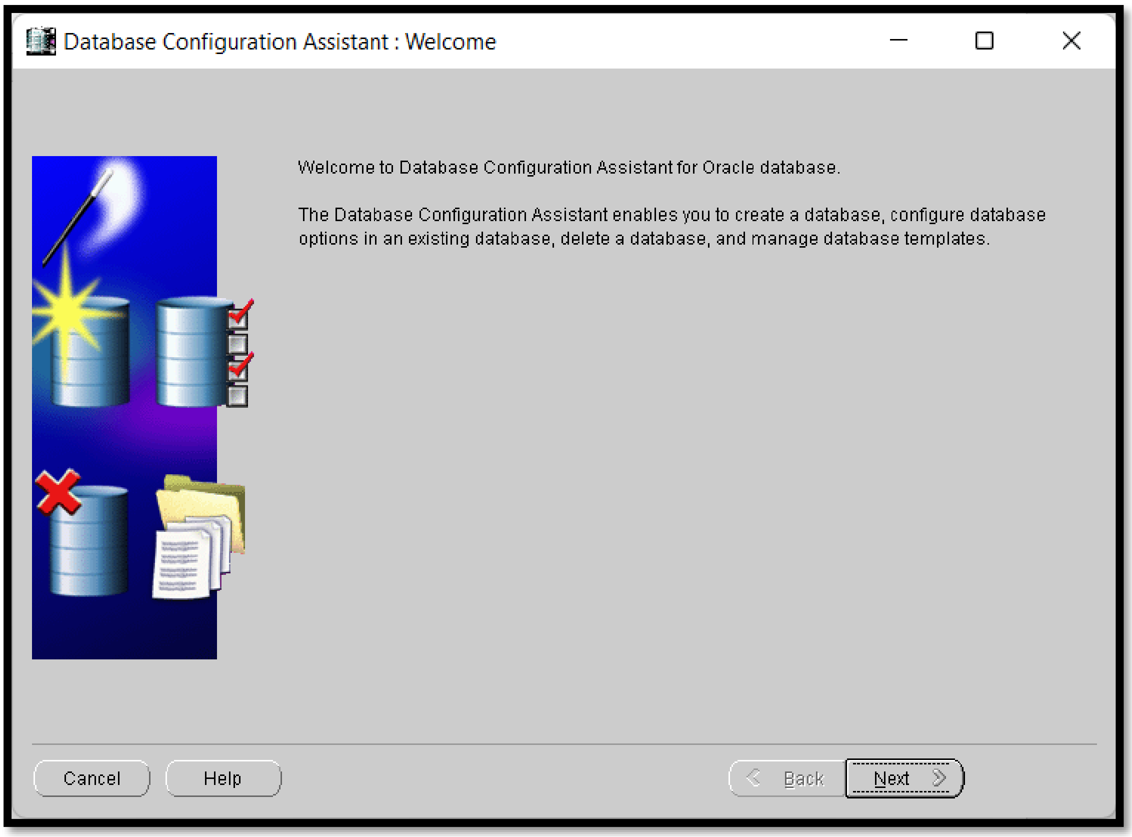
How to Create Two Database

Steps to Create Database db1 and db2

Step 1 :- Open Start Menu on Window Explorer Go to Database Configuration Assistant


database Configuration Assistant
All
Apps
Documents
Web
More
Best match
Database Configuration Assistant
App
Search the web
database configuration assistant - See web results
database configuration assistant oracle 11g
database configuration assistant 11g
database configuration assistant download
database configuration assistant 설치
database configuration assistant 18c
database configuration assistant oracle 19c
Database Configuration Assistant
App
Open
Run as administrator
Open file location
Pin to Start
Pin to taskbar
Uninstall

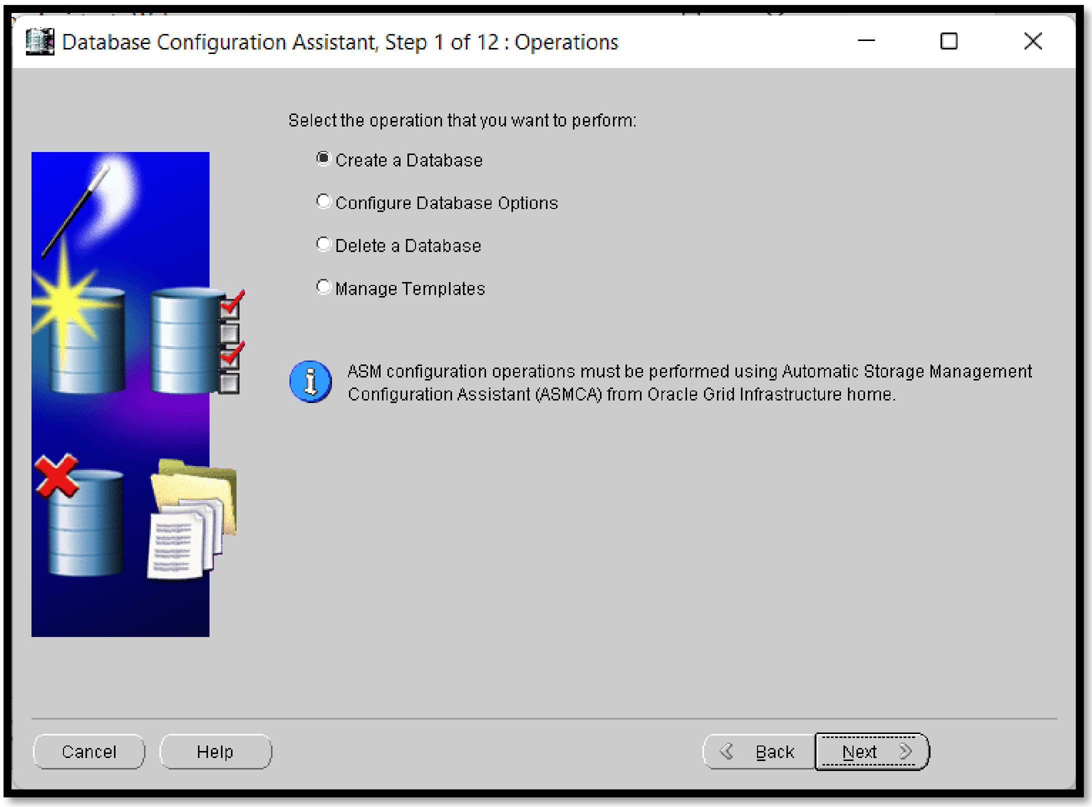
Step 2: Click on Next


Database Configuration Assistant : Welcome

Welcome to Database Configuration Assistant for Oracle database.

The Database Configuration Assistant enables you to create a database, configure database options in an existing database, delete a database, and manage database templates.

Step 3: Select Option Create a Database

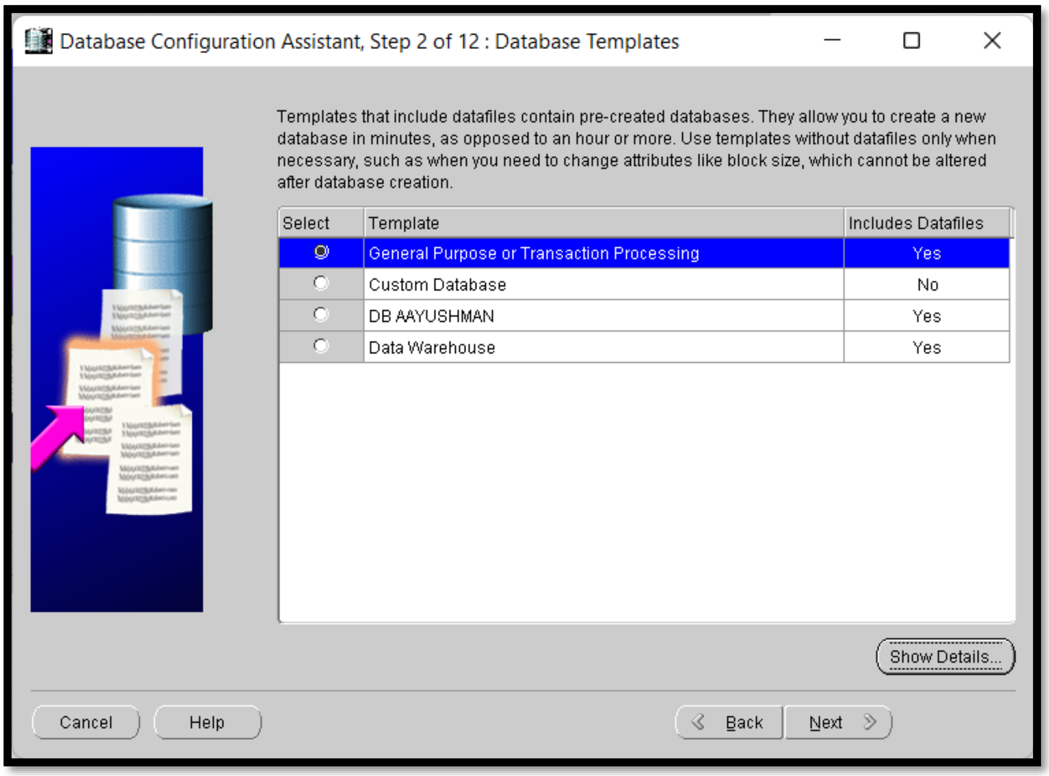

Database Configuration Assistant, Step 1 of 12 : Operations

Select the operation that you want to perform:

- [✓ Create a Database]
- Configure Database Options
- Delete a Database
- Manage Templates

ASM configuration operations must be performed using Automatic Storage Management Configuration Assistant (ASMCA) from Oracle Grid Infrastructure home.

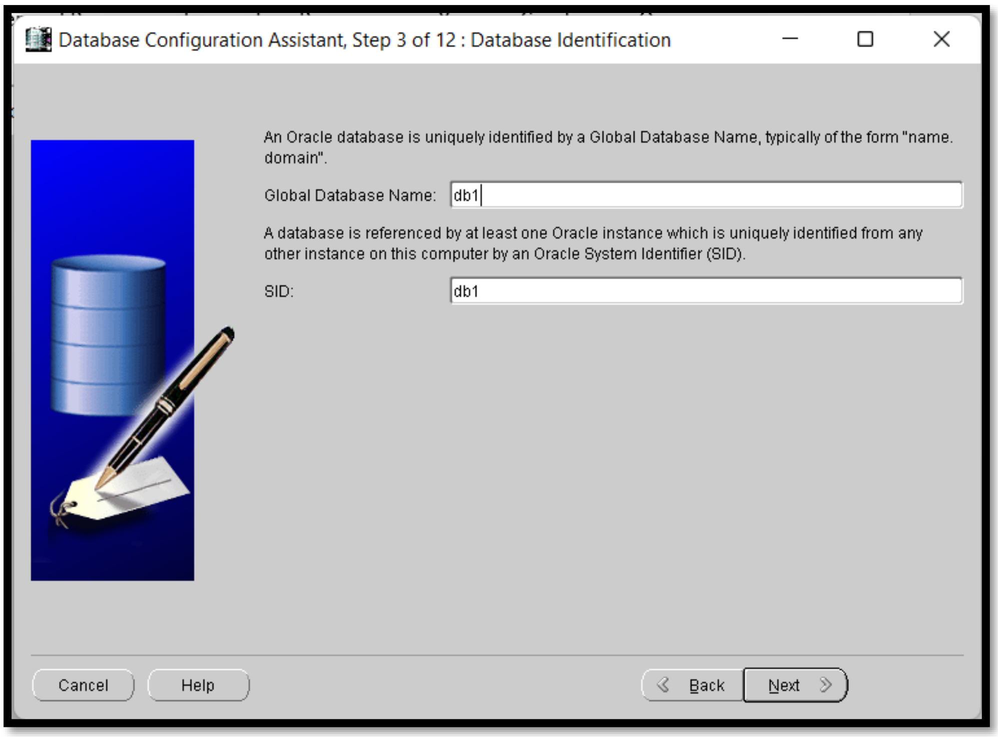
Step 4: Select Option General Purpose or Transaction Processing or You can Create your Own Custom Database.


Database Configuration Assistant, Step 2 of 12 : Database Templates
Show Details...
Cancel
Help
Back
Next

Templates that include datafiles contain pre-created databases. They allow you to create a new database in minutes, as opposed to an hour or more. Use templates without datafiles only when necessary, such as when you need to change attributes like block size, which cannot be altered after database creation.

Select	Template	Includes Datafiles
●	General Purpose or Transaction Processing	Yes
○	Custom Database	No
○	DB AAYUSHMAN	Yes
○	Data Warehouse	Yes

Step 5: Give Database Name as db1 (of your own choice)

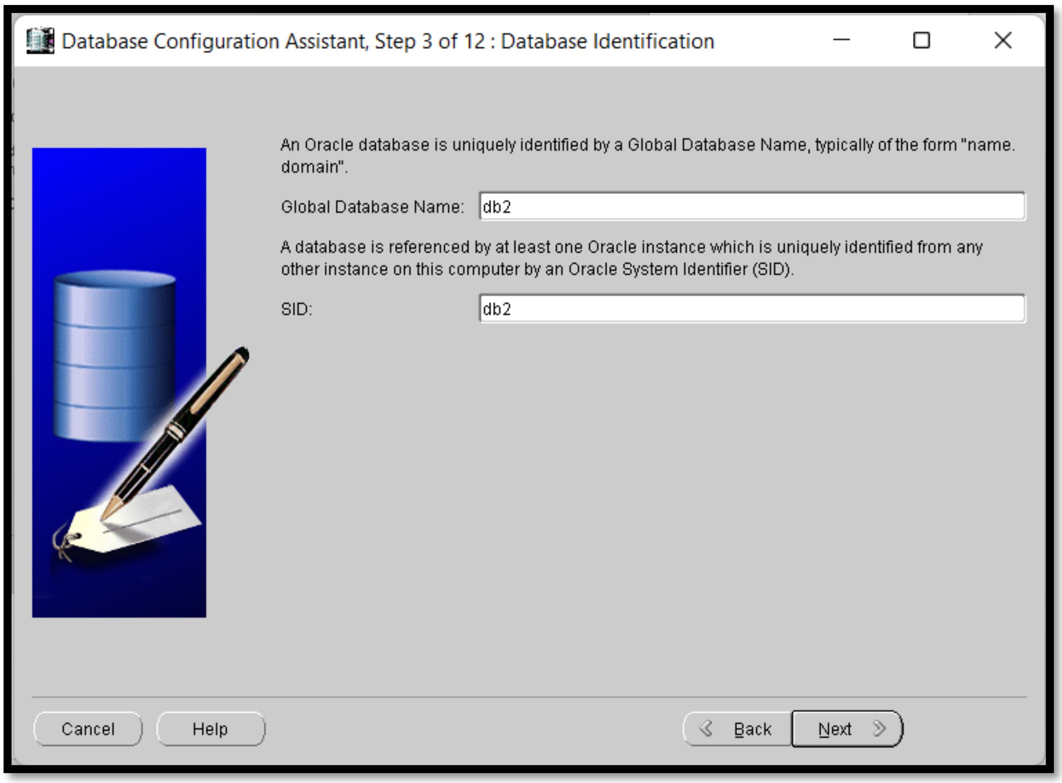

Database Configuration Assistant, Step 3 of 12 : Database Identification
Cancel
Help
Back
Next

An Oracle database is uniquely identified by a Global Database Name, typically of the form "name. domain".

Global Database Name: db1

A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle System Identifier (SID).

SID: db1


Database Configuration Assistant, Step 3 of 12 : Database Identification

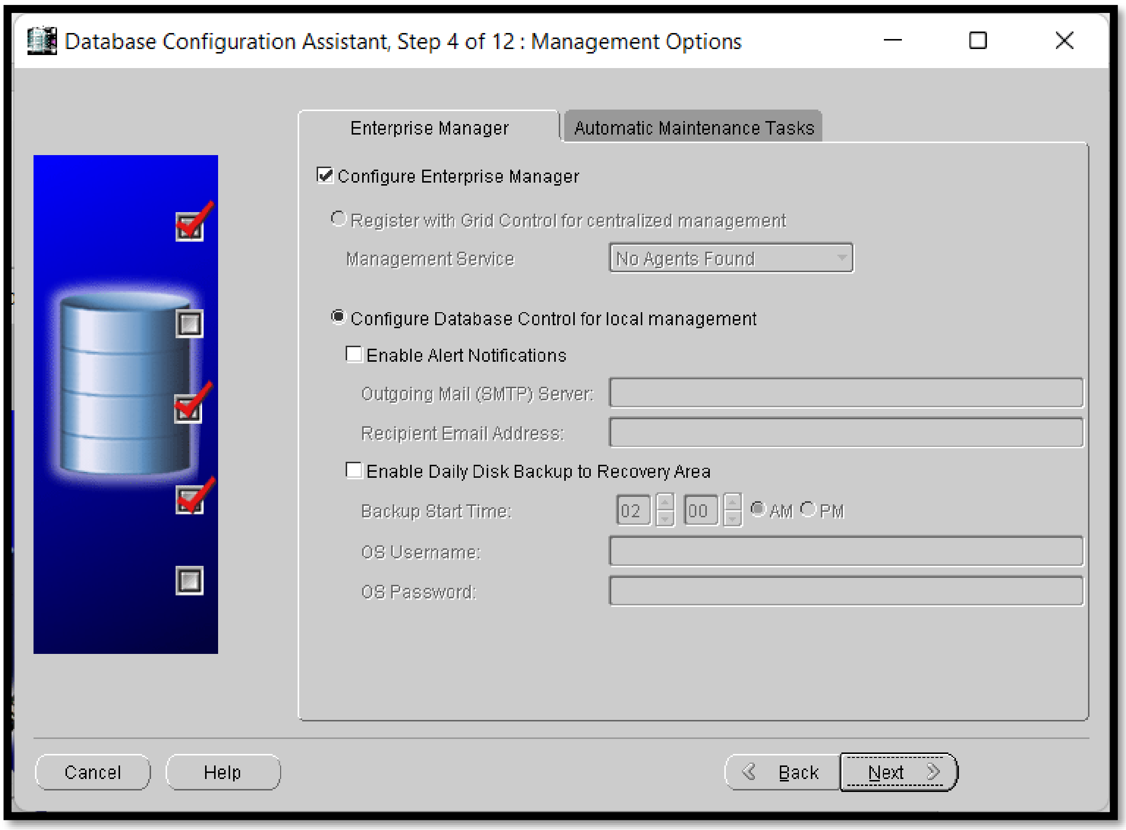
An Oracle database is uniquely identified by a Global Database Name, typically of the form "name.domain".

Global Database Name: db2

A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle System Identifier (SID).

SID: db2

Step 6 : No changes Needed, Click on Next


Database Configuration Assistant, Step 4 of 12 : Management Options

[✓] Configure Enterprise Manager

○ Register with Grid Control for centralized management

Management Service: No Agents Found

● Configure Database Control for local management

☐ Enable Alert Notifications

Outgoing Mail (SMTP) Server:

Recipient Email Address:

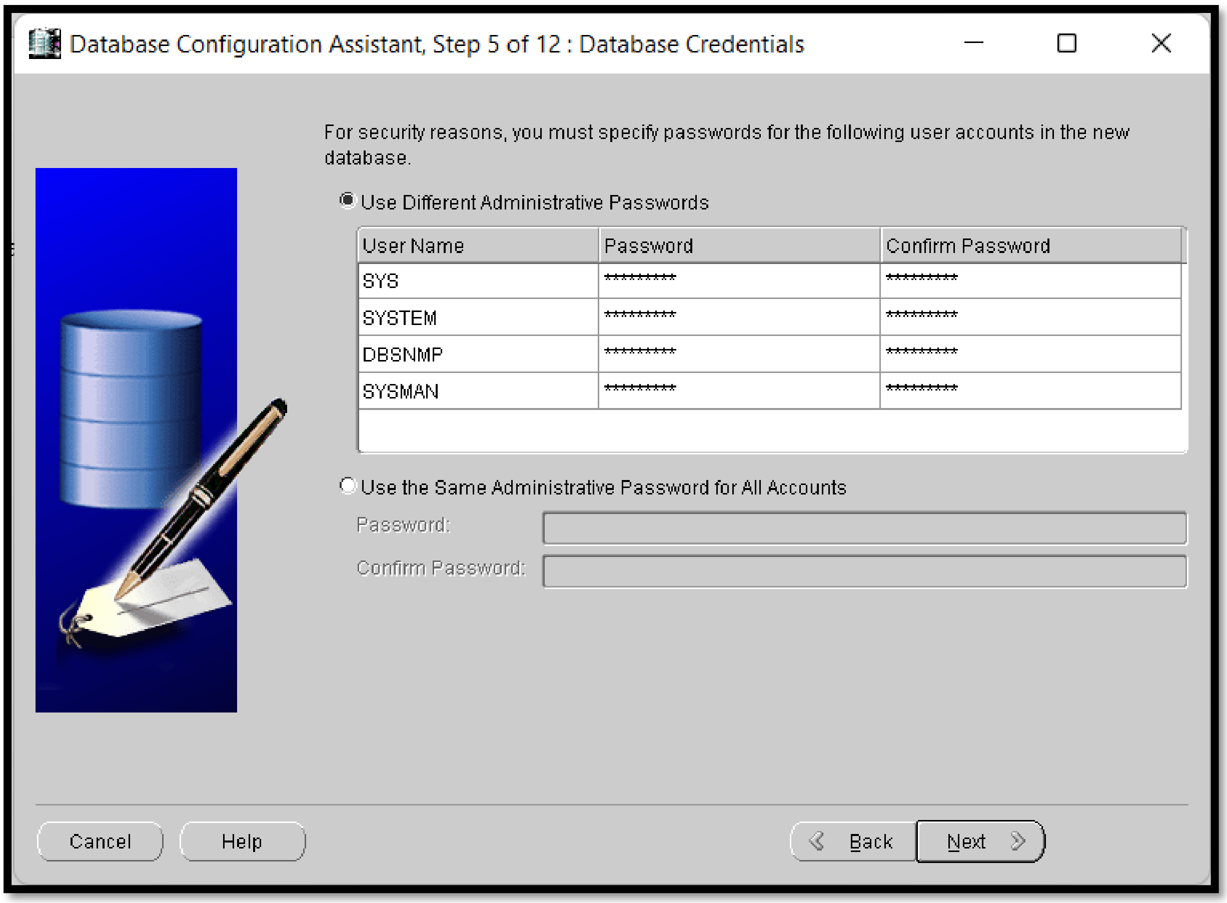
☐ Enable Daily Disk Backup to Recovery Area

Backup Start Time: 02 00 ● AM ○ PM

OS Username:

OS Password:

Step 7: Input Password of your choice for Each Fields or Else use your Administrator Credentials for all Profile



Database Configuration Assistant, Step 5 of 12 : Database Credentials

For security reasons, you must specify passwords for the following user accounts in the new database.

● Use Different Administrative Passwords

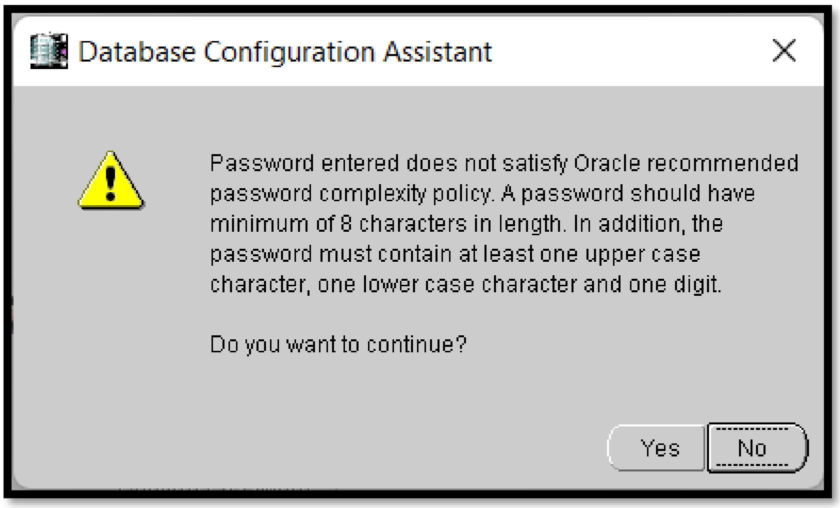
User Name	Password	Confirm Password
SYS	*********	*********
SYSTEM	*********	*********
DBSNMP	*********	*********
SYSMAN	*********	*********

○ Use the Same Administrative Password for All Accounts

Password:

Confirm Password:

Checks for Password Confirmation, Just Click Yes

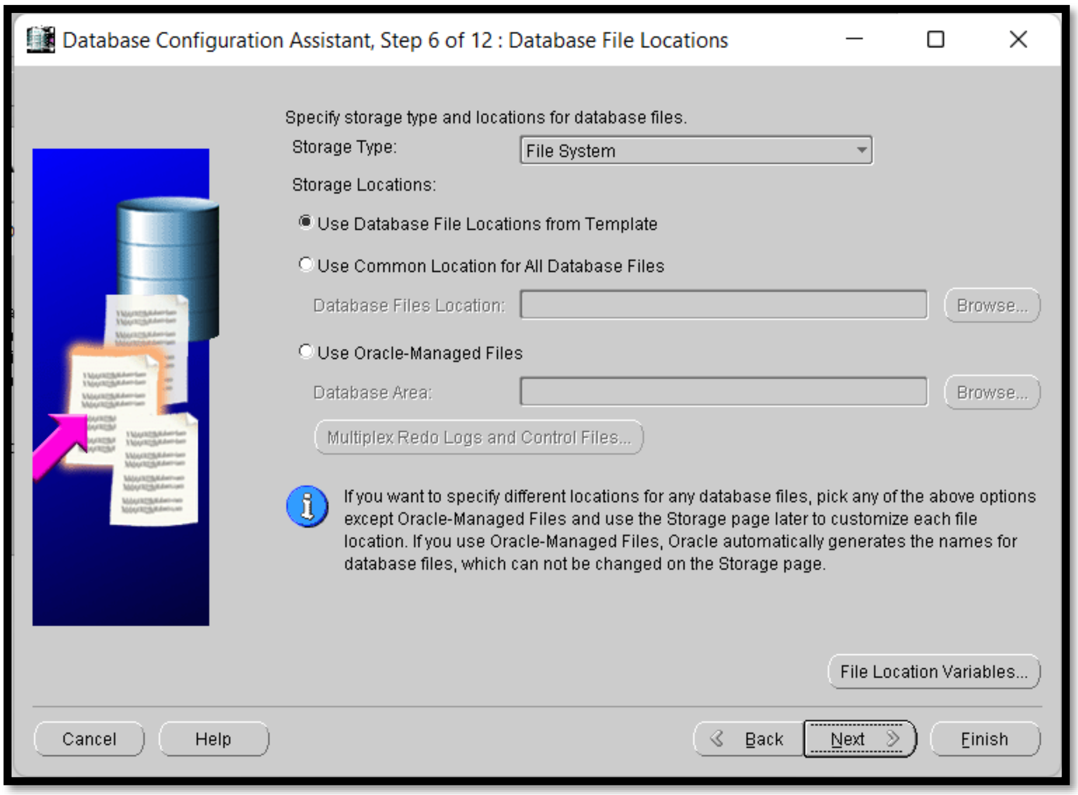


Database Configuration Assistant

Password entered does not satisfy Oracle recommended password complexity policy. A password should have minimum of 8 characters in length. In addition, the password must contain at least one upper case character, one lower case character and one digit.

Do you want to continue?

Step 8: No changes Needed, Click on Next



Database Configuration Assistant, Step 6 of 12 : Database File Locations

Specify storage type and locations for database files.

Storage Type: File System

Storage Locations:

(●) Use Database File Locations from Template

( ) Use Common Location for All Database Files

Database Files Location:

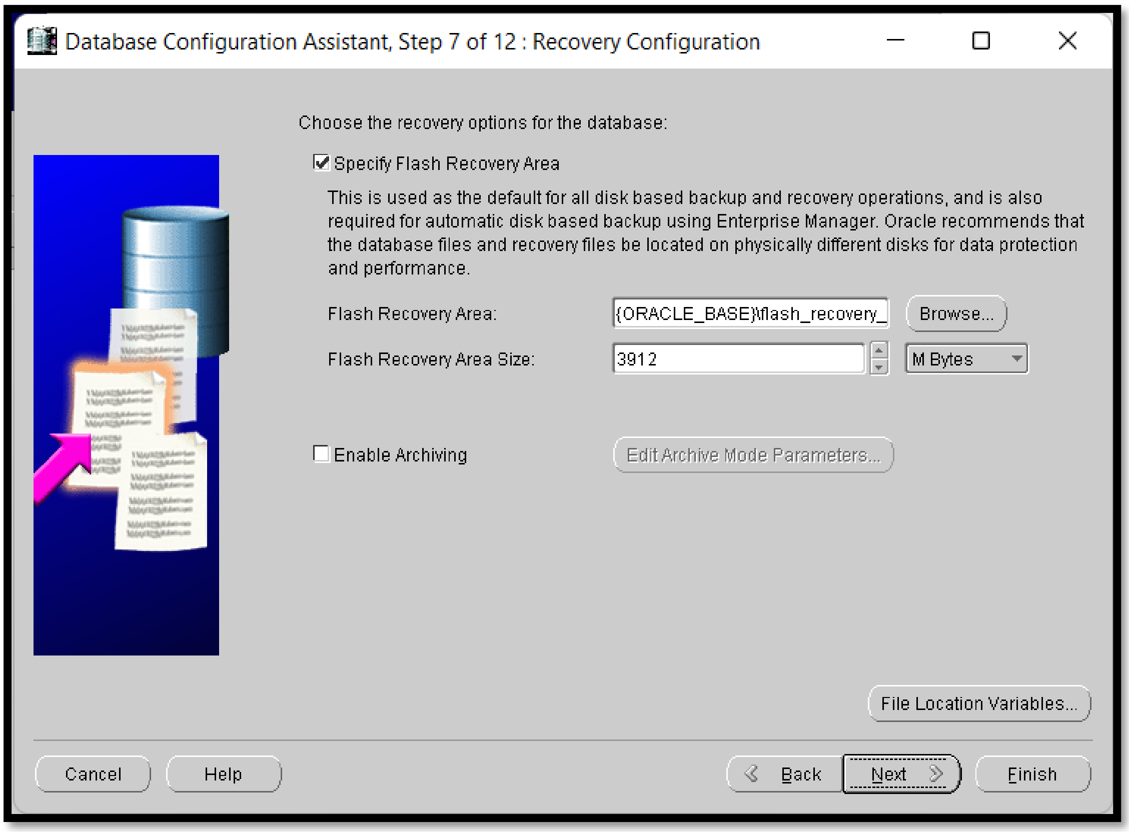
( ) Use Oracle-Managed Files

Database Area:

If you want to specify different locations for any database files, pick any of the above options except Oracle-Managed Files and use the Storage page later to customize each file location. If you use Oracle-Managed Files, Oracle automatically generates the names for database files, which can not be changed on the Storage page.

Browse...
Browse...
Multiplex Redo Logs and Control Files...
File Location Variables...
Cancel
Help
Back
Next
Finish

Step 9: No changes Needed, Click on Next



Database Configuration Assistant, Step 7 of 12 : Recovery Configuration

Choose the recovery options for the database:

[✓] Specify Flash Recovery Area

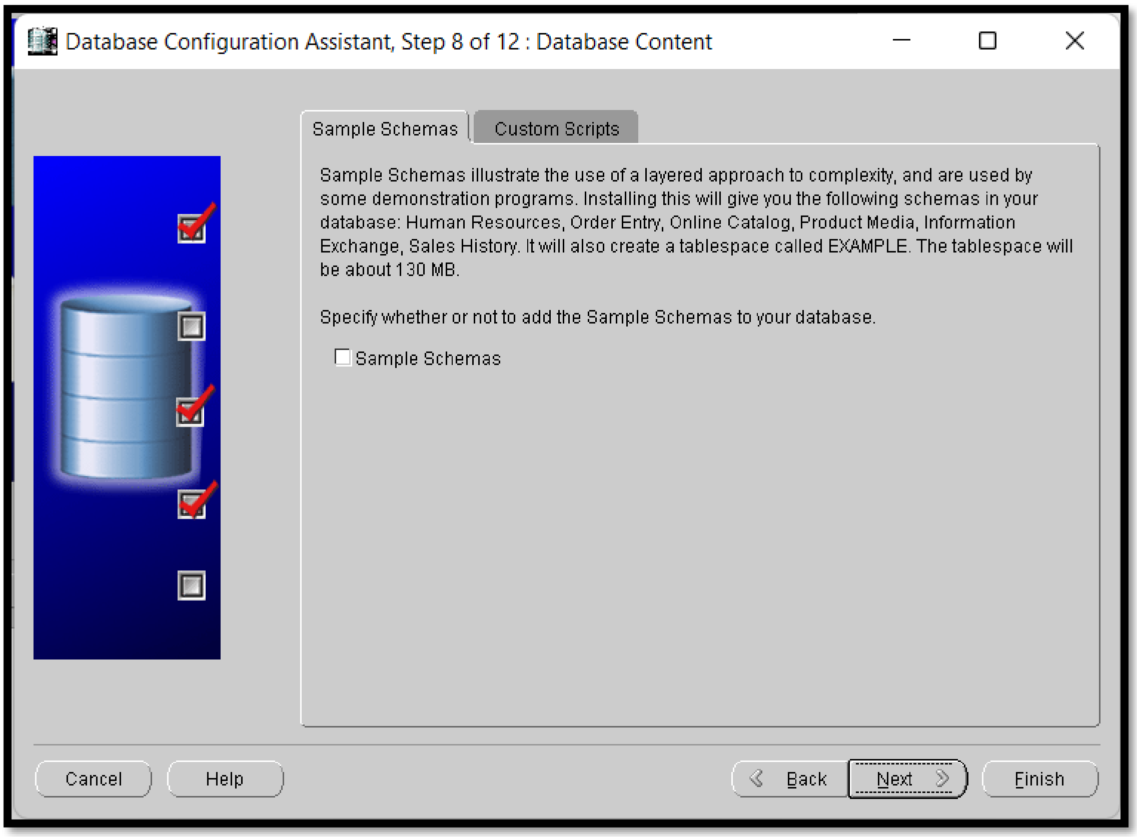
This is used as the default for all disk based backup and recovery operations, and is also required for automatic disk based backup using Enterprise Manager. Oracle recommends that the database files and recovery files be located on physically different disks for data protection and performance.

Flash Recovery Area: {ORACLE_BASE}\flash_recovery_

Flash Recovery Area Size: 3912 M Bytes

[ ] Enable Archiving

Step 10: No changes Needed, Click on Next



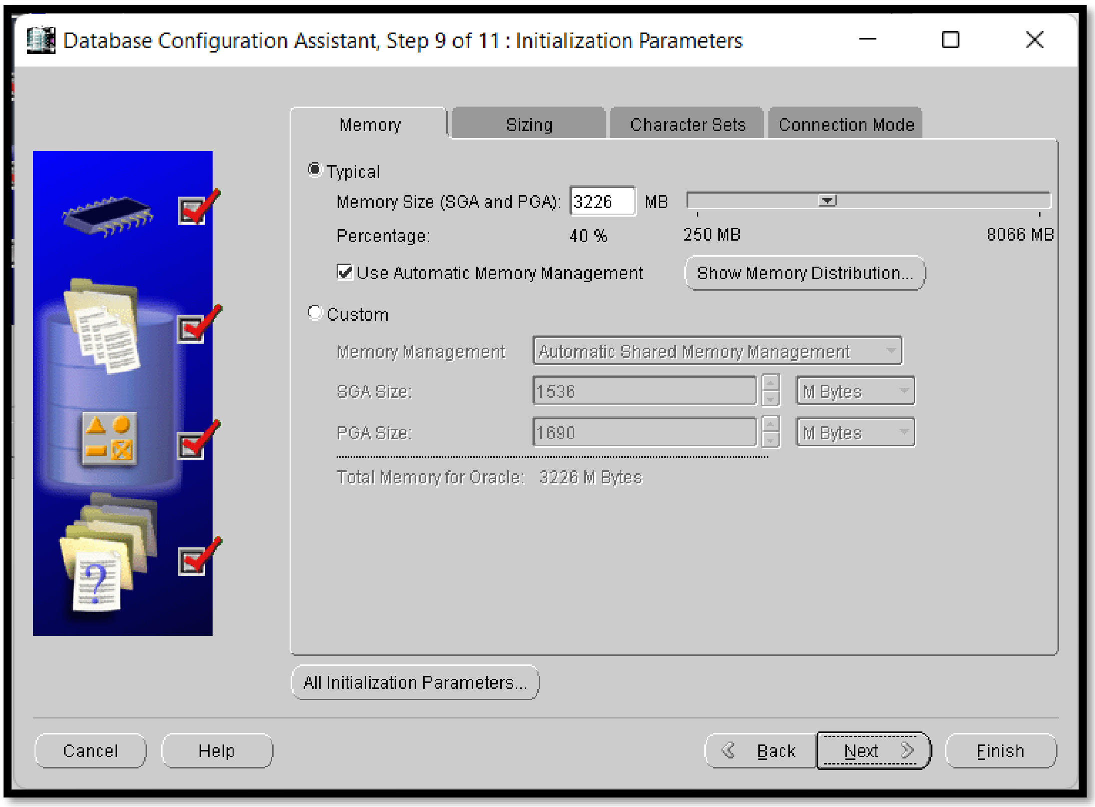
Database Configuration Assistant, Step 8 of 12 : Database Content

Sample Schemas illustrate the use of a layered approach to complexity, and are used by some demonstration programs. Installing this will give you the following schemas in your database: Human Resources, Order Entry, Online Catalog, Product Media, Information Exchange, Sales History. It will also create a tablespace called EXAMPLE. The tablespace will be about 130 MB.

Specify whether or not to add the Sample Schemas to your database.

☐ Sample Schemas

Step 11: No changes Needed, Click on Next



Database Configuration Assistant, Step 9 of 11 : Initialization Parameters

● Typical

Memory Size (SGA and PGA): 3226 MB

Percentage: 40 %　　250 MB　　8066 MB

☑ Use Automatic Memory Management

○ Custom

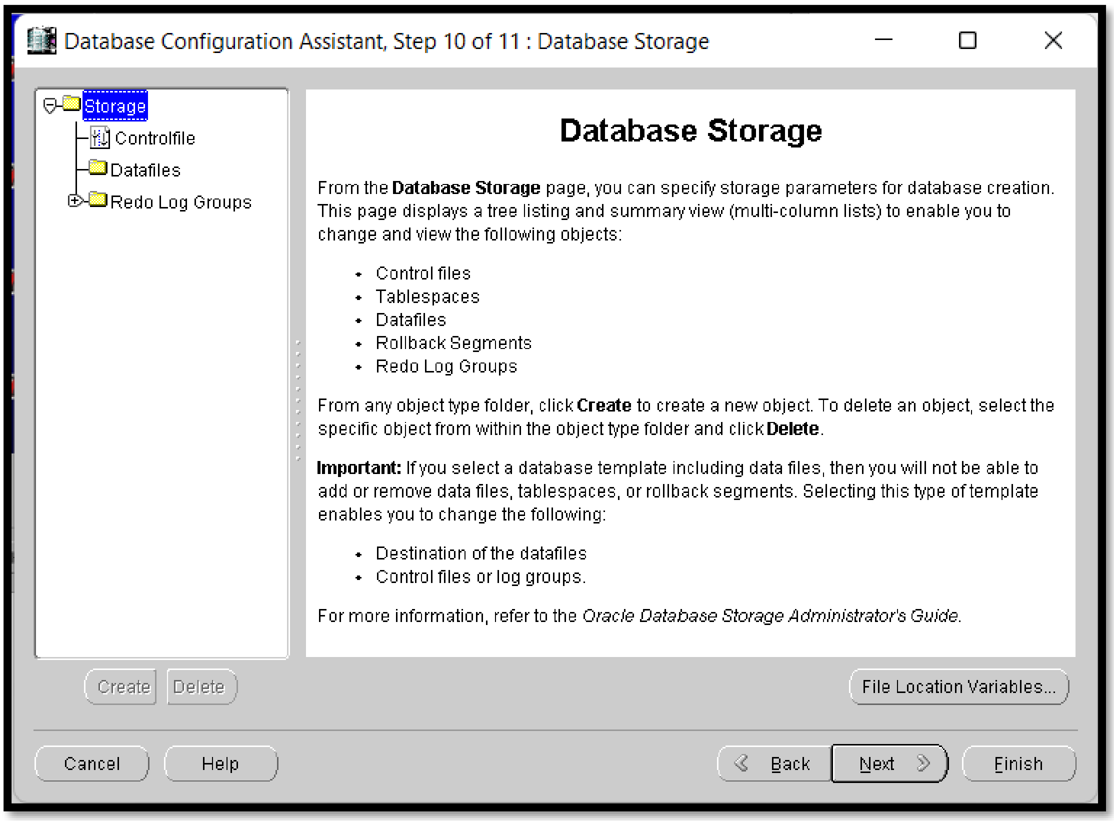
Memory Management: Automatic Shared Memory Management

SGA Size: 1536 M Bytes

PGA Size: 1690 M Bytes

Total Memory for Oracle: 3226 M Bytes

Step 12: No changes Needed, Click on Next


Database Configuration Assistant, Step 10 of 11 : Database Storage

Database Storage

From the **Database Storage** page, you can specify storage parameters for database creation. This page displays a tree listing and summary view (multi-column lists) to enable you to change and view the following objects:

- Control files
- Tablespaces
- Datafiles
- Rollback Segments
- Redo Log Groups

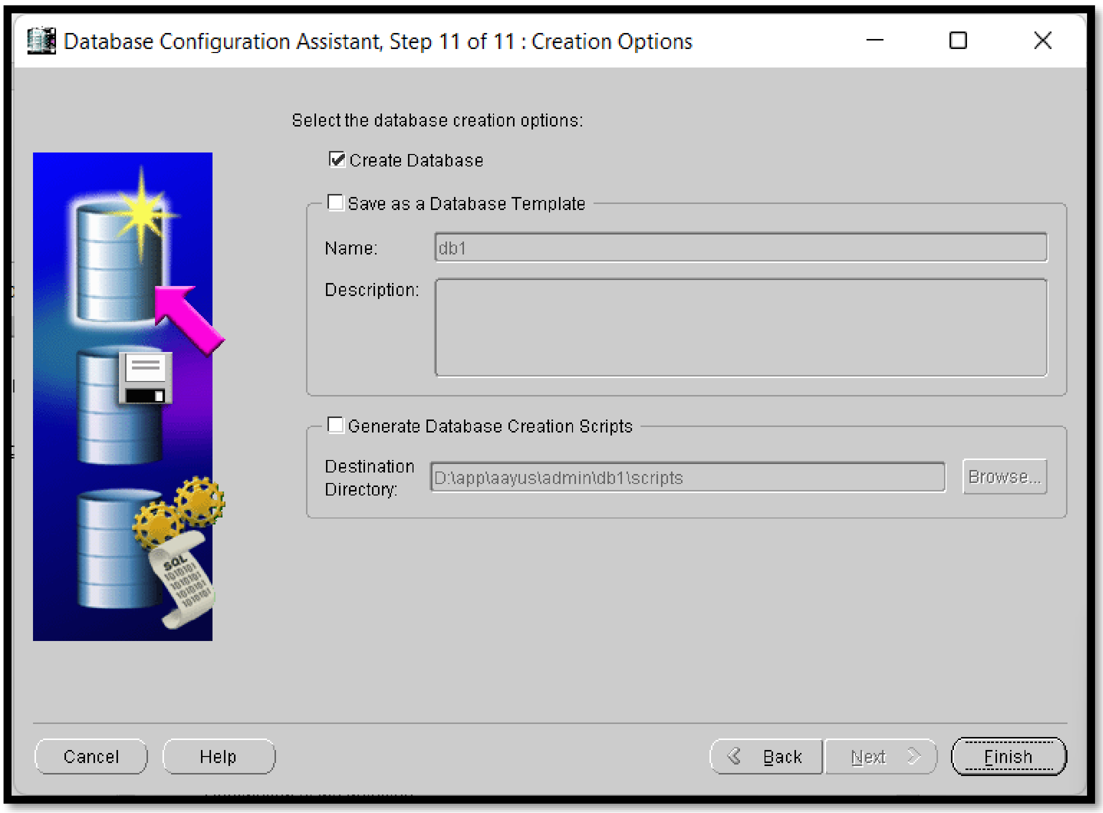
From any object type folder, click **Create** to create a new object. To delete an object, select the specific object from within the object type folder and click **Delete**.

Important: If you select a database template including data files, then you will not be able to add or remove data files, tablespaces, or rollback segments. Selecting this type of template enables you to change the following:

- Destination of the datafiles
- Control files or log groups.

For more information, refer to the *Oracle Database Storage Administrator's Guide*.

Step 13: No changes Needed, Click on Finish



Database Configuration Assistant, Step 11 of 11 : Creation Options

Select the database creation options:

[✓] Create Database

[ ] Save as a Database Template

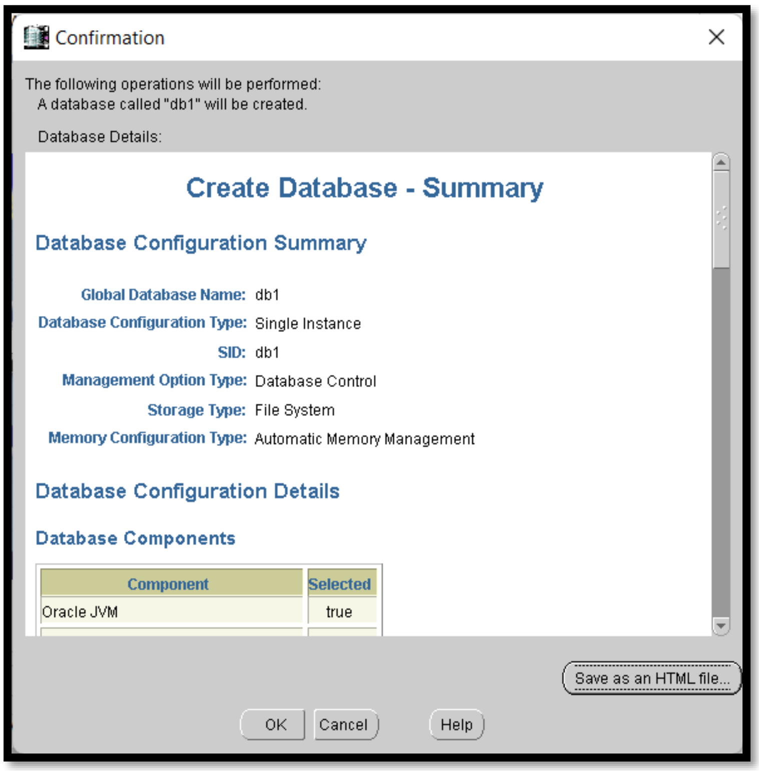
Name: db1

Description:

[ ] Generate Database Creation Scripts

Destination Directory: D:\app\aayus\admin\db1\scripts

Confirmation of Creating Database, You can Save it as well for your database details. Incase you forget credentials for your database, you can take help of this file to get access of your database.



Confirmation

The following operations will be performed:
A database called "db1" will be created.

Database Details:

Create Database - Summary

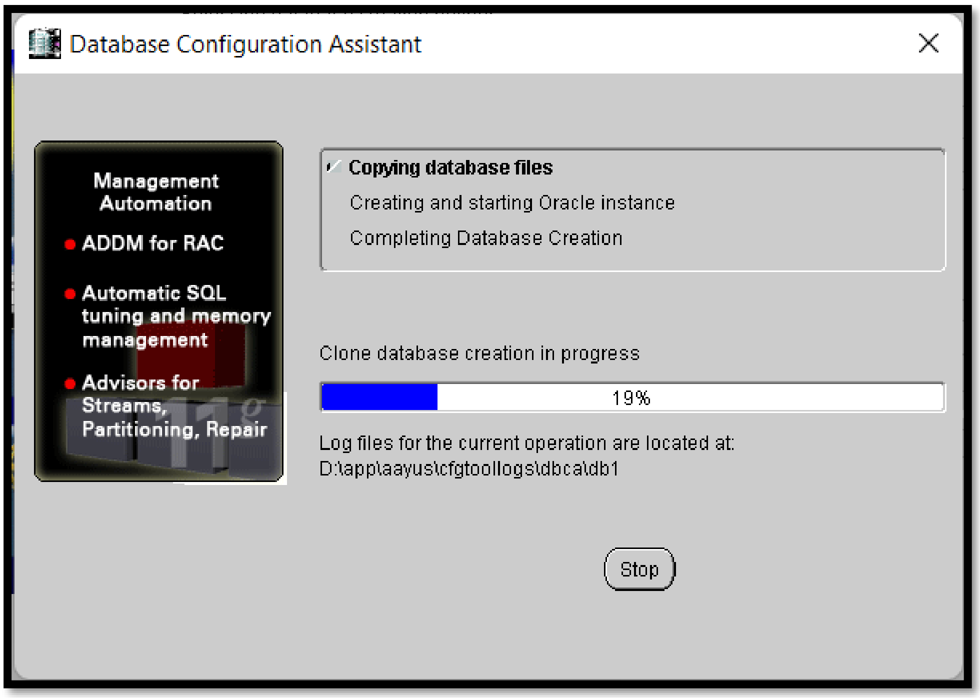
Database Configuration Summary

Global Database Name:	db1
Database Configuration Type:	Single Instance
SID:	db1
Management Option Type:	Database Control
Storage Type:	File System
Memory Configuration Type:	Automatic Memory Management

Database Configuration Details

Database Components

Component	Selected
Oracle JVM	true

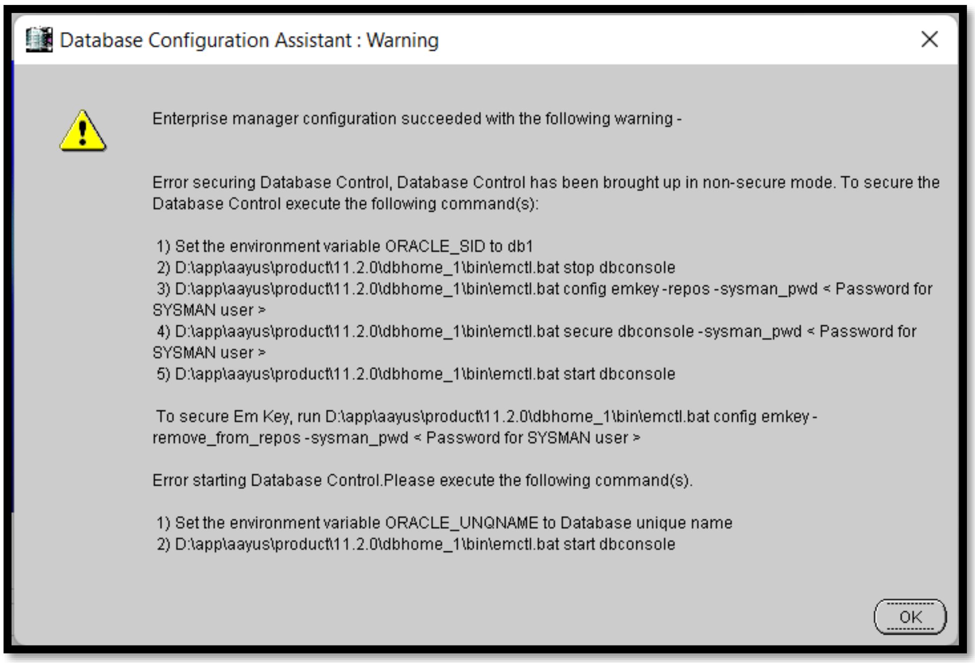

Database Configuration Assistant
Management Automation
ADDM for RAC
Automatic SQL tuning and memory management
Advisors for Streams, Partitioning, Repair
Stop

✓ Copying database files
Creating and starting Oracle instance
Completing Database Creation

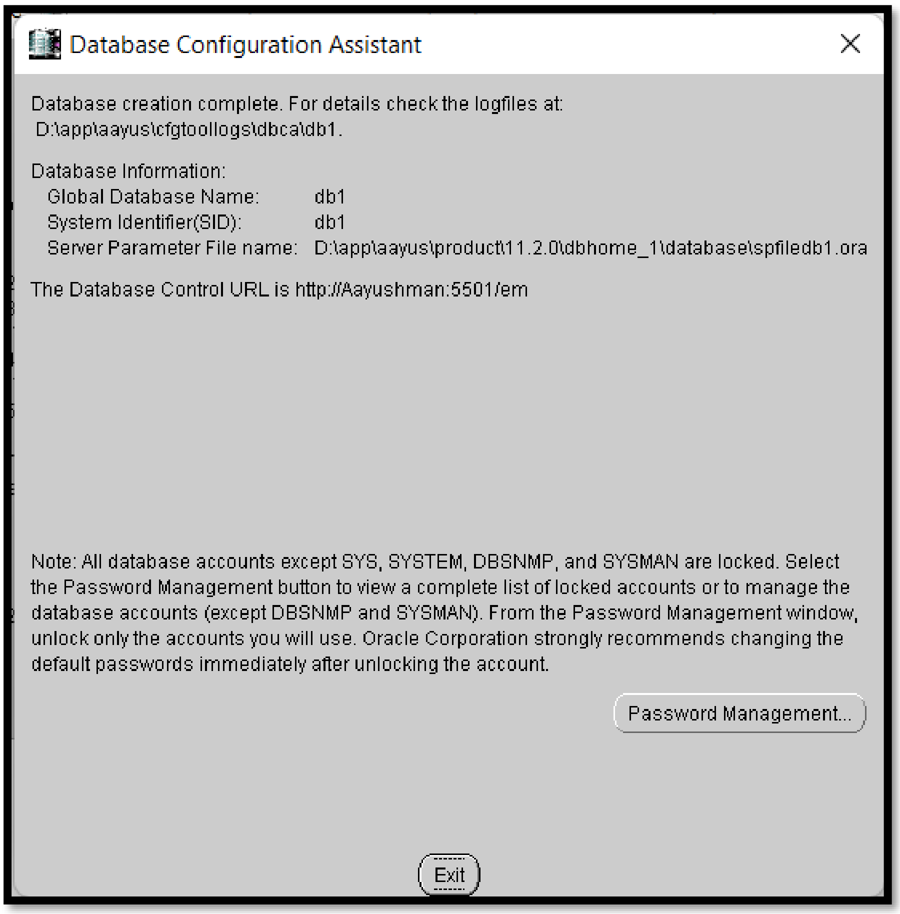
Clone database creation in progress

19%

Log files for the current operation are located at:
D:\app\aayus\cfgtoollogs\dbca\db1



```
Enterprise manager configuration succeeded with the following warning -

Error securing Database Control, Database Control has been brought up in non-secure mode. To secure the
Database Control execute the following command(s):

 1) Set the environment variable ORACLE_SID to db1
 2) D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat stop dbconsole
 3) D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat config emkey -repos -sysman_pwd < Password for
SYSMAN user >
 4) D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat secure dbconsole -sysman_pwd < Password for
SYSMAN user >
 5) D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat start dbconsole

 To secure Em Key, run D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat config emkey -
remove_from_repos -sysman_pwd < Password for SYSMAN user >

Error starting Database Control.Please execute the following command(s).

 1) Set the environment variable ORACLE_UNQNAME to Database unique name
 2) D:\app\aayus\product\11.2.0\dbhome_1\bin\emctl.bat start dbconsole
```


Database Configuration Assistant

```
Database creation complete. For details check the logfiles at:
 D:\app\aayus\cfgtoollogs\dbca\db1.

Database Information:
   Global Database Name:        db1
   System Identifier(SID):      db1
   Server Parameter File name:  D:\app\aayus\product\11.2.0\dbhome_1\database\spfiledb1.ora

The Database Control URL is http://Aayushman:5501/em

Note: All database accounts except SYS, SYSTEM, DBSNMP, and SYSMAN are locked. Select
the Password Management button to view a complete list of locked accounts or to manage the
database accounts (except DBSNMP and SYSMAN). From the Password Management window,
unlock only the accounts you will use. Oracle Corporation strongly recommends changing the
default passwords immediately after unlocking the account.
```

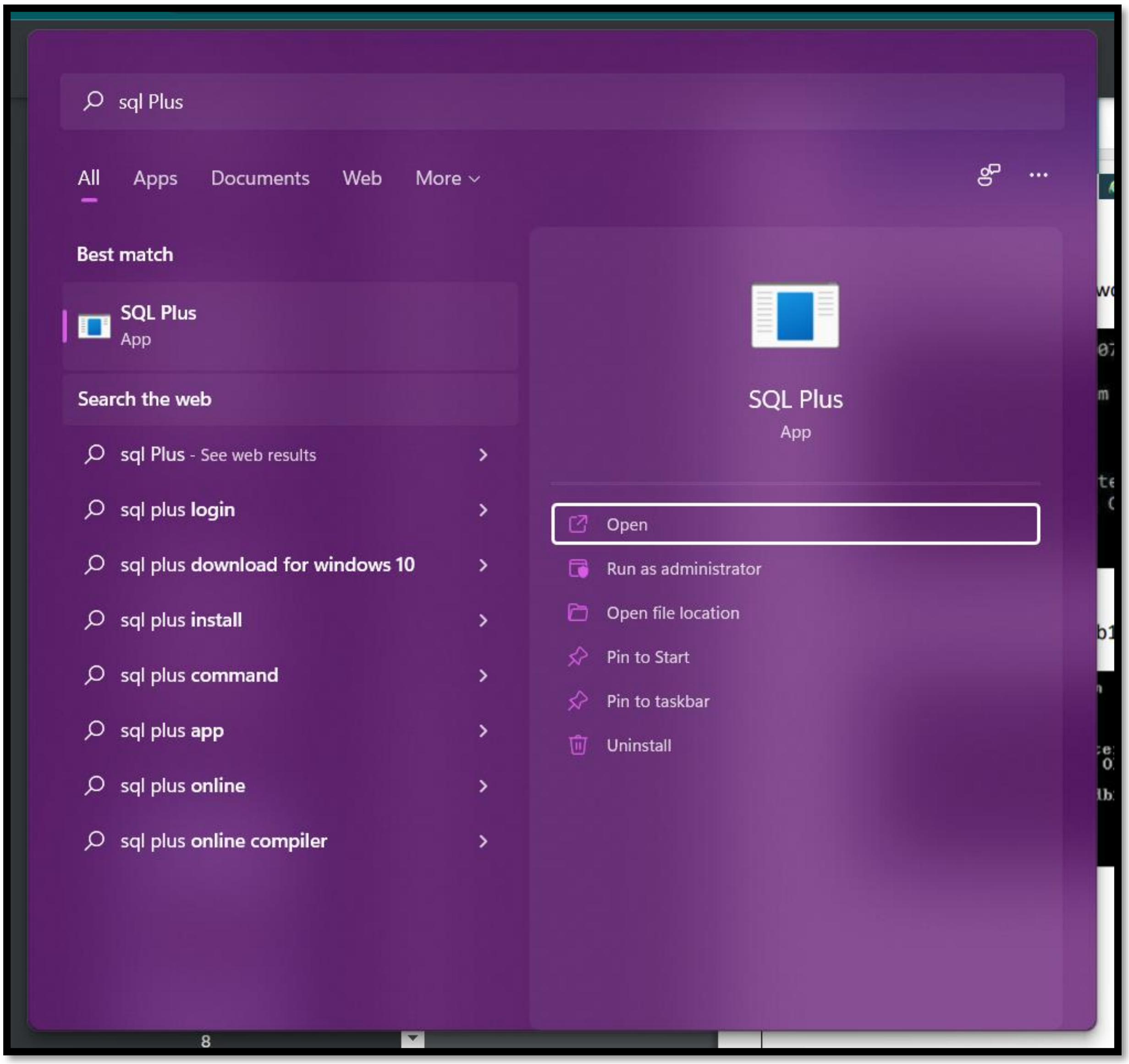
Click on Exit and Done.....

Follow the Same Steps to create db2,

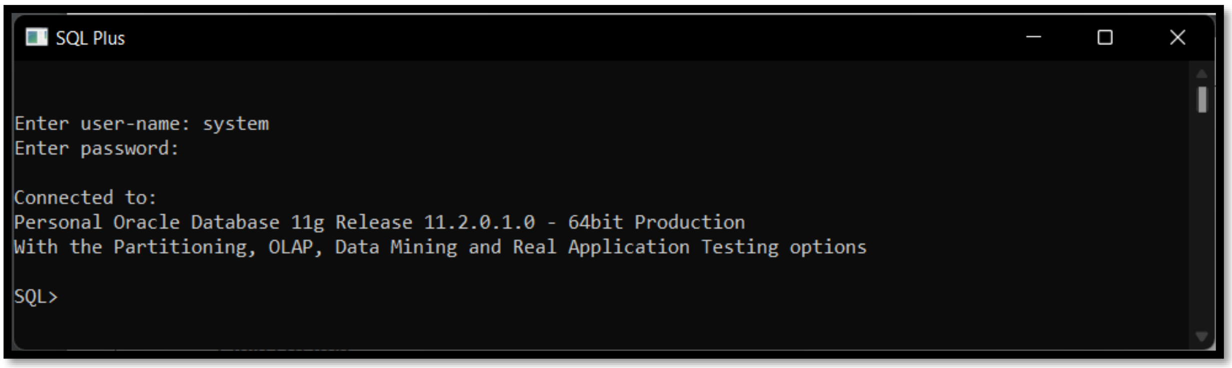
Once done with Creating db1 and db2

Practical Implementation Steps :

✓ **Step 1:-** Open SQLPlus

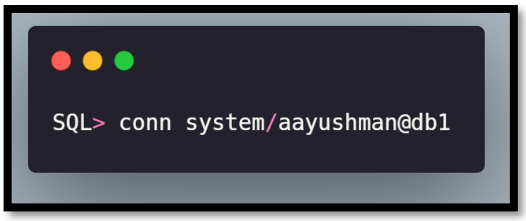


✓ **Step 2:** Connect to Your Database



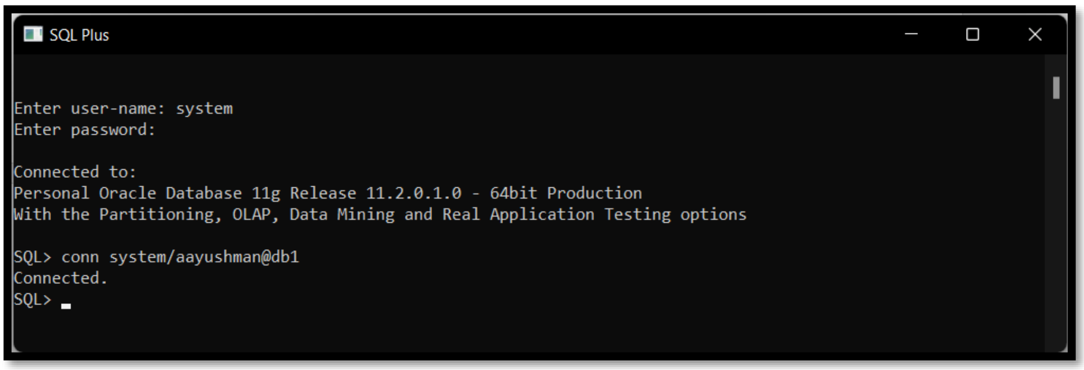
```
Enter user-name: system
Enter password:

Connected to:
Personal Oracle Database 11g Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL>
```

✓ **Step 3:** Connect your db1 While executing the Command



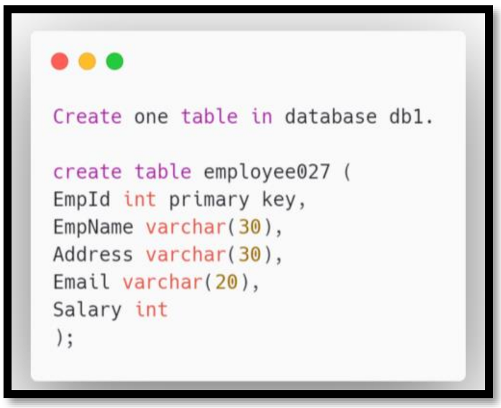
```
SQL> conn system/aayushman@db1
```

[Where "aayushman" is password of your database, and "db1" is database name]

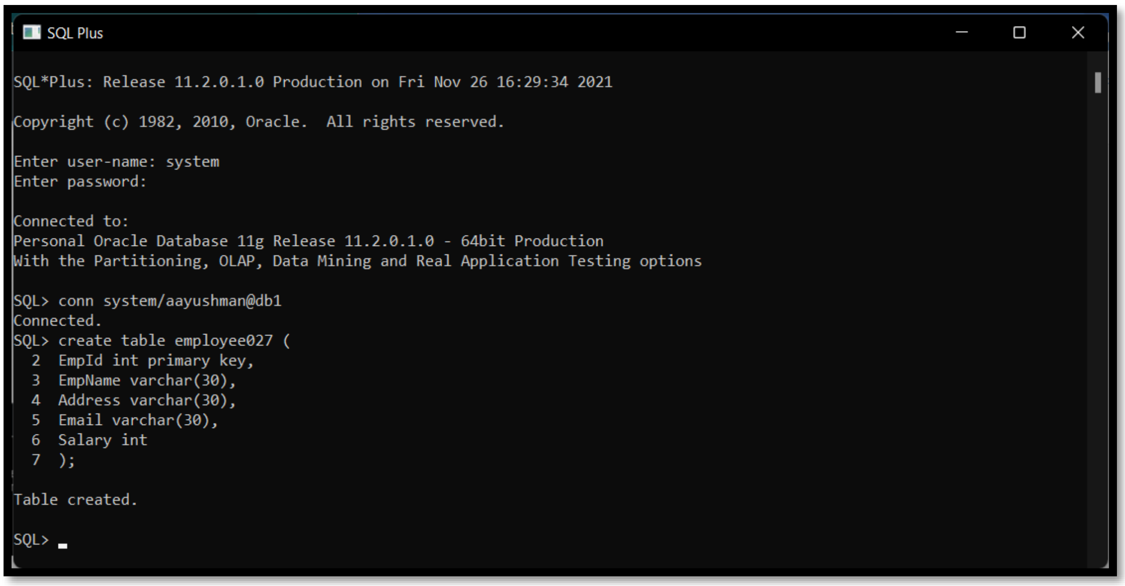


```
Enter user-name: system
Enter password:

Connected to:
Personal Oracle Database 11g Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> conn system/aayushman@db1
Connected.
SQL> _
```

✓ **Step 4:** Create one table in database db1



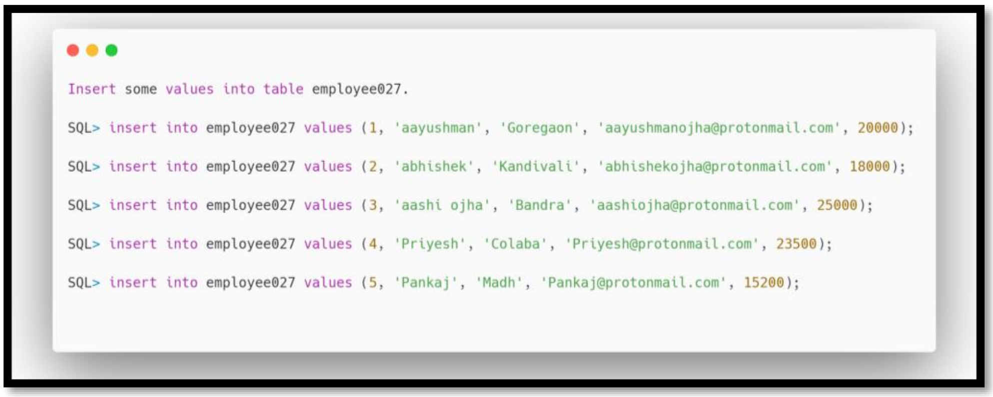
```
Create one table in database db1.

create table employee027 (
EmpId int primary key,
EmpName varchar(30),
Address varchar(30),
Email varchar(20),
Salary int
);
```



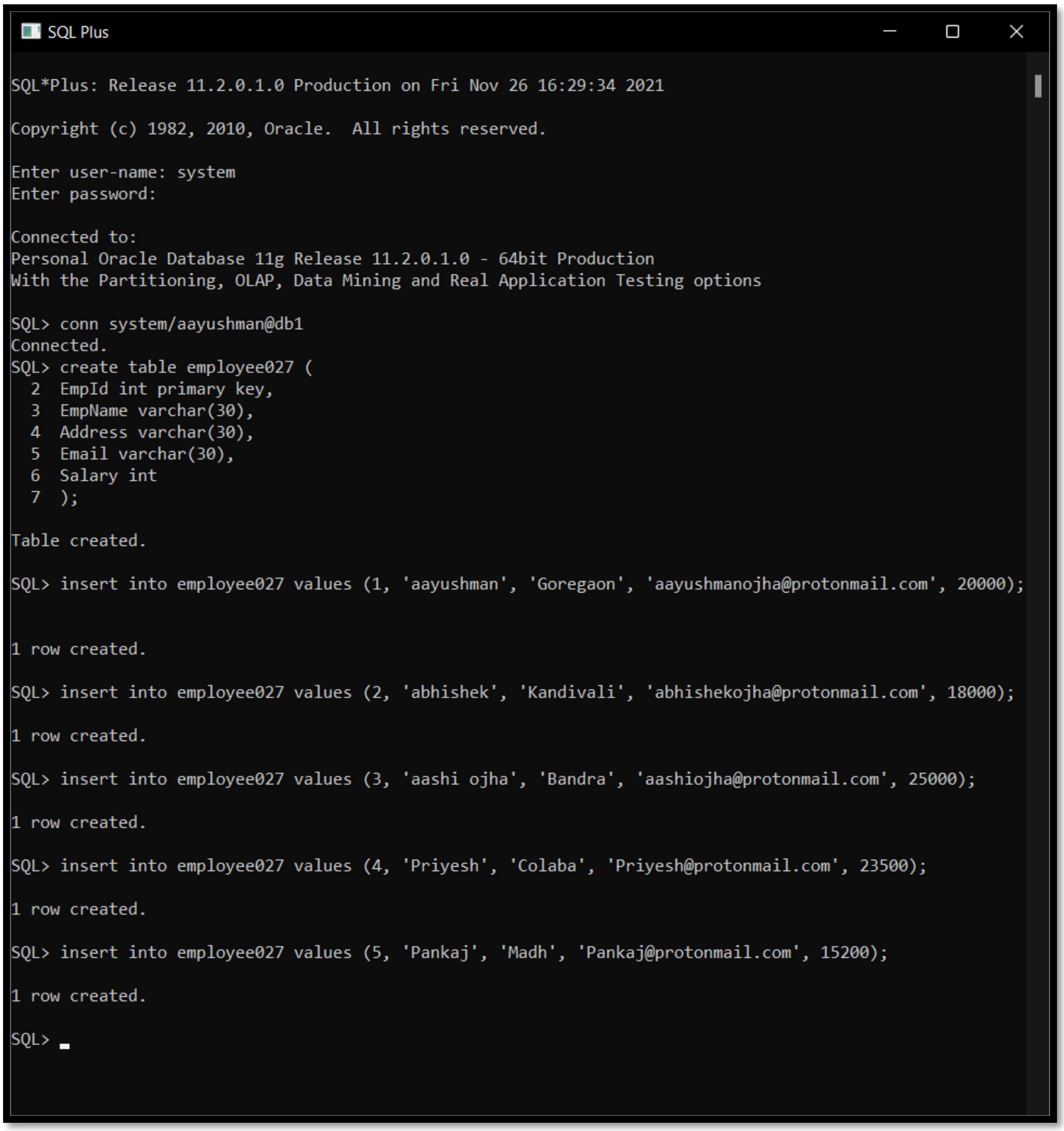
SQL Plus

```
SQL*Plus: Release 11.2.0.1.0 Production on Fri Nov 26 16:29:34 2021

Copyright (c) 1982, 2010, Oracle.  All rights reserved.

Enter user-name: system
Enter password:

Connected to:
Personal Oracle Database 11g Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> conn system/aayushman@db1
Connected.
SQL> create table employee027 (
  2  EmpId int primary key,
  3  EmpName varchar(30),
  4  Address varchar(30),
  5  Email varchar(30),
  6  Salary int
  7  );

Table created.

SQL> _
```

✓ **Step 5:** Insert Some values in Created Table.

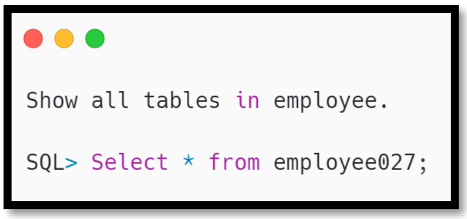


```
Insert some values into table employee027.

SQL> insert into employee027 values (1, 'aayushman', 'Goregaon', 'aayushmanojha@protonmail.com', 20000);

SQL> insert into employee027 values (2, 'abhishek', 'Kandivali', 'abhishekojha@protonmail.com', 18000);

SQL> insert into employee027 values (3, 'aashi ojha', 'Bandra', 'aashiojha@protonmail.com', 25000);

SQL> insert into employee027 values (4, 'Priyesh', 'Colaba', 'Priyesh@protonmail.com', 23500);

SQL> insert into employee027 values (5, 'Pankaj', 'Madh', 'Pankaj@protonmail.com', 15200);
```

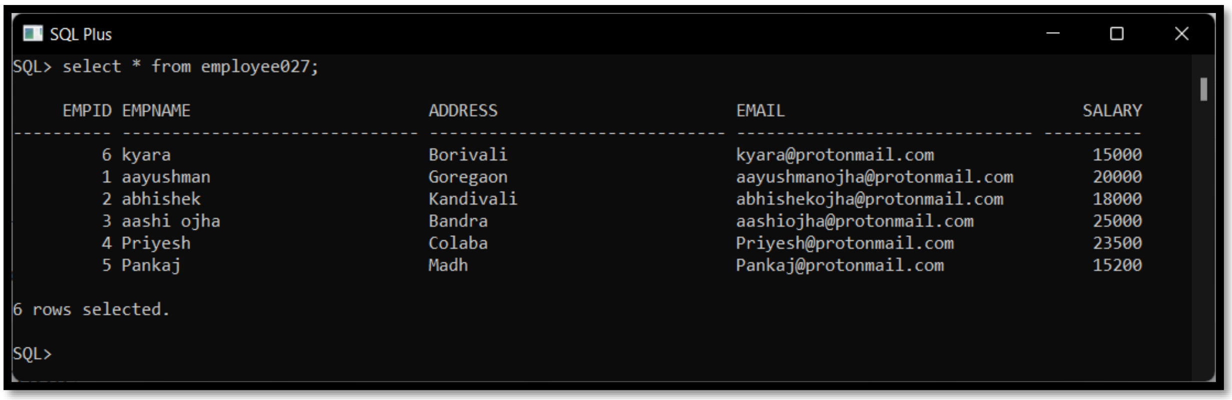


```
SQL*Plus: Release 11.2.0.1.0 Production on Fri Nov 26 16:29:34 2021

Copyright (c) 1982, 2010, Oracle.  All rights reserved.

Enter user-name: system
Enter password:

Connected to:
Personal Oracle Database 11g Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> conn system/aayushman@db1
Connected.
SQL> create table employee027 (
  2  EmpId int primary key,
  3  EmpName varchar(30),
  4  Address varchar(30),
  5  Email varchar(30),
  6  Salary int
  7  );

Table created.

SQL> insert into employee027 values (1, 'aayushman', 'Goregaon', 'aayushmanojha@protonmail.com', 20000);


1 row created.

SQL> insert into employee027 values (2, 'abhishek', 'Kandivali', 'abhishekojha@protonmail.com', 18000);

1 row created.

SQL> insert into employee027 values (3, 'aashi ojha', 'Bandra', 'aashiojha@protonmail.com', 25000);

1 row created.

SQL> insert into employee027 values (4, 'Priyesh', 'Colaba', 'Priyesh@protonmail.com', 23500);

1 row created.

SQL> insert into employee027 values (5, 'Pankaj', 'Madh', 'Pankaj@protonmail.com', 15200);

1 row created.

SQL> _
```

✓ **Step 6:**



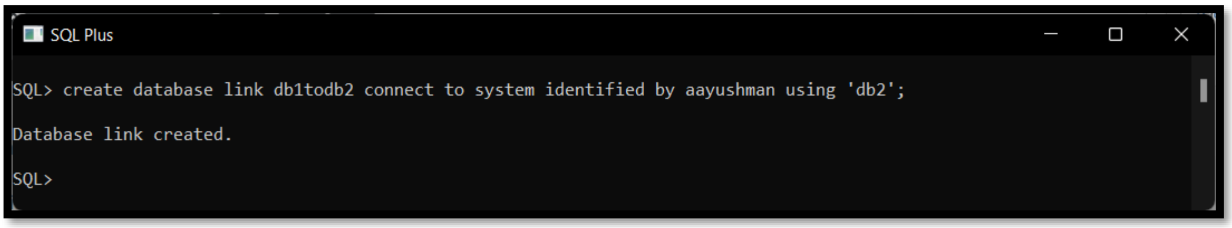
```
Show all tables in employee.

SQL> Select * from employee027;
```



```
SQL Plus
SQL> select * from employee027;

     EMPID EMPNAME                      ADDRESS                      EMAIL                          SALARY
---------- ---------------------------- ---------------------------- ---------------------------- ----------
         6 kyara                        Borivali                     kyara@protonmail.com            15000
         1 aayushman                    Goregaon                     aayushmanojha@protonmail.com    20000
         2 abhishek                     Kandivali                    abhishekojha@protonmail.com     18000
         3 aashi ojha                   Bandra                       aashiojha@protonmail.com        25000
         4 Priyesh                      Colaba                       Priyesh@protonmail.com          23500
         5 Pankaj                       Madh                         Pankaj@protonmail.com           15200

6 rows selected.

SQL>
```

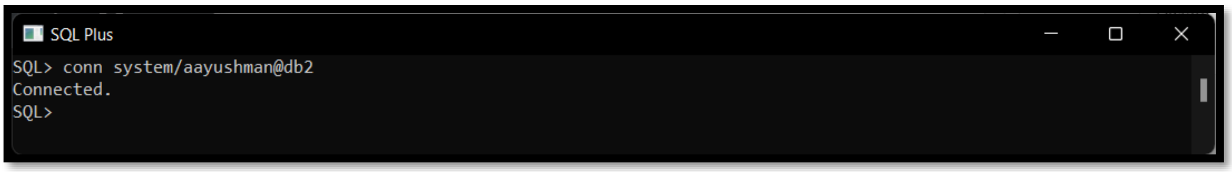
✓ **Step 7:** Enter following command to create link between two databases.

```
Enter following command to create link between two databases.

SQL> create database link db1todb2 connect system identified by aayushman using 'db2';
```



```
SQL Plus

SQL> create database link db1todb2 connect to system identified by aayushman using 'db2';

Database link created.

SQL>
```

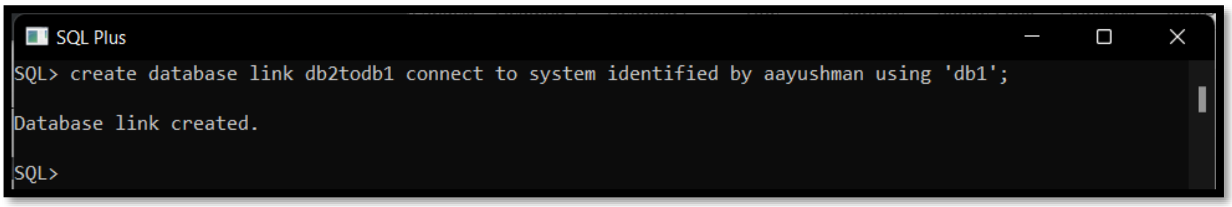
✓ **Step 8:** Connect to Db2.



```
SQL Plus
SQL> conn system/aayushman@db2
Connected.
SQL>
```

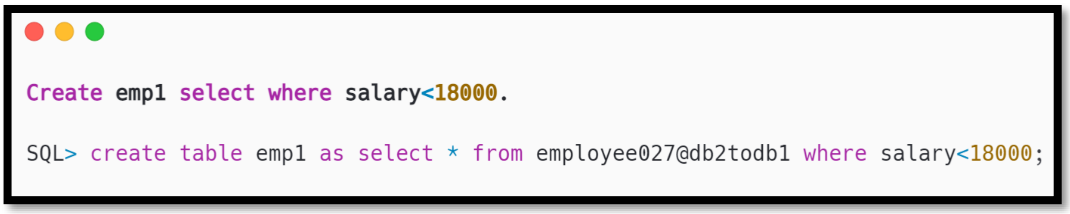
✓ **Step 9:** Create link to connect db1.

```
Create link to connect db1.

SQL> create database link db2todb1 connect system identified by aayushman using 'db1';
```

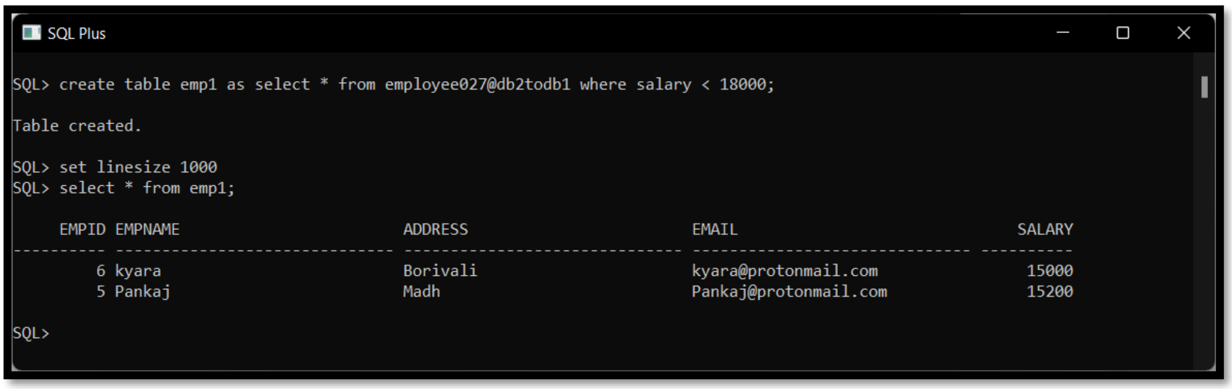


```
SQL Plus
SQL> create database link db2todb1 connect to system identified by aayushman using 'db1';

Database link created.

SQL>
```

✓ **Step 10:** Create emp1 select where salary<18000.

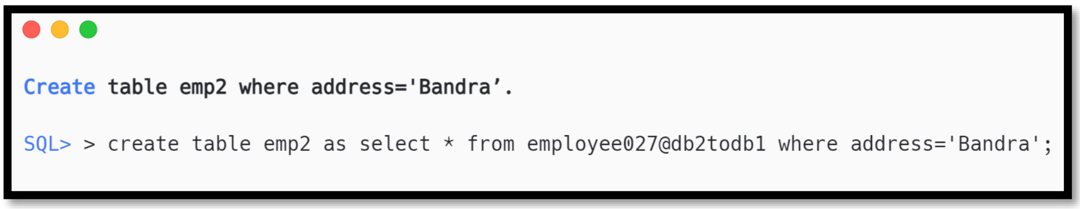


```
Create emp1 select where salary<18000.

SQL> create table emp1 as select * from employee027@db2todb1 where salary<18000;
```

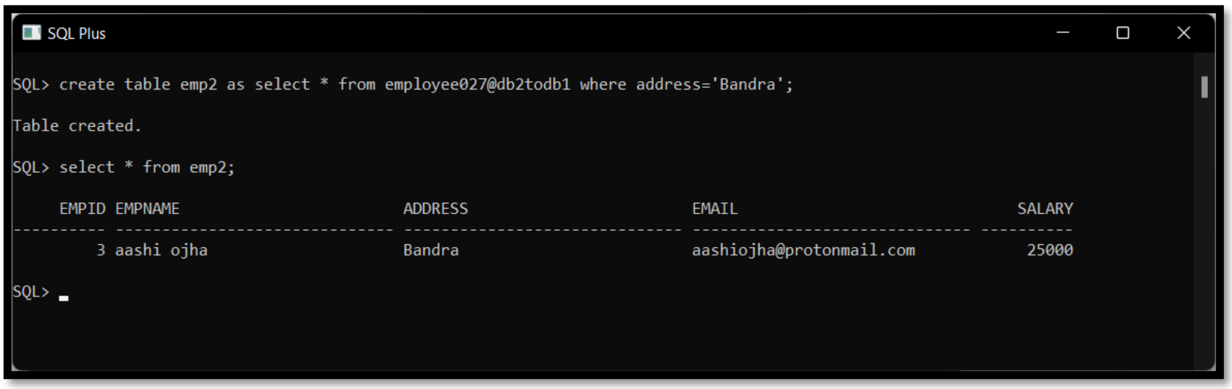


```
SQL> create table emp1 as select * from employee027@db2todb1 where salary < 18000;

Table created.

SQL> set linesize 1000
SQL> select * from emp1;

    EMPID EMPNAME                       ADDRESS                       EMAIL                             SALARY
--------- ----------------------------- ----------------------------- ----------------------------- ----------
        6 kyara                         Borivali                      kyara@protonmail.com               15000
        5 Pankaj                        Madh                          Pankaj@protonmail.com              15200

SQL>
```

✓ **Step 11:** Create table emp2 where address='Bandra'.

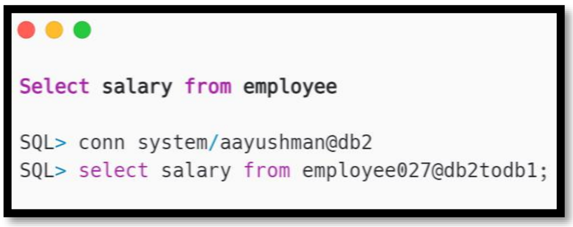


```
Create table emp2 where address='Bandra'.

SQL> > create table emp2 as select * from employee027@db2todb1 where address='Bandra';
```

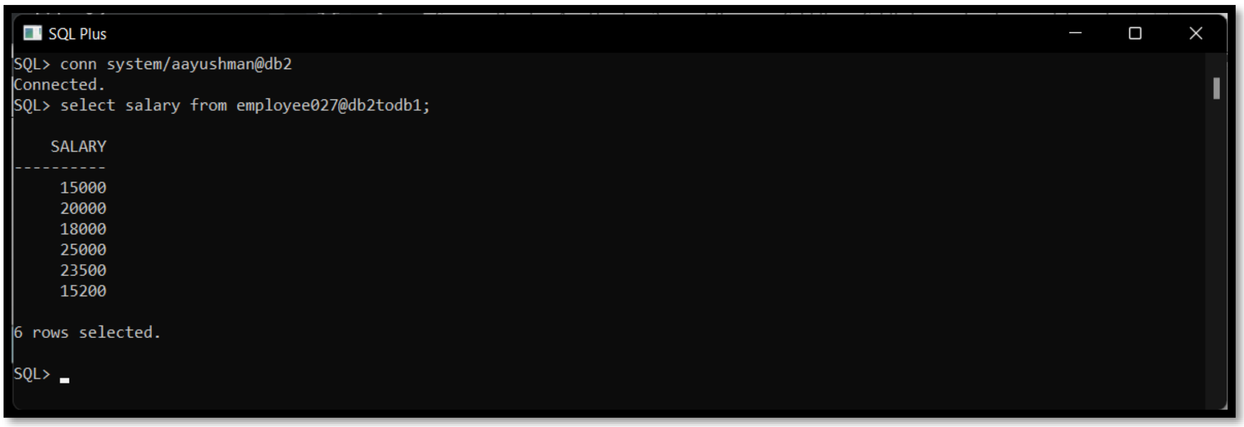


```
SQL> create table emp2 as select * from employee027@db2todb1 where address='Bandra';

Table created.

SQL> select * from emp2;

    EMPID EMPNAME                       ADDRESS                       EMAIL                             SALARY
--------- ----------------------------- ----------------------------- ----------------------------- ----------
        3 aashi ojha                    Bandra                        aashiojha@protonmail.com           25000

SQL>
```

✓ **Step 12:** Select salary from employee

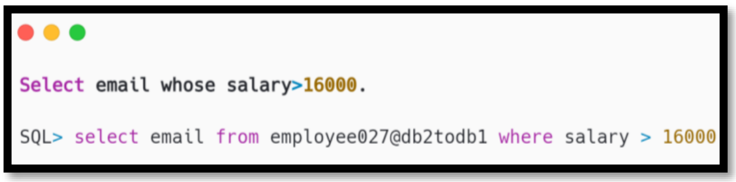


```
Select salary from employee

SQL> conn system/aayushman@db2
SQL> select salary from employee027@db2todb1;
```

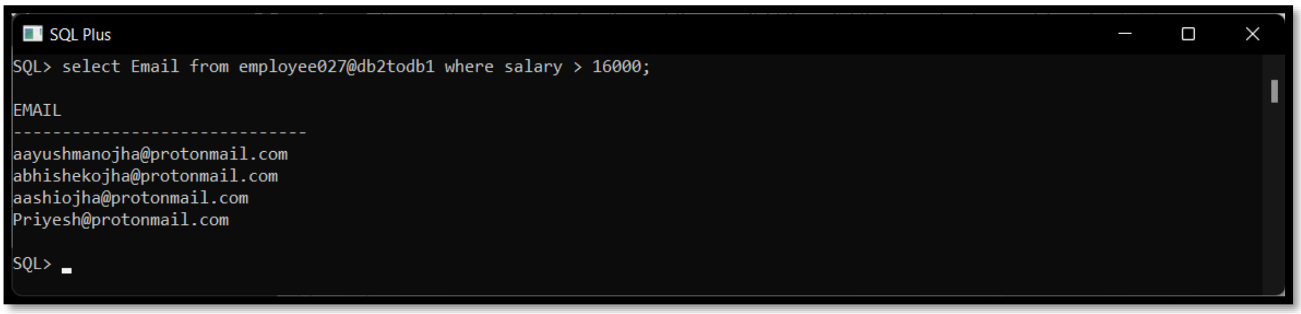


```
SQL> conn system/aayushman@db2
Connected.
SQL> select salary from employee027@db2todb1;

    SALARY
----------
     15000
     20000
     18000
     25000
     23500
     15200

6 rows selected.

SQL>
```

- ✓ **Step 13:** Select mail whose salary>16000.

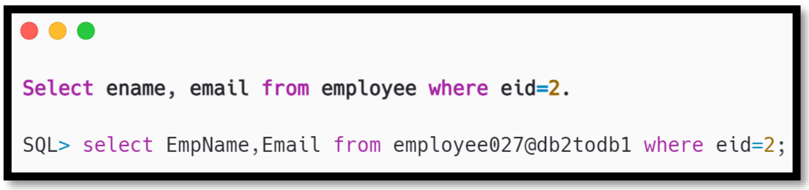


```
Select email whose salary>16000.

SQL> select email from employee027@db2todb1 where salary > 16000
```

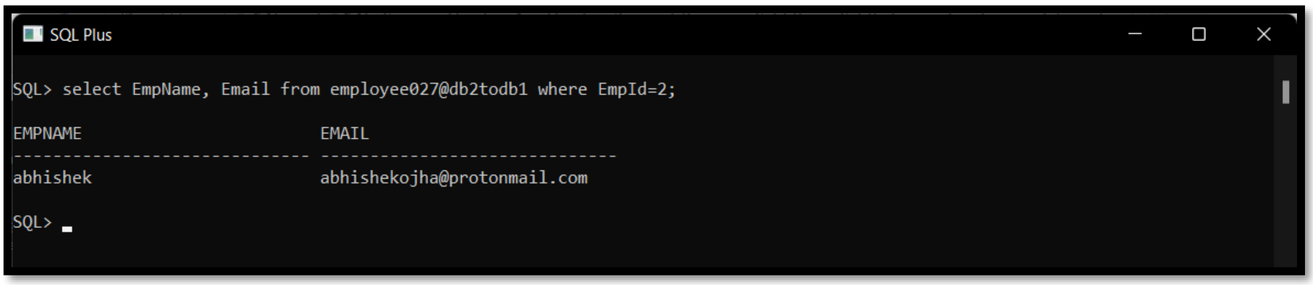


```
SQL> select Email from employee027@db2todb1 where salary > 16000;

EMAIL
------------------------------
aayushmanojha@protonmail.com
abhishekojha@protonmail.com
aashiojha@protonmail.com
Priyesh@protonmail.com

SQL>
```

- ✓ **Step 14:** Select Employee Name and Email from Employee table where eid=2.

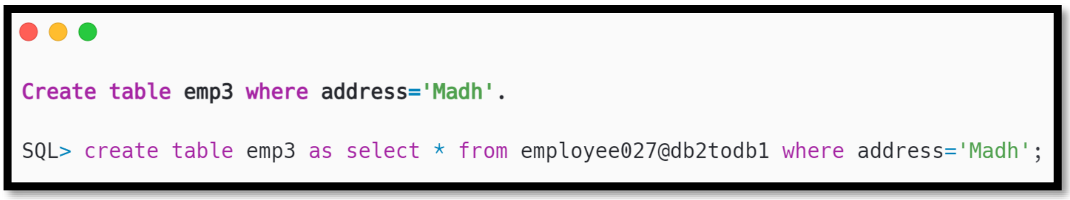


```
Select ename, email from employee where eid=2.

SQL> select EmpName,Email from employee027@db2todb1 where eid=2;
```

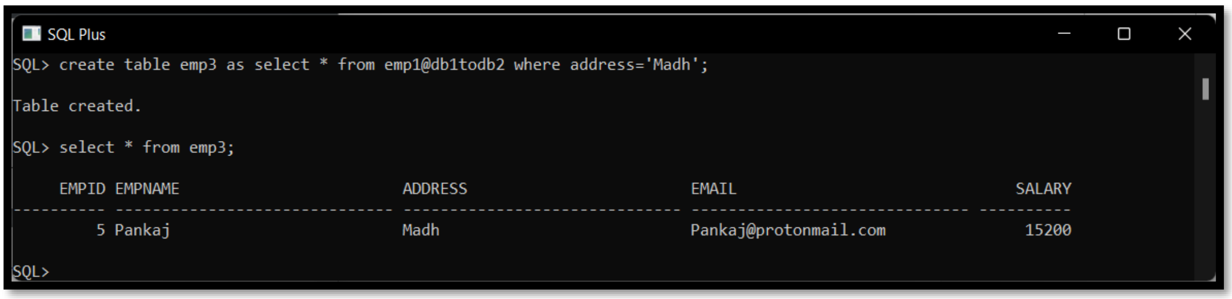


```
SQL> select EmpName, Email from employee027@db2todb1 where EmpId=2;

EMPNAME                        EMAIL
------------------------------ ------------------------------
abhishek                       abhishekojha@protonmail.com

SQL>
```

- ✓ **Step 15:** Create table emp3 where address='Madh'.



```
Create table emp3 where address='Madh'.

SQL> create table emp3 as select * from employee027@db2todb1 where address='Madh';
```



```
SQL> create table emp3 as select * from emp1@db1todb2 where address='Madh';

Table created.

SQL> select * from emp3;

     EMPID EMPNAME                        ADDRESS                        EMAIL                              SALARY
---------- ------------------------------ ------------------------------ ------------------------------ ----------
         5 Pankaj                         Madh                           Pankaj@protonmail.com               15200

SQL>
```

Conclusion: Successfully Execution of Schema into horizontal and vertical Fragmentation on different nodes in Distributed Database Environment.

PRACTICAL NO 3

CRUD Operation on MongoDB

Abhishek Ojha
Seat No 027

Practical No: 3

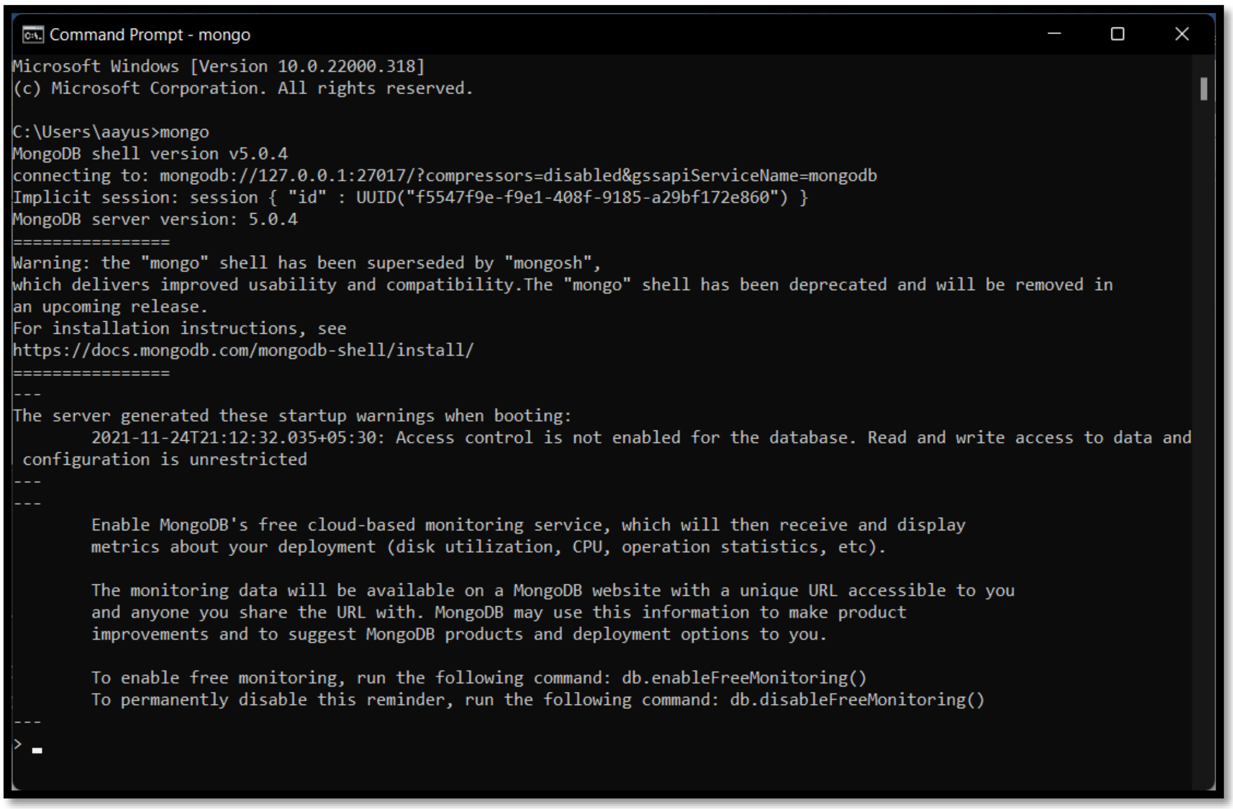
Aim: To perform CRUD Operation using MongoDB.

Software Requirement:

MongoDB

Practical Implementation Steps :

- ✓ **Step 1:-** Open CMD and hit command "Mongo" [To directly run MongoDB from Command Prompt we need to First Set the Environment Variable for MongoDB]
- ✓ To set Environment Variable Follow the Steps:
  - ❖ Open C drive -> Program Files -> MongoDB -> server -> 5.0 -> bin C:\Program Files\MongoDB\Server\5.0\bin [Copy the Path].
  - ❖ Start -> Search For "Edit the System Environment Variable" -> Open.
  - ❖ Add the Copied Path in System Variable and done.

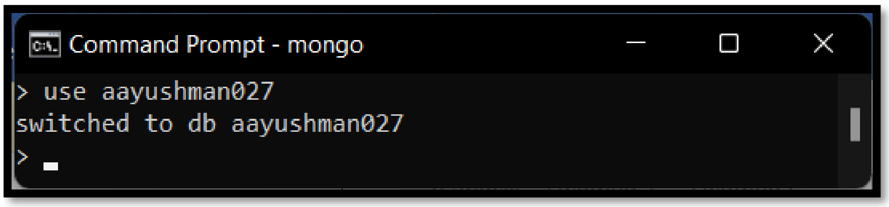


```
Command Prompt - mongo
Microsoft Windows [Version 10.0.22000.318]
(c) Microsoft Corporation. All rights reserved.

C:\Users\aayus>mongo
MongoDB shell version v5.0.4
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("f5547f9e-f9e1-408f-9185-a29bf172e860") }
MongoDB server version: 5.0.4
================
Warning: the "mongo" shell has been superseded by "mongosh",
which delivers improved usability and compatibility.The "mongo" shell has been deprecated and will be removed in
an upcoming release.
For installation instructions, see
https://docs.mongodb.com/mongodb-shell/install/
================
---
The server generated these startup warnings when booting:
        2021-11-24T21:12:32.035+05:30: Access control is not enabled for the database. Read and write access to data and
 configuration is unrestricted
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
> 
```

- ✓ **Step 2:** Creating and selecting database

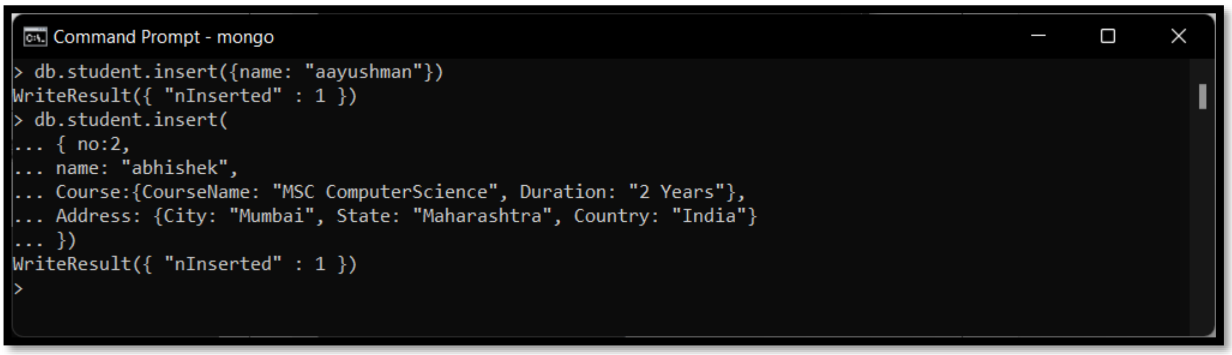
  Command : use aayushman027 [i.e. aayushman027 is Database Name]

  Note: To list all Database use the command : Show dbs.



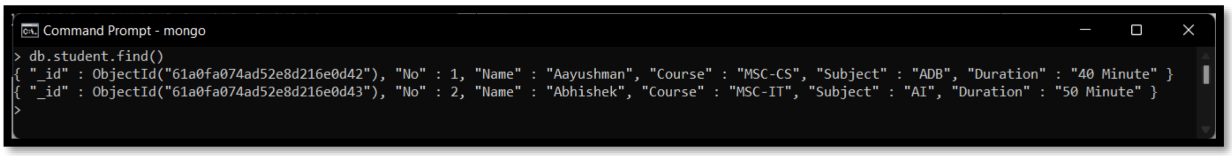
```
Command Prompt - mongo
> use aayushman027
switched to db aayushman027
> 
```

- ✓ **Step 3:** Creating Collections and Inserting Values **[C - Create]**
  Creating a collection and inserting values can be done together. Here we have orcollection name as 'student '



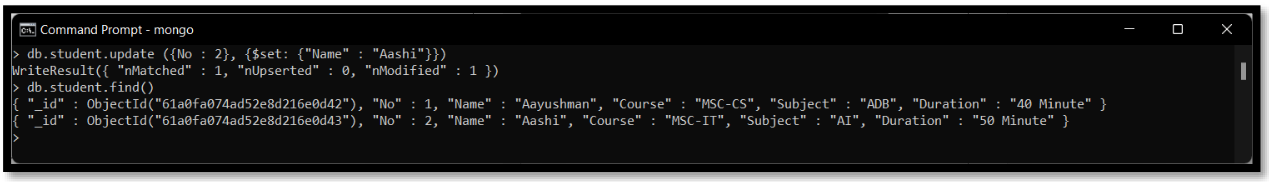
```
Command Prompt - mongo
> db.student.insert({name: "aayushman"})
WriteResult({ "nInserted" : 1 })
> db.student.insert(
... { no:2,
... name: "abhishek",
... Course:{CourseName: "MSC ComputerScience", Duration: "2 Years"},
... Address: {City: "Mumbai", State: "Maharashtra", Country: "India"}
... })
WriteResult({ "nInserted" : 1 })
>
```

- ✓ **Step 4:** Read Data from the Collections **[R - Read]**
  To retrieve the inserted document



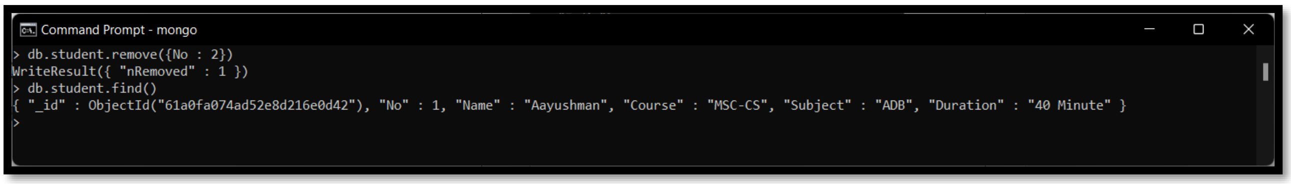
```
Command Prompt - mongo
> db.student.find()
{ "_id" : ObjectId("61a0fa074ad52e8d216e0d42"), "No" : 1, "Name" : "Aayushman", "Course" : "MSC-CS", "Subject" : "ADB", "Duration" : "40 Minute" }
{ "_id" : ObjectId("61a0fa074ad52e8d216e0d43"), "No" : 2, "Name" : "Abhishek", "Course" : "MSC-IT", "Subject" : "AI", "Duration" : "50 Minute" }
>
```

- ✓ **Step 5:** Updating a Document in a Collection [**U - Update**]



```
Command Prompt - mongo
> db.student.update ({No : 2}, {$set: {"Name" : "Aashi"}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.student.find()
{ "_id" : ObjectId("61a0fa074ad52e8d216e0d42"), "No" : 1, "Name" : "Aayushman", "Course" : "MSC-CS", "Subject" : "ADB", "Duration" : "40 Minute" }
{ "_id" : ObjectId("61a0fa074ad52e8d216e0d43"), "No" : 2, "Name" : "Aashi", "Course" : "MSC-IT", "Subject" : "AI", "Duration" : "50 Minute" }
>
```

- ✓ **Step 6:** Removing an Entry From the Collection[**D- Delete**]



```
Command Prompt - mongo
> db.student.remove({No : 2})
WriteResult({ "nRemoved" : 1 })
> db.student.find()
{ "_id" : ObjectId("61a0fa074ad52e8d216e0d42"), "No" : 1, "Name" : "Aayushman", "Course" : "MSC-CS", "Subject" : "ADB", "Duration" : "40 Minute" }
>
```

Conclusion: Successfully Performed and Implemented the CRUD Operation Using MongoDB.

PRACTICAL NO 4

CRUD Operations on Types

Abhishek Ojha
Seat No 027

ADVANCED DATABASE

Practical No : 4

Aim: Create different types that include attributes and methods. Define tables for these types by adding sufficient number of tuples. Demonstrate insert, update and delete operations on these tables. Execute queries on them.

Software Requirement:

Oracle 11g

Steps:

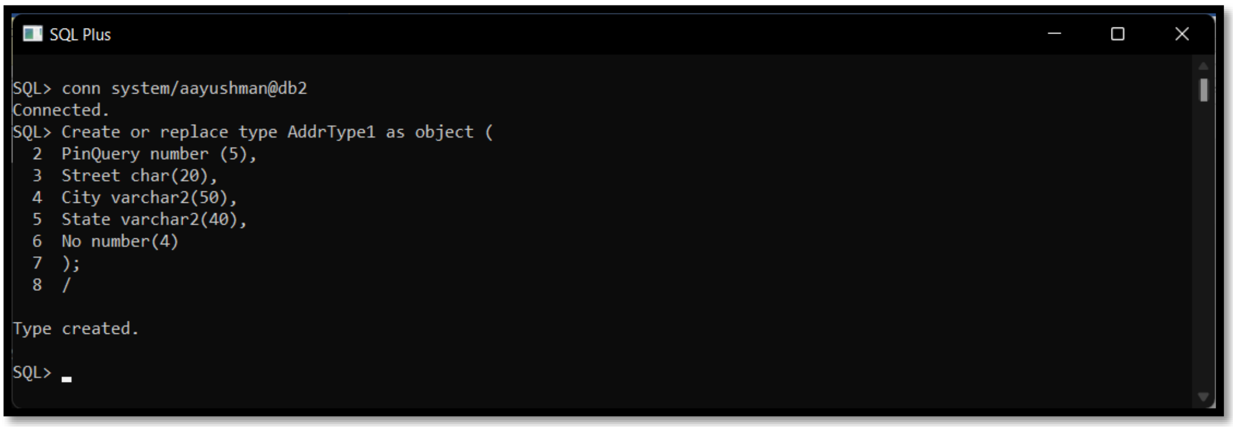
1. AddrType1 (PinQuery: number, Street :char, City : char, state :char) .
2. BranchType (address: AddrType1, phone1: integer,phone2: integer).
3. AuthorType (name:char,,addr AddrType1).
4. PublisherType (name: char, addr: AddrType1, branches: BranchTableType.
5. books(title: varchar, year : date, published_by ref PublisherType,authorsAuthorListType).
6. Insert some records into the above tables and fire the following queries.

Query:

1. List all of the authors that have the same pin Query as their publisher.
2. List all books that have 2 or more authors.
3. List the name of the publisher that has the most branches.
4. List all authors who have published more than one Book.
5. List all books (title) where the same author appears more than once on the list of authors(assuming that an integrity constraint requiring that the name of an author is unique in a list of authors has not been specified).

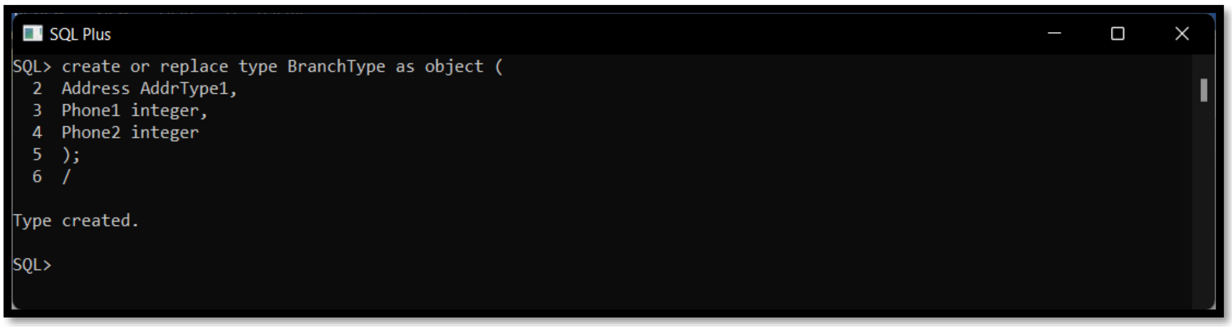
Practical Implementation Steps :

- ✓ **Step 1:-** AddrType1 (PinQuery: number, Street :char, City : char, state :char)

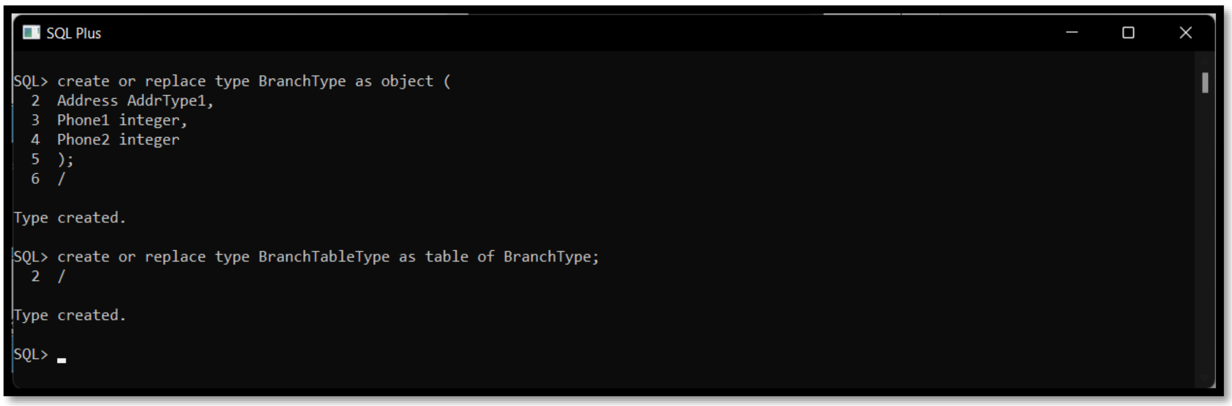


```
SQL> conn system/aayushman@db2
Connected.
SQL> Create or replace type AddrType1 as object (
  2  PinQuery number (5),
  3  Street char(20),
  4  City varchar2(50),
  5  State varchar2(40),
  6  No number(4)
  7  );
  8  /

Type created.

SQL>
```

- ✓ **Step 2:-** BranchType (address: AddrType1, phone1: integer,phone2: integer)

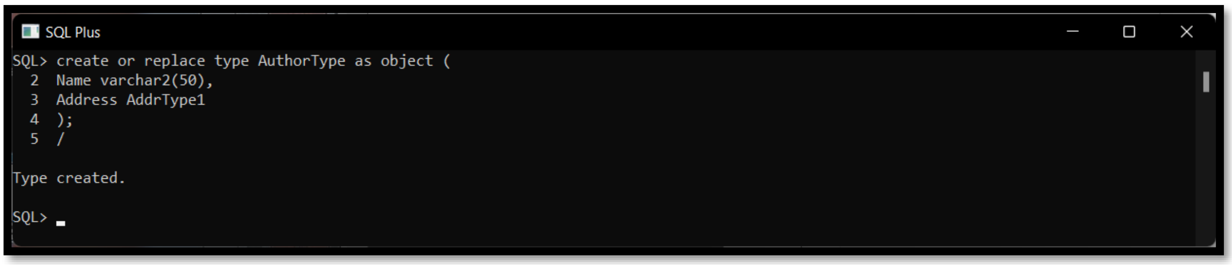


```
SQL> create or replace type BranchType as object (
  2  Address AddrType1,
  3  Phone1 integer,
  4  Phone2 integer
  5  );
  6  /

Type created.

SQL>
```

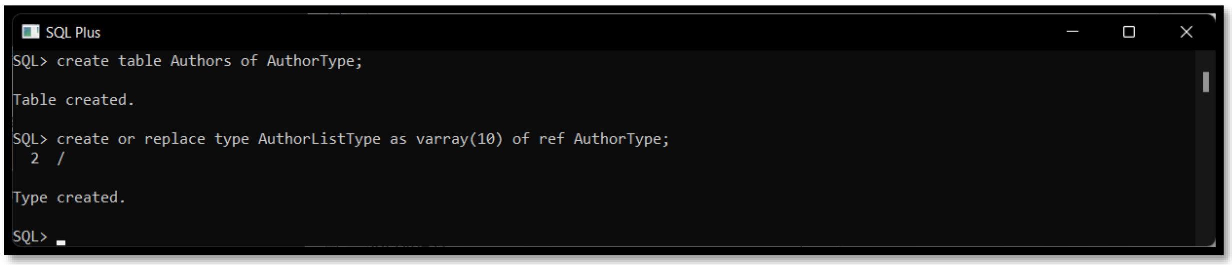


```
SQL> create or replace type BranchType as object (
  2  Address AddrType1,
  3  Phone1 integer,
  4  Phone2 integer
  5  );
  6  /

Type created.

SQL> create or replace type BranchTableType as table of BranchType;
  2  /

Type created.

SQL>
```

- ✓ **Step 3:-** AuthorType (name:char,,addr AddrType1)

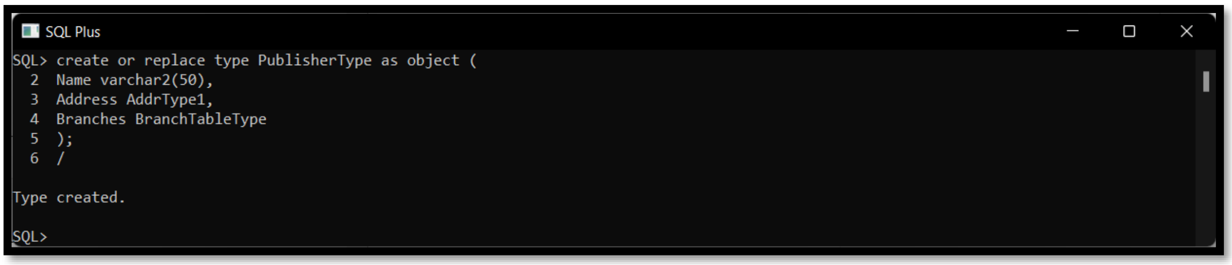


```
SQL> create or replace type AuthorType as object (
  2  Name varchar2(50),
  3  Address AddrType1
  4  );
  5  /

Type created.

SQL>
```

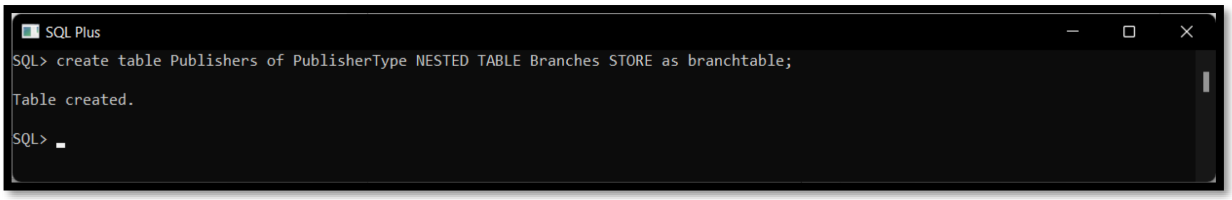


```
SQL> create table Authors of AuthorType;

Table created.

SQL> create or replace type AuthorListType as varray(10) of ref AuthorType;
  2  /

Type created.

SQL>
```

- ✓ **Step 4:-** PublisherType (name: char, addr: AddrType1, branches: BranchTableType

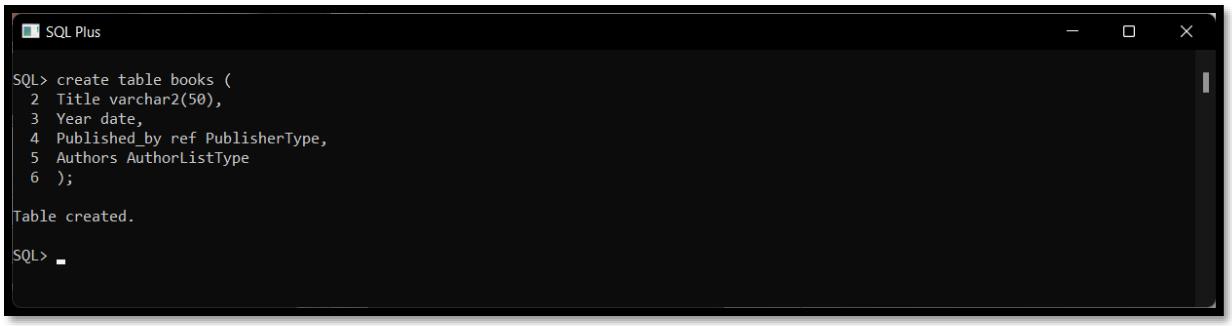


```
SQL> create or replace type PublisherType as object (
  2  Name varchar2(50),
  3  Address AddrType1,
  4  Branches BranchTableType
  5  );
  6  /

Type created.

SQL>
```



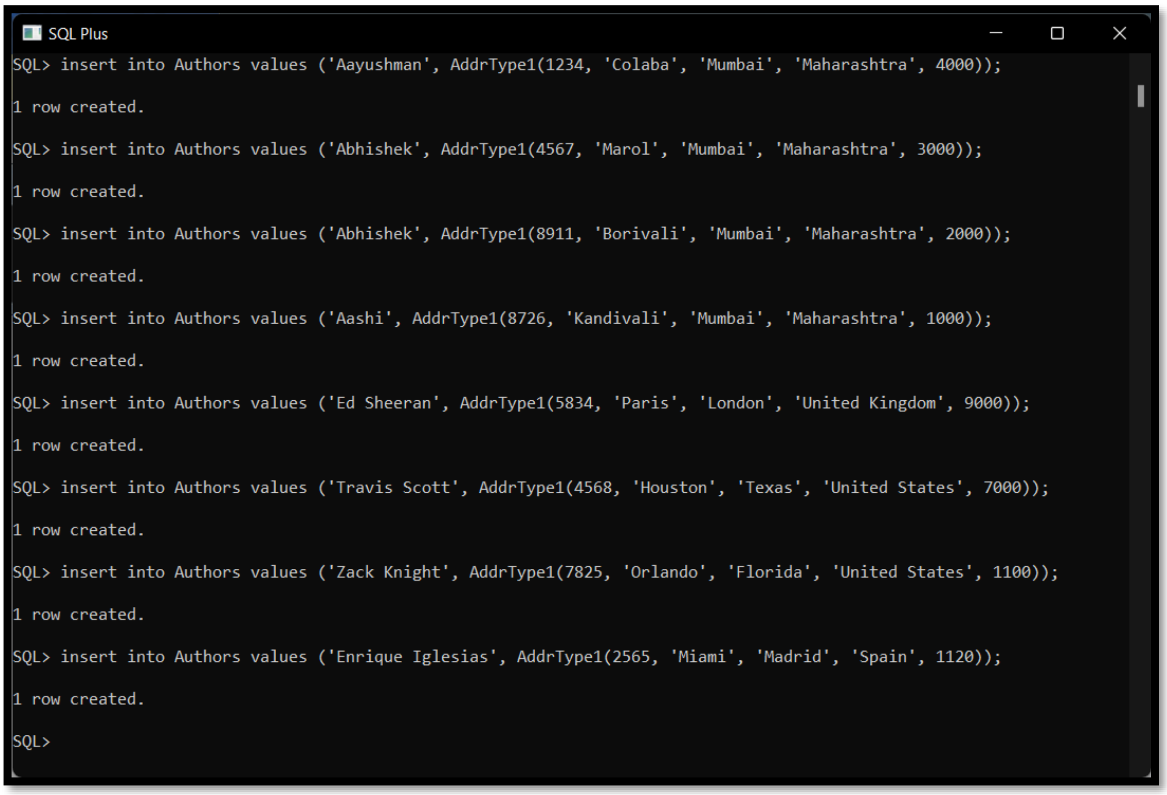
```
SQL> create table Publishers of PublisherType NESTED TABLE Branches STORE as branchtable;

Table created.

SQL>
```

- ✓ **Steps 5**:- books(title: varchar, year : date, published_by ref PublisherType,authorsAuthorListType)



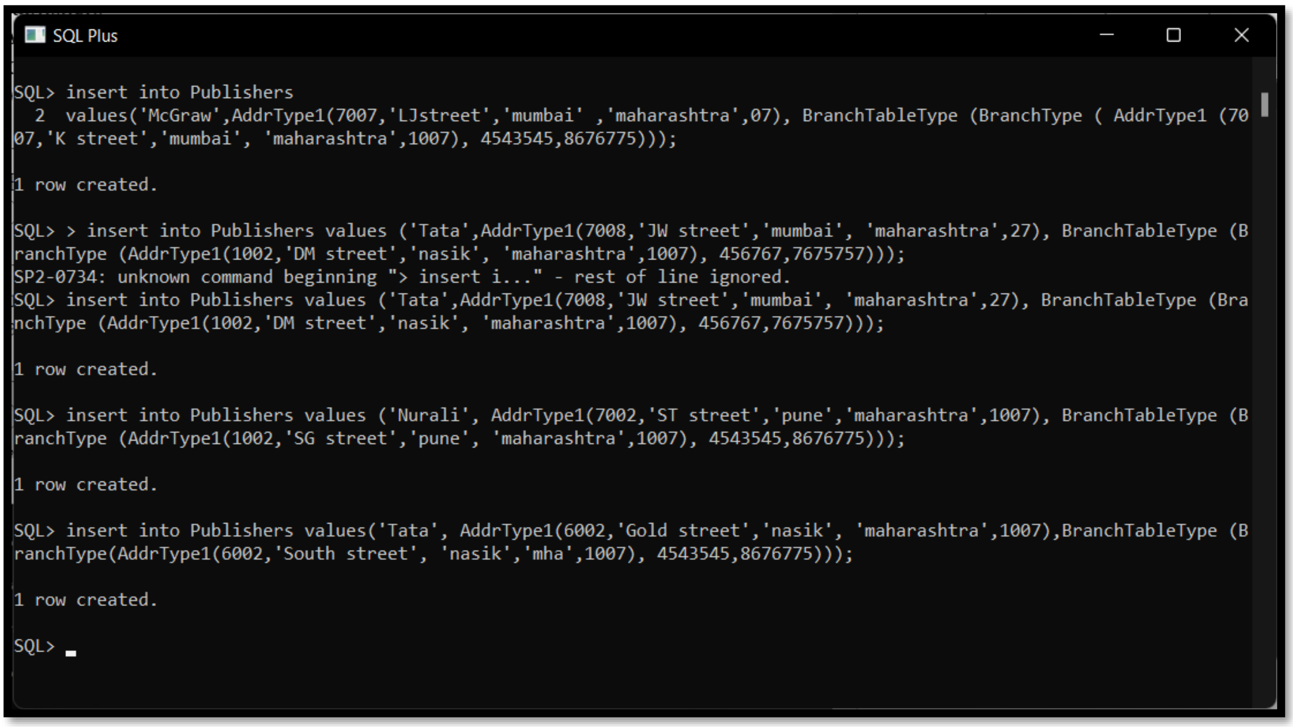
```
SQL> create table books (
  2  Title varchar2(50),
  3  Year date,
  4  Published_by ref PublisherType,
  5  Authors AuthorListType
  6  );

Table created.

SQL>
```

- ✓ **Step 6:-** Insert some records into the above tables and fire the following queries:



```
SQL> insert into Authors values ('Aayushman', AddrType1(1234, 'Colaba', 'Mumbai', 'Maharashtra', 4000));

1 row created.

SQL> insert into Authors values ('Abhishek', AddrType1(4567, 'Marol', 'Mumbai', 'Maharashtra', 3000));

1 row created.

SQL> insert into Authors values ('Abhishek', AddrType1(8911, 'Borivali', 'Mumbai', 'Maharashtra', 2000));

1 row created.

SQL> insert into Authors values ('Aashi', AddrType1(8726, 'Kandivali', 'Mumbai', 'Maharashtra', 1000));

1 row created.

SQL> insert into Authors values ('Ed Sheeran', AddrType1(5834, 'Paris', 'London', 'United Kingdom', 9000));

1 row created.

SQL> insert into Authors values ('Travis Scott', AddrType1(4568, 'Houston', 'Texas', 'United States', 7000));

1 row created.

SQL> insert into Authors values ('Zack Knight', AddrType1(7825, 'Orlando', 'Florida', 'United States', 1100));

1 row created.

SQL> insert into Authors values ('Enrique Iglesias', AddrType1(2565, 'Miami', 'Madrid', 'Spain', 1120));

1 row created.

SQL>
```

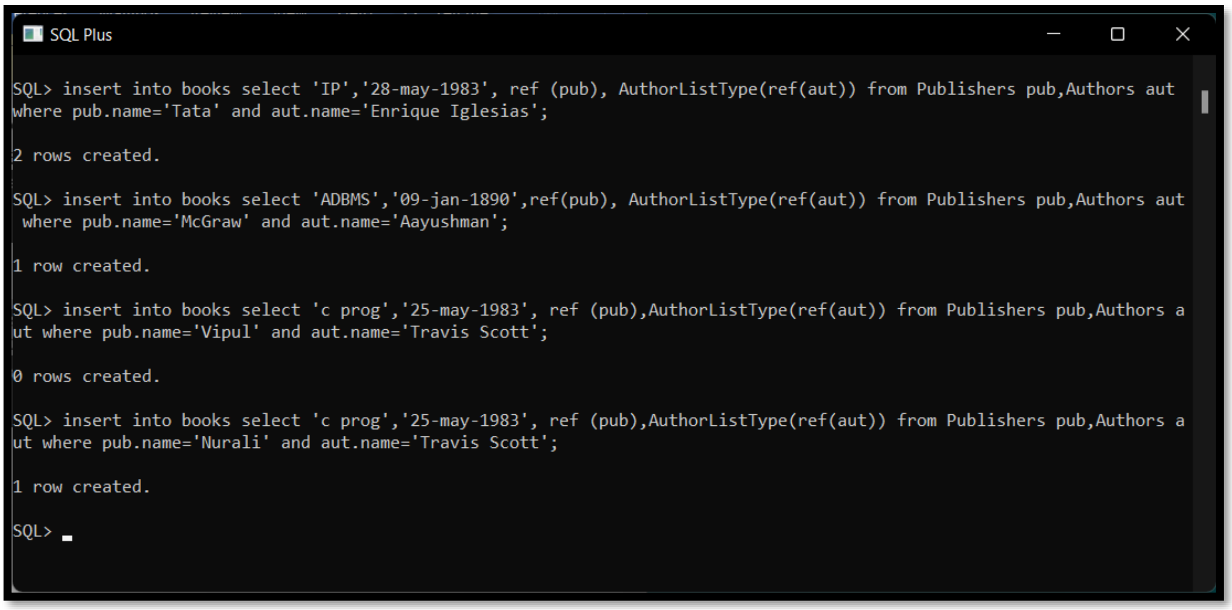
Step 7: - Insert Some records into the above tables and fire the following queries:



SQL Plus

```
SQL> insert into Publishers
  2  values('McGraw',AddrType1(7007,'LJstreet','mumbai' ,'maharashtra',07), BranchTableType (BranchType ( AddrType1 (70
07,'K street','mumbai', 'maharashtra',1007), 4543545,8676775)));

1 row created.

SQL> > insert into Publishers values ('Tata',AddrType1(7008,'JW street','mumbai', 'maharashtra',27), BranchTableType (B
ranchType (AddrType1(1002,'DM street','nasik', 'maharashtra',1007), 456767,7675757)));
SP2-0734: unknown command beginning "> insert i..." - rest of line ignored.
SQL> insert into Publishers values ('Tata',AddrType1(7008,'JW street','mumbai', 'maharashtra',27), BranchTableType (Bra
nchType (AddrType1(1002,'DM street','nasik', 'maharashtra',1007), 456767,7675757)));

1 row created.

SQL> insert into Publishers values ('Nurali', AddrType1(7002,'ST street','pune','maharashtra',1007), BranchTableType (B
ranchType (AddrType1(1002,'SG street','pune', 'maharashtra',1007), 4543545,8676775)));

1 row created.

SQL> insert into Publishers values('Tata', AddrType1(6002,'Gold street','nasik', 'maharashtra',1007),BranchTableType (B
ranchType(AddrType1(6002,'South street', 'nasik','mha',1007), 4543545,8676775)));

1 row created.

SQL> _
```

Step 8:- Insert some records into the above tables and fire the following queries:

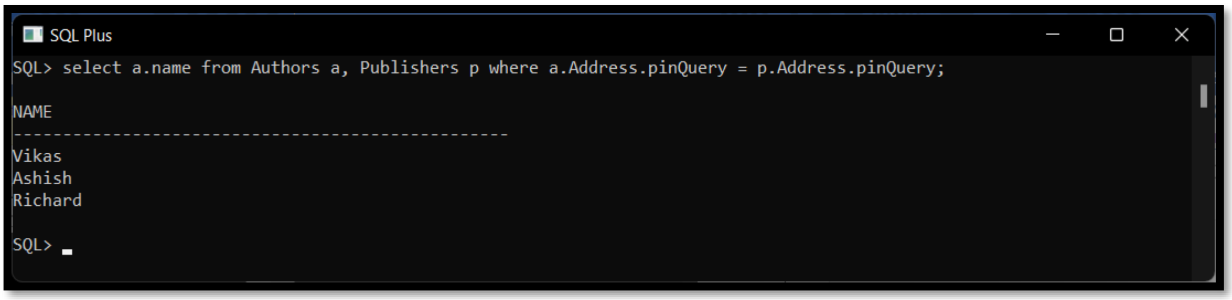


SQL Plus

```
SQL> insert into books select 'IP','28-may-1983', ref (pub), AuthorListType(ref(aut)) from Publishers pub,Authors aut
where pub.name='Tata' and aut.name='Enrique Iglesias';

2 rows created.

SQL> insert into books select 'ADBMS','09-jan-1890',ref(pub), AuthorListType(ref(aut)) from Publishers pub,Authors aut
 where pub.name='McGraw' and aut.name='Aayushman';

1 row created.

SQL> insert into books select 'c prog','25-may-1983', ref (pub),AuthorListType(ref(aut)) from Publishers pub,Authors a
ut where pub.name='Vipul' and aut.name='Travis Scott';

0 rows created.

SQL> insert into books select 'c prog','25-may-1983', ref (pub),AuthorListType(ref(aut)) from Publishers pub,Authors a
ut where pub.name='Nurali' and aut.name='Travis Scott';

1 row created.

SQL> _
```

Query : List all of the authors that have the same pin Query as their publisher.

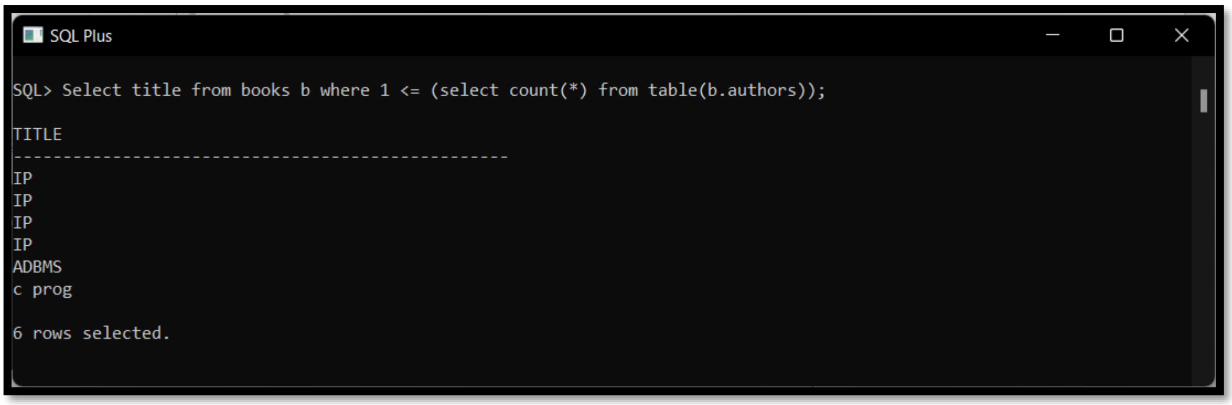
select a.name from Authors a, Publishers p
where a.Address.pinQuery = p.Address.pinQuery;



```
SQL> select a.name from Authors a, Publishers p where a.Address.pinQuery = p.Address.pinQuery;

NAME
--------------------------------------------------
Vikas
Ashish
Richard

SQL>
```

Query: List all books that have 2 or more authors

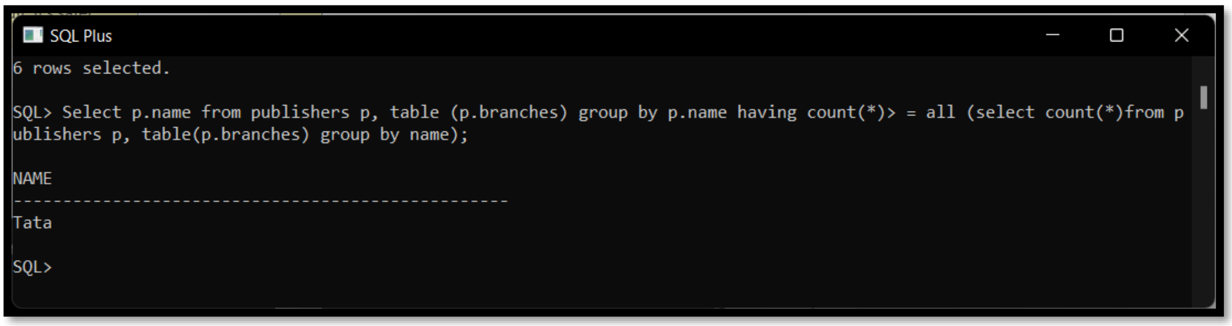
Select title from books b where 1 <= (select count(*) from table(b.authors));



```
SQL> Select title from books b where 1 <= (select count(*) from table(b.authors));

TITLE
--------------------------------------------------
IP
IP
IP
IP
ADBMS
c prog

6 rows selected.
```

Query: List the name of the publisher that has the most branches

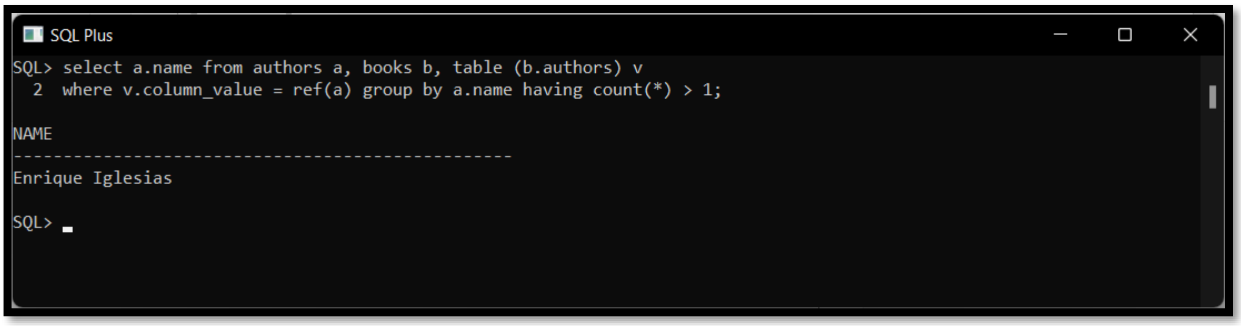
Select p.name from publishers p, table (p.branches) group by p.name having count(*)> = all (select count(*)from publishers p, table(p.branches) group by name);



```
6 rows selected.

SQL> Select p.name from publishers p, table (p.branches) group by p.name having count(*)> = all (select count(*)from p
ublishers p, table(p.branches) group by name);

NAME
--------------------------------------------------
Tata

SQL>
```

Query: List all authors who have published more than one Book

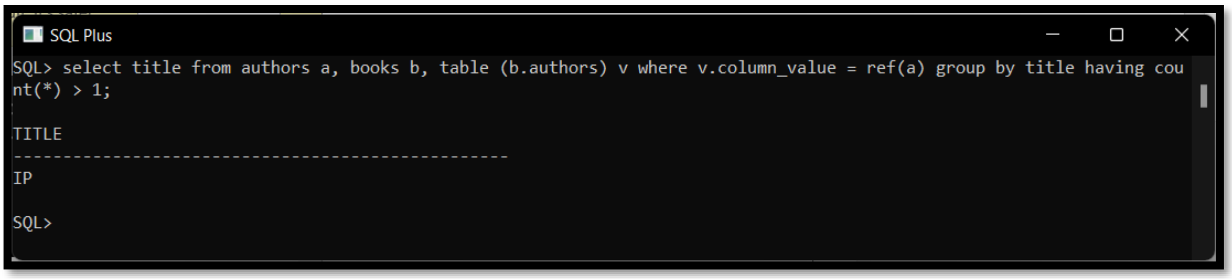
select a.name from authors a, books b, table (b.authors) v where v.column_value = ref(a) group by a.name having count(*) > 1;



```
SQL> select a.name from authors a, books b, table (b.authors) v
  2  where v.column_value = ref(a) group by a.name having count(*) > 1;

NAME
--------------------------------------------------
Enrique Iglesias

SQL>
```

Query: List all books (title) where the same author appears more than once on the list of authors(assuming that an integrity constraint requiring that the name of an author is unique in a list of authors has not been specified).

select title from authors a, books b, table (b.authors) v wherev.column_value = ref(a) group by title having count(*) > 1;



```
SQL> select title from authors a, books b, table (b.authors) v where v.column_value = ref(a) group by title having cou
nt(*) > 1;

TITLE
--------------------------------------------------
IP

SQL>
```

Conclusion : Successfully Demonstrated insert, update and delete operations on Type

PRACTICAL NO 5

Temporal Database

Abhishek Ojha
Seat No 027

Practical No: 5

Aim: Create a temporal database and issue queries on it.

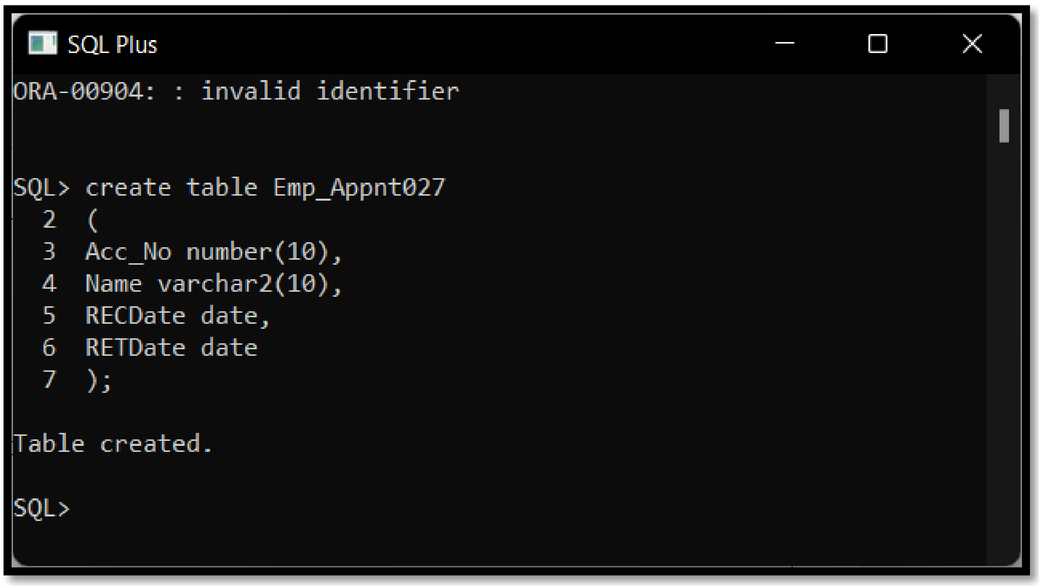
Software Requirement:

MongoDB

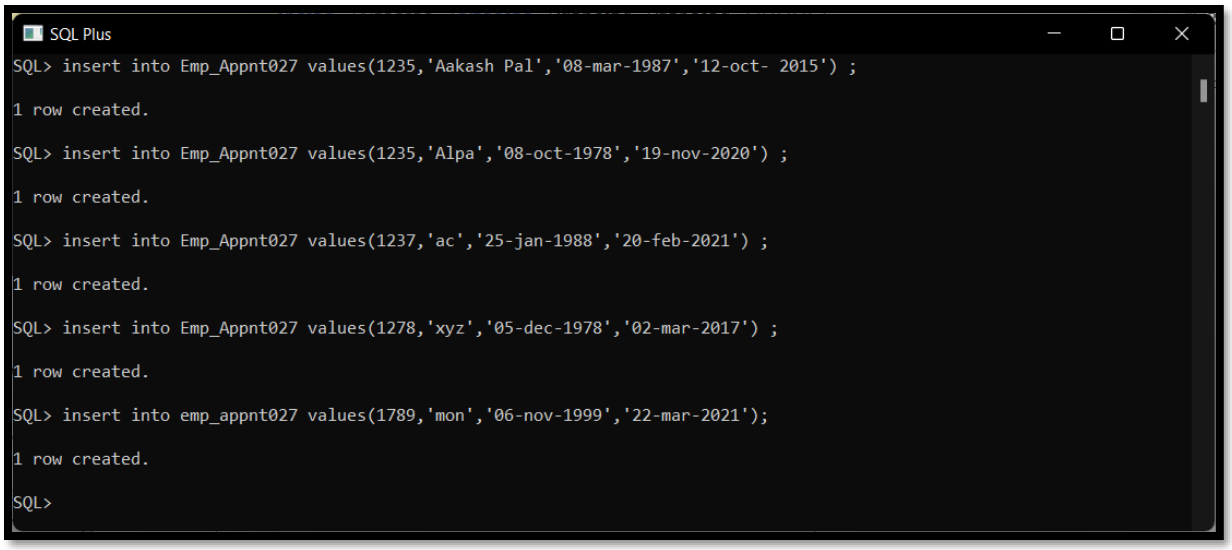
Query:

1. Show the Employee Whose Record Date is 08-Mar-1987.
2. Show the Employee Whose Retired Date is 22-Mar-2021
3. Create a new table named as tbl_shares1.
4. Insert Some Row in Table tbl_shares1
5. Display all the records you have entered in table.
6. Display records where price>100 and TransTime='01:09'.
7. Display the records where price=(select max(price) from tbl_shares1 where TransTime='02:04');

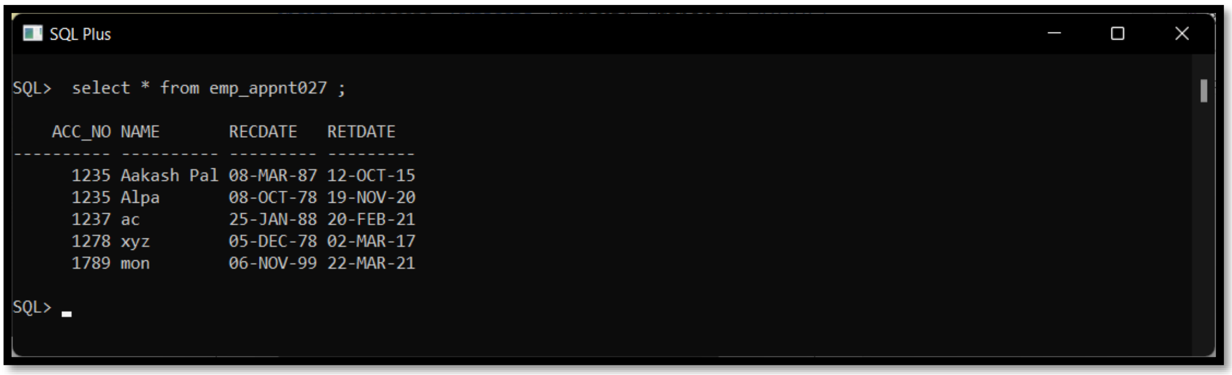
Practical Implementation:



```
ORA-00904: : invalid identifier


SQL> create table Emp_Appnt027
  2  (
  3  Acc_No number(10),
  4  Name varchar2(10),
  5  RECDate date,
  6  RETDate date
  7  );

Table created.

SQL>
```

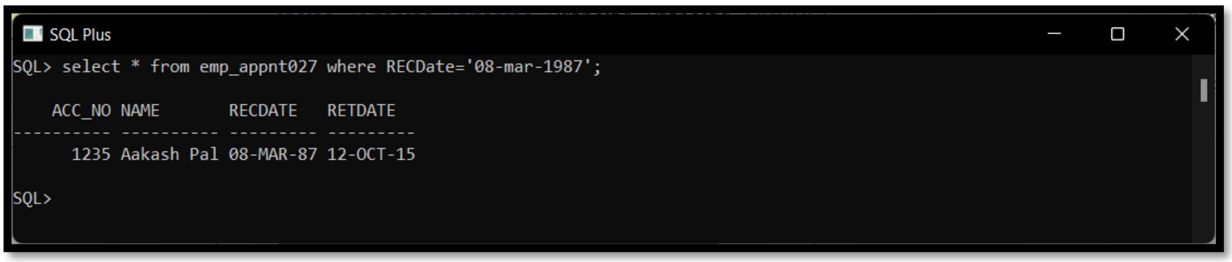


```
SQL> insert into Emp_Appnt027 values(1235,'Aakash Pal','08-mar-1987','12-oct- 2015') ;

1 row created.

SQL> insert into Emp_Appnt027 values(1235,'Alpa','08-oct-1978','19-nov-2020') ;

1 row created.

SQL> insert into Emp_Appnt027 values(1237,'ac','25-jan-1988','20-feb-2021') ;

1 row created.

SQL> insert into Emp_Appnt027 values(1278,'xyz','05-dec-1978','02-mar-2017') ;

1 row created.

SQL> insert into emp_appnt027 values(1789,'mon','06-nov-1999','22-mar-2021');

1 row created.

SQL>
```



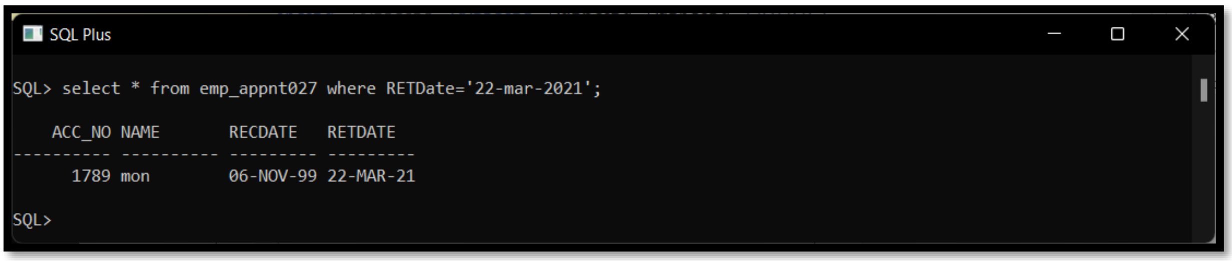
```
SQL>  select * from emp_appnt027 ;

    ACC_NO NAME       RECDATE   RETDATE
---------- ---------- --------- ---------
      1235 Aakash Pal 08-MAR-87 12-OCT-15
      1235 Alpa       08-OCT-78 19-NOV-20
      1237 ac         25-JAN-88 20-FEB-21
      1278 xyz        05-DEC-78 02-MAR-17
      1789 mon        06-NOV-99 22-MAR-21

SQL>
```

1. Show the Employee Whose Record Date is 08-Mar-1987



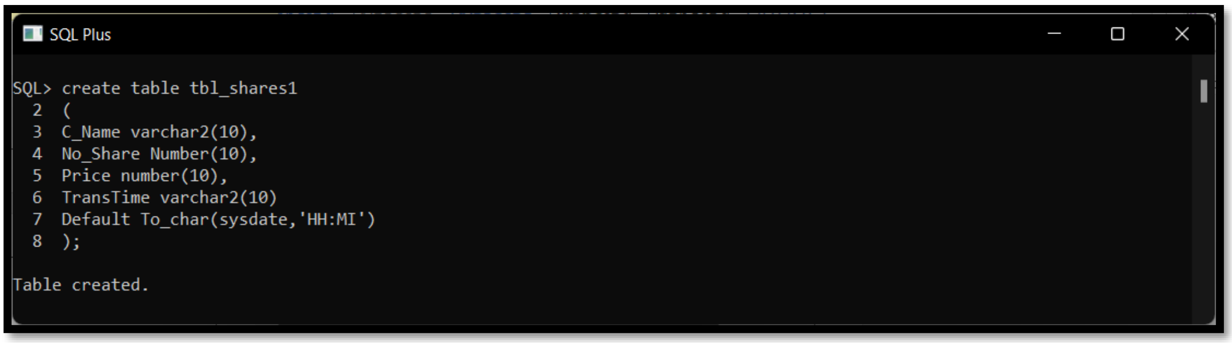
```
SQL> select * from emp_appnt027 where RECDate='08-mar-1987';

    ACC_NO NAME       RECDATE   RETDATE
---------- ---------- --------- ---------
      1235 Aakash Pal 08-MAR-87 12-OCT-15

SQL>
```

2. Show the Employee Whose Retired Date is 22-Mar-2021



```
SQL> select * from emp_appnt027 where RETDate='22-mar-2021';

    ACC_NO NAME       RECDATE   RETDATE
---------- ---------- --------- ---------
      1789 mon        06-NOV-99 22-MAR-21

SQL>
```

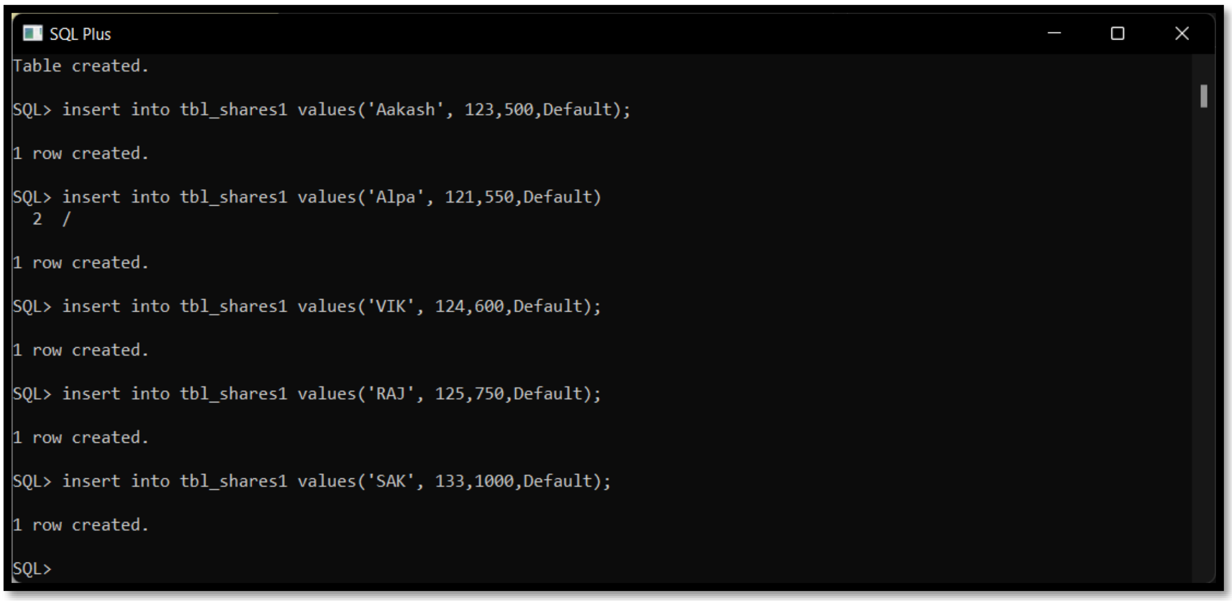
3. **Create a new table named as tbl_shares1.**



SQL Plus

```
SQL> create table tbl_shares1
  2  (
  3  C_Name varchar2(10),
  4  No_Share Number(10),
  5  Price number(10),
  6  TransTime varchar2(10)
  7  Default To_char(sysdate,'HH:MI')
  8  );

Table created.
```

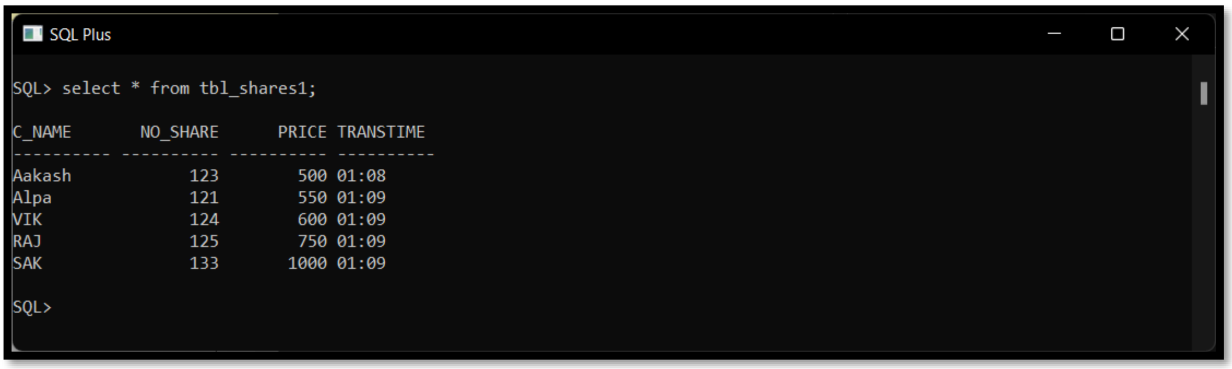
4. **Insert Some Row in Table tbl_shares1**



SQL Plus

```
Table created.

SQL> insert into tbl_shares1 values('Aakash', 123,500,Default);

1 row created.

SQL> insert into tbl_shares1 values('Alpa', 121,550,Default)
  2  /

1 row created.

SQL> insert into tbl_shares1 values('VIK', 124,600,Default);

1 row created.

SQL> insert into tbl_shares1 values('RAJ', 125,750,Default);

1 row created.

SQL> insert into tbl_shares1 values('SAK', 133,1000,Default);

1 row created.

SQL>
```

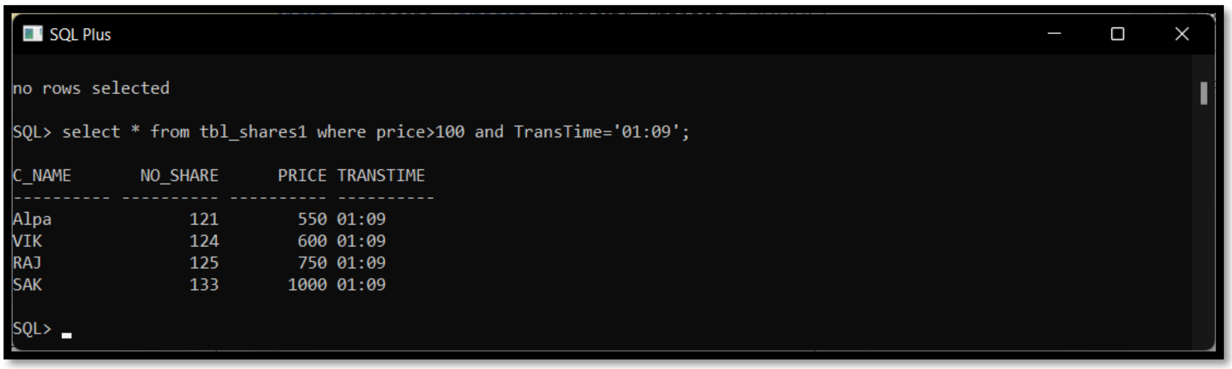
5. **Display all the records you have entered in table.**



SQL Plus

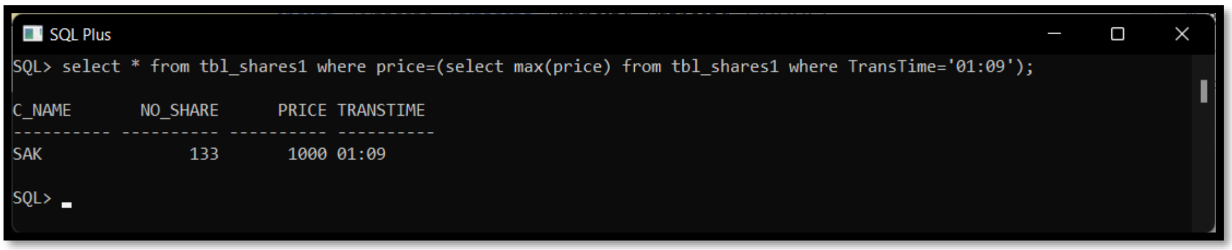
```
SQL> select * from tbl_shares1;

C_NAME       NO_SHARE      PRICE TRANSTIME
---------- ---------- ---------- ----------
Aakash            123        500 01:08
Alpa              121        550 01:09
VIK               124        600 01:09
RAJ               125        750 01:09
SAK               133       1000 01:09

SQL>
```

6. **Display records where price>100 and TransTime='01:09'.**



```
SQL Plus

no rows selected

SQL> select * from tbl_shares1 where price>100 and TransTime='01:09';

C_NAME       NO_SHARE      PRICE TRANSTIME
---------- ---------- ---------- ----------
Alpa              121        550 01:09
VIK               124        600 01:09
RAJ               125        750 01:09
SAK               133       1000 01:09

SQL> _
```

7. **Display the records where price=(select max(price) from tbl_shares1 where TransTime='02:04');**



```
SQL Plus
SQL> select * from tbl_shares1 where price=(select max(price) from tbl_shares1 where TransTime='01:09');

C_NAME       NO_SHARE      PRICE TRANSTIME
---------- ---------- ---------- ----------
SAK               133       1000 01:09

SQL> _
```

Conclusion : Successfully Performed and Implemented the temporal database and issue queries on Oracle Database.

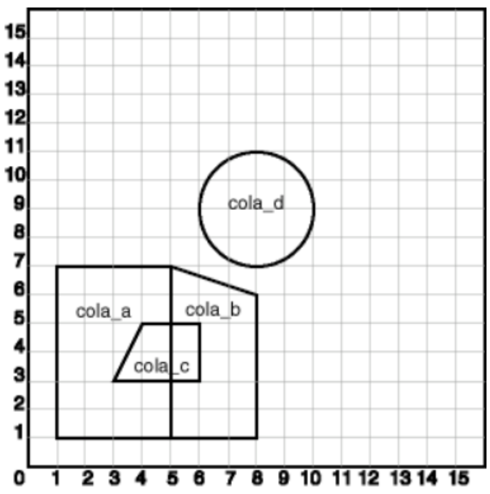
PRACTICAL NO 6

Spatial Database

Abhishek Ojha
Seat No 027

Practical 6:

Aim: Create a table that stores spatial data and issue queries on it.



Software Requirement: Oracle 11g

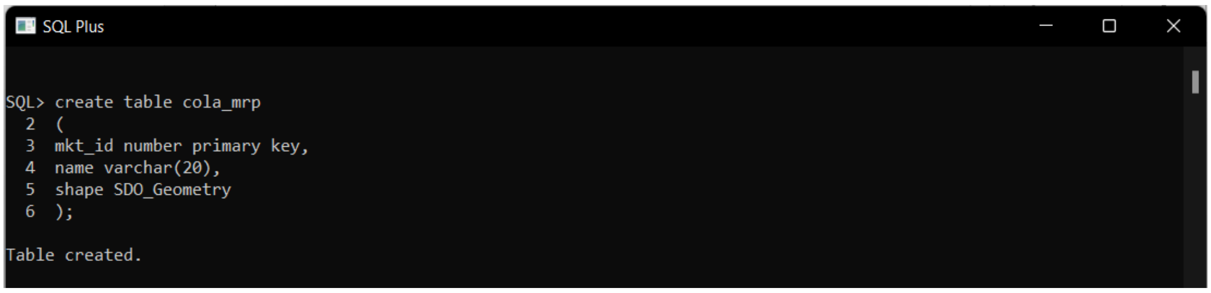
Query:

Create a spatial database table that stores the number, name and location, which consists of four different areas say abc, pqr, mno and xyz.
Fire the following queries:

a) Find the topological intersection of two geometries.
b) Find whether two geometric figures are equivalent to each other.
c) Find the areas of all different locations.
d) Find the area of only one location.
e) Find the distance between two geometries.

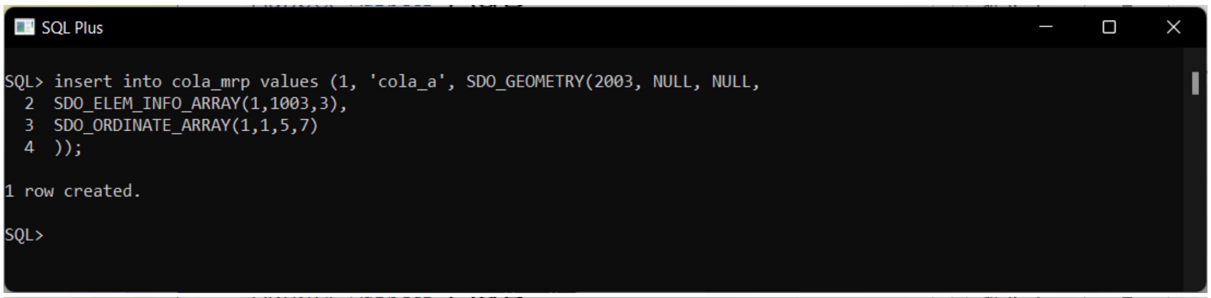
Practical Implementation:

1. **Create a table for cola (soft drink) markets in a given geography (such as city or state). Each row will be an area of interest for a specific cola (for example, where the cola is most preferred by residents, where the manufacturer believes the cola has growth potential, and so on). (For restrictions on spatial table and column names, see**

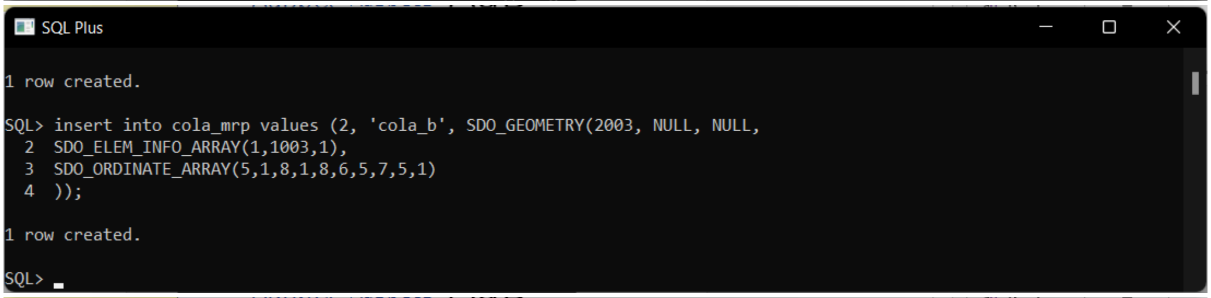


```
SQL> create table cola_mrp
  (
  mkt_id number primary key,
  name varchar(20),
  shape SDO_Geometry
  );

Table created.
```

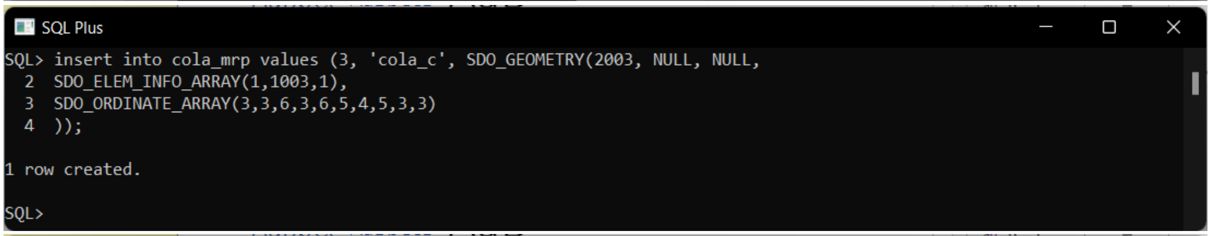
2. The next INSERT statement creates an area of interest for Cola A. This area happens to be a rectangle. The area could represent any user-defined criterion: for example, where Cola A is the preferred drink, where Cola A is under competitive pressure, where Cola A has strong growth potential, and so on.



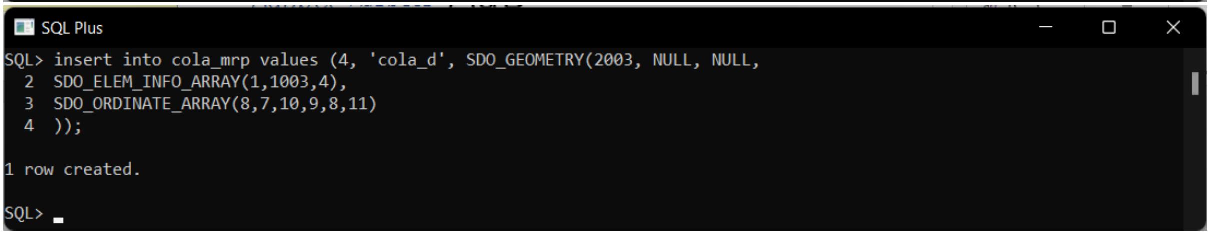
```
SQL> insert into cola_mrp values (1, 'cola_a', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,3),
  3  SDO_ORDINATE_ARRAY(1,1,5,7)
  4  ));

1 row created.

SQL>
```



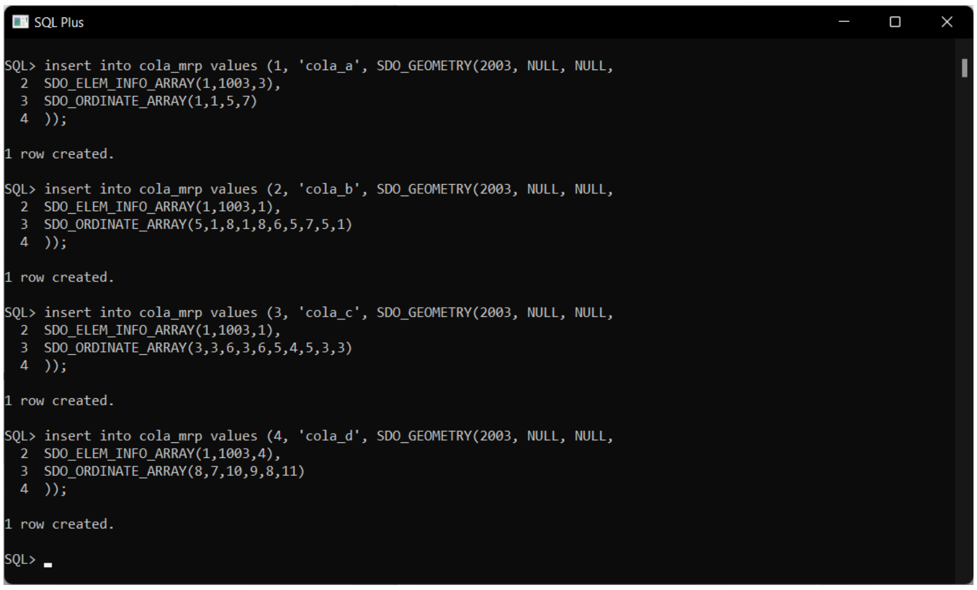
```
1 row created.

SQL> insert into cola_mrp values (2, 'cola_b', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,1),
  3  SDO_ORDINATE_ARRAY(5,1,8,1,8,6,5,7,5,1)
  4  ));

1 row created.

SQL>
```



```
SQL> insert into cola_mrp values (3, 'cola_c', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,1),
  3  SDO_ORDINATE_ARRAY(3,3,6,3,6,5,4,5,3,3)
  4  ));

1 row created.

SQL>
```



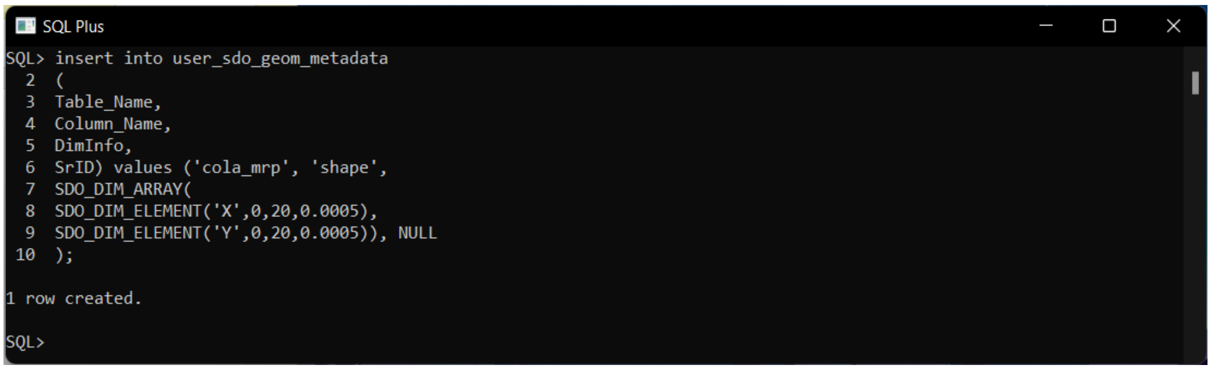
```
SQL> insert into cola_mrp values (4, 'cola_d', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,4),
  3  SDO_ORDINATE_ARRAY(8,7,10,9,8,11)
  4  ));

1 row created.

SQL>
```



```
SQL> insert into cola_mrp values (1, 'cola_a', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,3),
  3  SDO_ORDINATE_ARRAY(1,1,5,7)
  4  ));

1 row created.

SQL> insert into cola_mrp values (2, 'cola_b', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,1),
  3  SDO_ORDINATE_ARRAY(5,1,8,1,8,6,5,7,5,1)
  4  ));

1 row created.

SQL> insert into cola_mrp values (3, 'cola_c', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,1),
  3  SDO_ORDINATE_ARRAY(3,3,6,3,6,5,4,5,3,3)
  4  ));

1 row created.

SQL> insert into cola_mrp values (4, 'cola_d', SDO_GEOMETRY(2003, NULL, NULL,
  2  SDO_ELEM_INFO_ARRAY(1,1003,4),
  3  SDO_ORDINATE_ARRAY(8,7,10,9,8,11)
  4  ));

1 row created.

SQL>
```

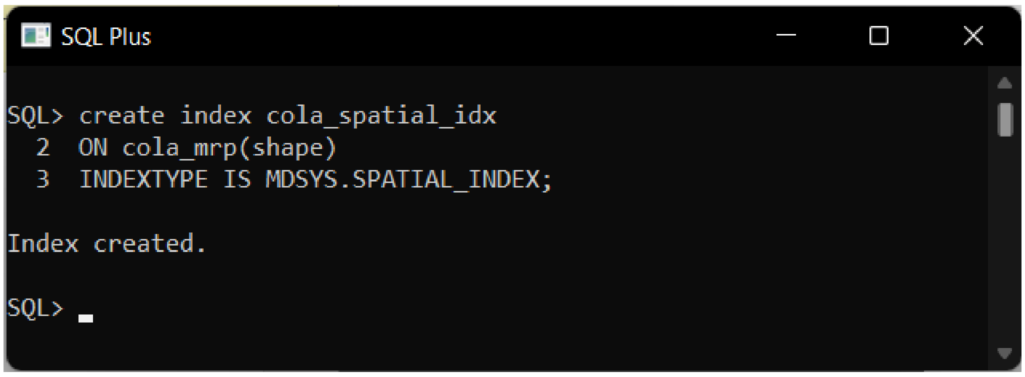
3. **UPDATE METADATA VIEW**

   Update the USER_SDO_GEOM_METADATA view. This is required before the spatial index can be created. Do this only once for each layer (that is, table-column combination; here: COLA_MARKETS and SHAPE).



```
SQL> insert into user_sdo_geom_metadata
  2  (
  3  Table_Name,
  4  Column_Name,
  5  DimInfo,
  6  SrID) values ('cola_mrp', 'shape',
  7  SDO_DIM_ARRAY(
  8  SDO_DIM_ELEMENT('X',0,20,0.0005),
  9  SDO_DIM_ELEMENT('Y',0,20,0.0005)), NULL
 10  );

1 row created.

SQL>
```

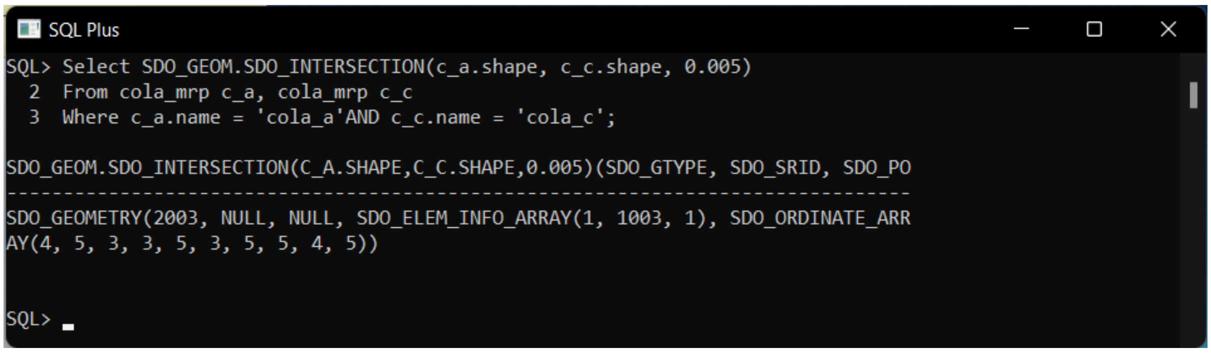
4. **CREATE THE SPATIAL INDEX**



```
SQL> create index cola_spatial_idx
  2  ON cola_mrp(shape)
  3  INDEXTYPE IS MDSYS.SPATIAL_INDEX;

Index created.

SQL>
```

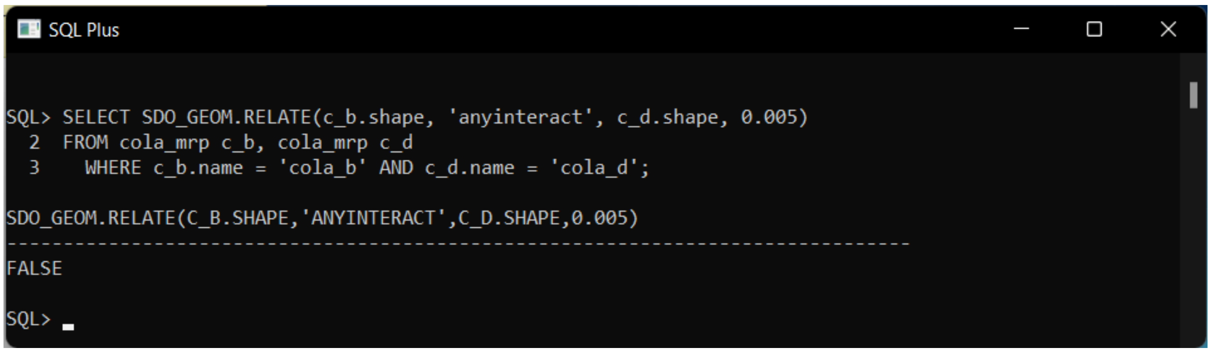
5. **PERFORM SOME SPATIAL QUERIES**

   Return the topological intersection of two geometries



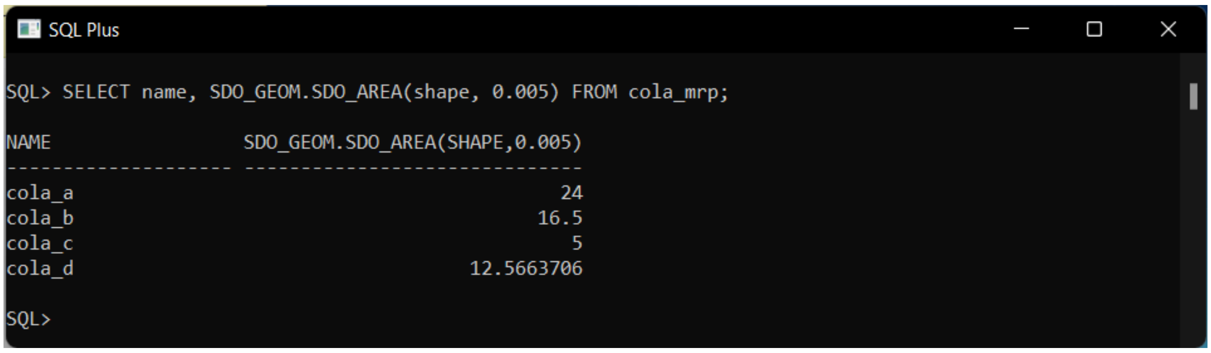
```
SQL> Select SDO_GEOM.SDO_INTERSECTION(c_a.shape, c_c.shape, 0.005)
  2  From cola_mrp c_a, cola_mrp c_c
  3  Where c_a.name = 'cola_a'AND c_c.name = 'cola_c';

SDO_GEOM.SDO_INTERSECTION(C_A.SHAPE,C_C.SHAPE,0.005)(SDO_GTYPE, SDO_SRID, SDO_PO
--------------------------------------------------------------------------------
SDO_GEOMETRY(2003, NULL, NULL, SDO_ELEM_INFO_ARRAY(1, 1003, 1), SDO_ORDINATE_ARR
AY(4, 5, 3, 3, 5, 3, 5, 5, 4, 5))


SQL>
```

Do two geometries have any spatial relationship?



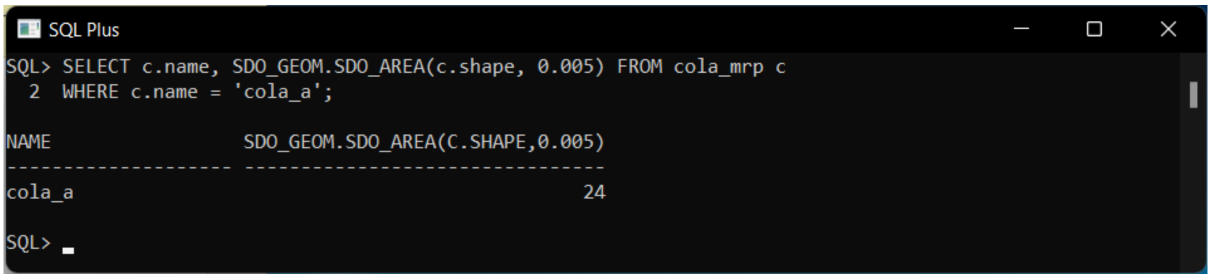
```
SQL> SELECT SDO_GEOM.RELATE(c_b.shape, 'anyinteract', c_d.shape, 0.005)
  2  FROM cola_mrp c_b, cola_mrp c_d
  3    WHERE c_b.name = 'cola_b' AND c_d.name = 'cola_d';

SDO_GEOM.RELATE(C_B.SHAPE,'ANYINTERACT',C_D.SHAPE,0.005)
--------------------------------------------------------------------------------
FALSE

SQL>
```

Return the areas of all cola markets



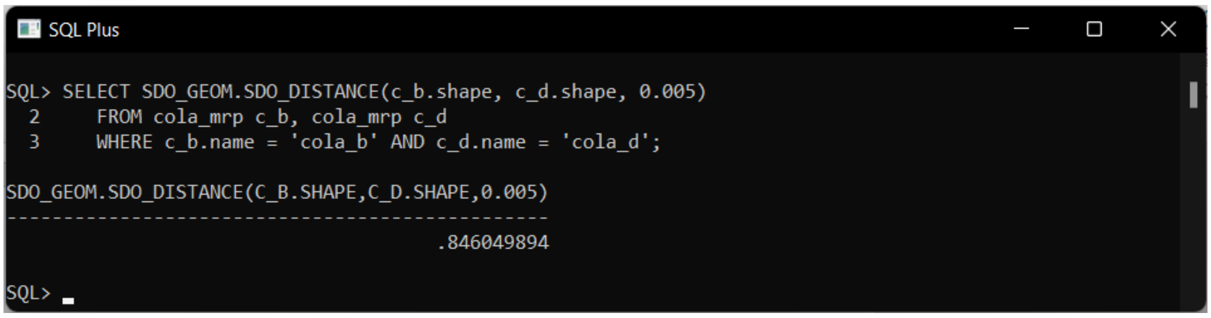
```
SQL> SELECT name, SDO_GEOM.SDO_AREA(shape, 0.005) FROM cola_mrp;

NAME                 SDO_GEOM.SDO_AREA(SHAPE,0.005)
-------------------- ------------------------------
cola_a                                           24
cola_b                                         16.5
cola_c                                            5
cola_d                                   12.5663706

SQL>
```

Return the area of just cola_a



```
SQL> SELECT c.name, SDO_GEOM.SDO_AREA(c.shape, 0.005) FROM cola_mrp c
  2  WHERE c.name = 'cola_a';

NAME                 SDO_GEOM.SDO_AREA(C.SHAPE,0.005)
-------------------- --------------------------------
cola_a                                             24

SQL>
```

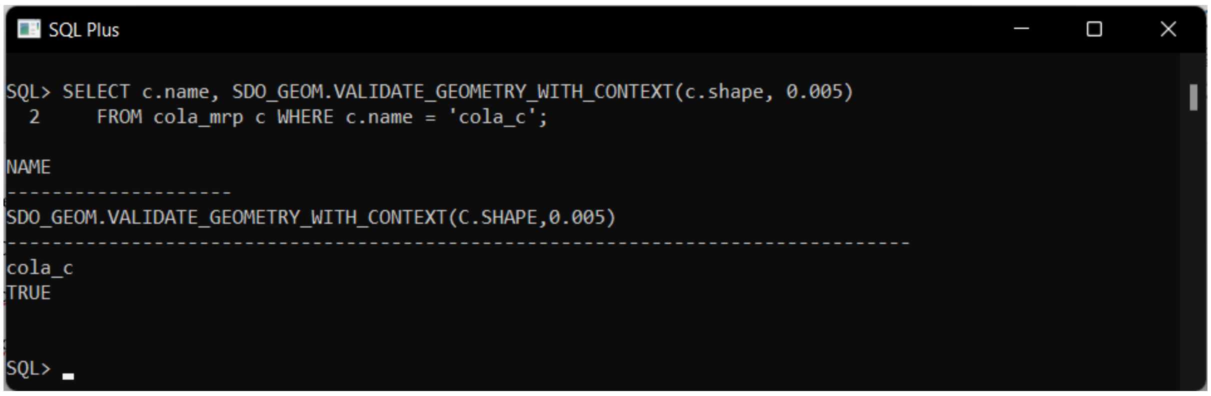
Return the distance between two geometries.



SQL Plus

```
SQL> SELECT SDO_GEOM.SDO_DISTANCE(c_b.shape, c_d.shape, 0.005)
  2     FROM cola_mrp c_b, cola_mrp c_d
  3     WHERE c_b.name = 'cola_b' AND c_d.name = 'cola_d';

SDO_GEOM.SDO_DISTANCE(C_B.SHAPE,C_D.SHAPE,0.005)
------------------------------------------------
                                      .846049894

SQL>
```

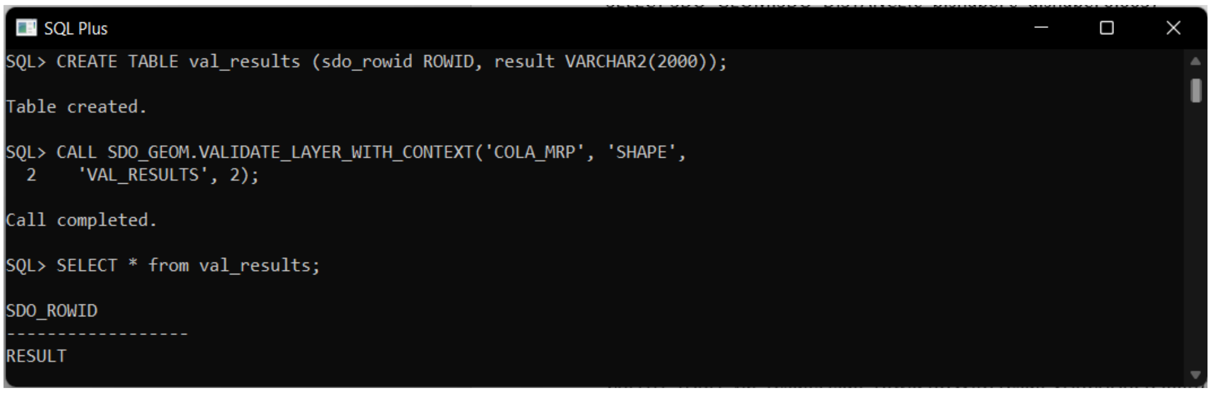
Is a geometry valid?



SQL Plus

```
SQL> SELECT c.name, SDO_GEOM.VALIDATE_GEOMETRY_WITH_CONTEXT(c.shape, 0.005)
  2     FROM cola_mrp c WHERE c.name = 'cola_c';

NAME
--------------------
SDO_GEOM.VALIDATE_GEOMETRY_WITH_CONTEXT(C.SHAPE,0.005)
--------------------------------------------------------------------------------
cola_c
TRUE


SQL>
```

is a layer valid? (First, create the results table)



SQL Plus

```
SQL> CREATE TABLE val_results (sdo_rowid ROWID, result VARCHAR2(2000));

Table created.

SQL> CALL SDO_GEOM.VALIDATE_LAYER_WITH_CONTEXT('COLA_MRP', 'SHAPE',
  2    'VAL_RESULTS', 2);

Call completed.

SQL> SELECT * from val_results;

SDO_ROWID
------------------
RESULT
```

Conclusion : Successfully Performed the Spatial Data Queries on Oracle Database.

PRACTICAL NO 7

XML Database

Abhishek Ojha
Seat No 027

Practical 7: XML Database

Aim:

Create a table employee having dept_id as number datatype and employee_spec as XML data type (XM_Type). The employee_spec is a schema with attributes emp_id, name, email, acc_no, managerEmail, dataOf Joning. Insert 10 tuples into employee table. Fire the following queries on XML database.

Query:

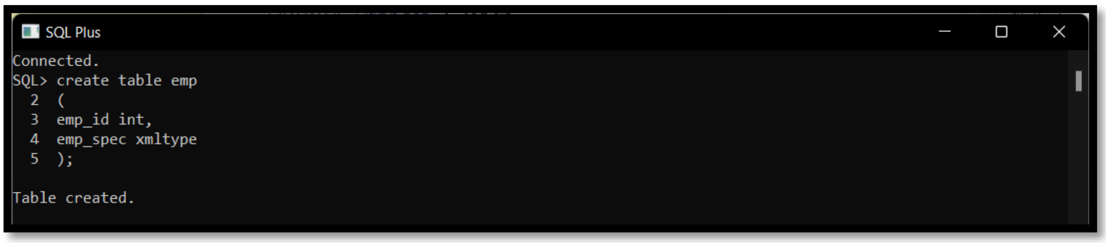
1. Retrieve the names of employee.
2. Retrieve the acc_no of employees.
3. Retrieve the names, acc_no, and email of employees.
4. Update the 3rd record from the table and display the name of an employee.
5. Delete 4th record from the table

Software Requirements:

Oracle 11g Express Edition, Any browser.

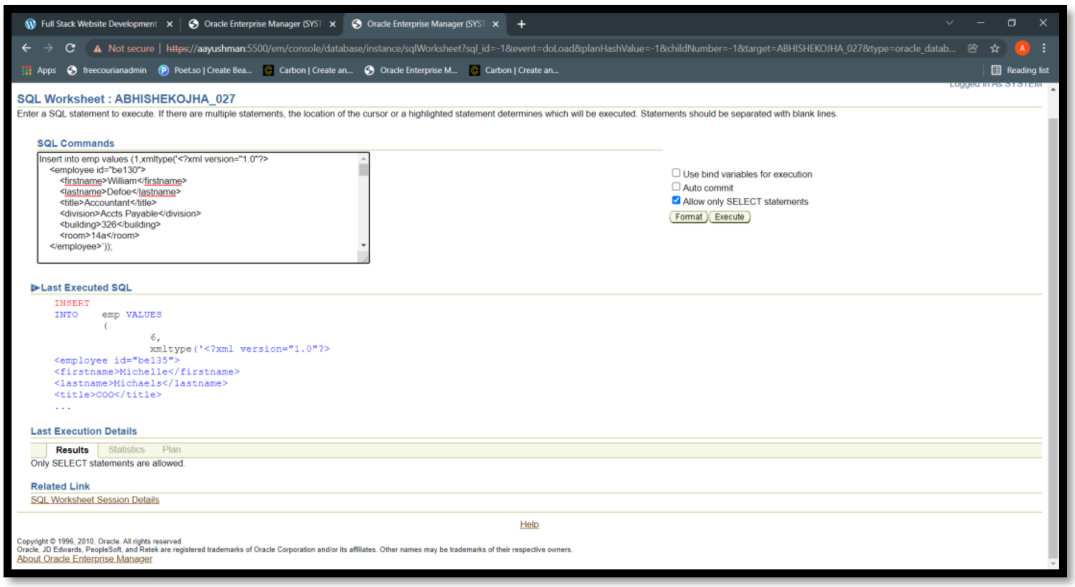
Practical Implementation:

1. Create Table Employee



```
Connected.
SQL> create table emp
  2  (
  3  emp_id int,
  4  emp_spec xmltype
  5  );

Table created.
```

2. Insert Some Records in Created Table



SQL Worksheet : ABHISHEKOJHA_027

Enter a SQL statement to execute. If there are multiple statements, the location of the cursor or a highlighted statement determines which will be executed. Statements should be separated with blank lines.

SQL Commands

```
Insert into emp values (1,xmltype('<?xml version="1.0"?>
  <employee id="be130">
    <firstname>William</firstname>
    <lastname>Defoe</lastname>
    <title>Accountant</title>
    <division>Accts Payable</division>
    <building>326</building>
    <room>14a</room>
  </employee>'));
```

[ ] Use bind variables for execution
[ ] Auto commit
[✓] Allow only SELECT statements

Last Executed SQL

```
INSERT
INTO     emp VALUES
        (
                6,
                xmltype('<?xml version="1.0"?>
<employee id="be135">
<firstname>Michelle</firstname>
<lastname>Michaels</lastname>
<title>COO</title>
...
```

Last Execution Details

Only SELECT statements are allowed.

Related Link

SQL Worksheet Session Details

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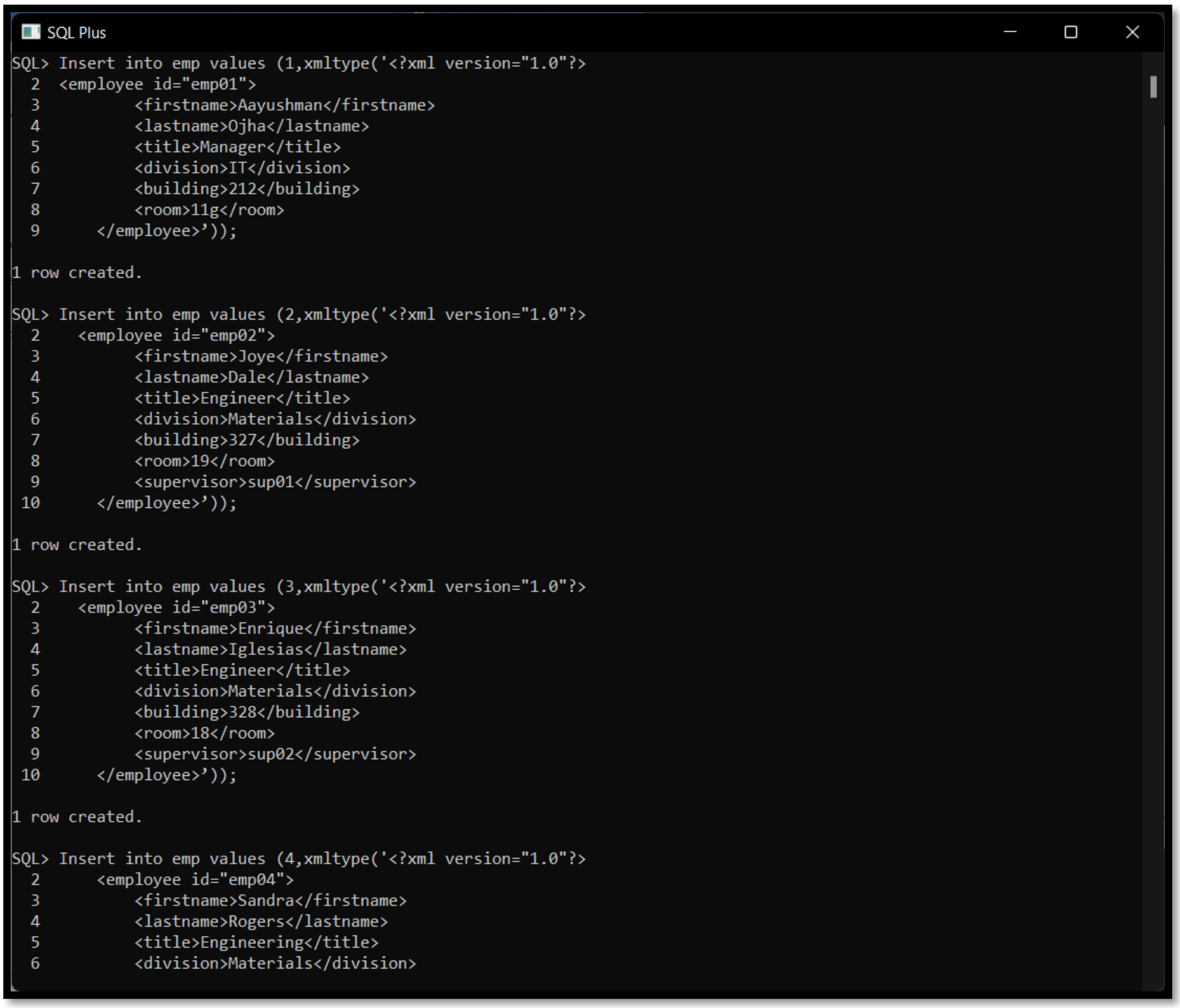
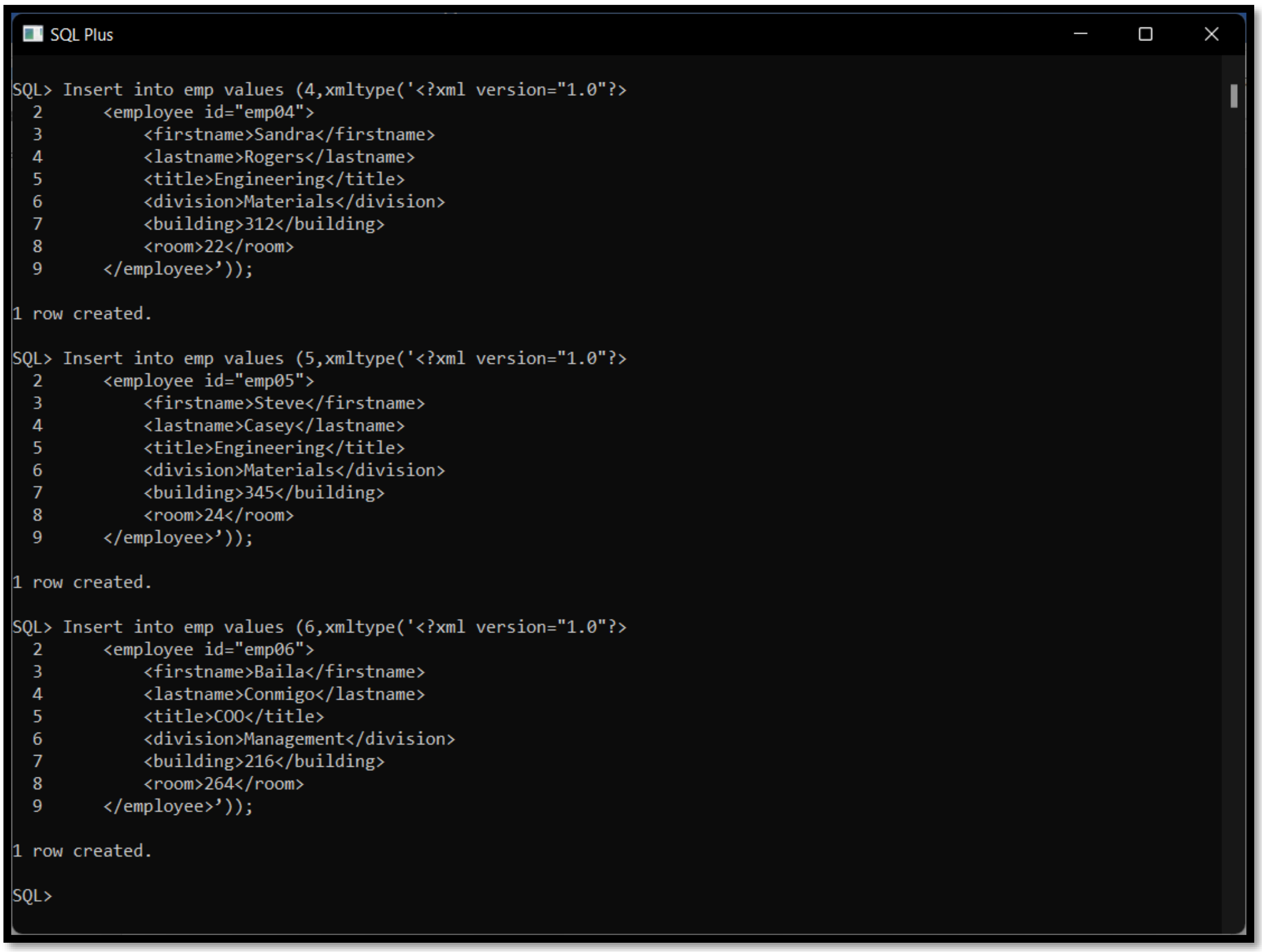
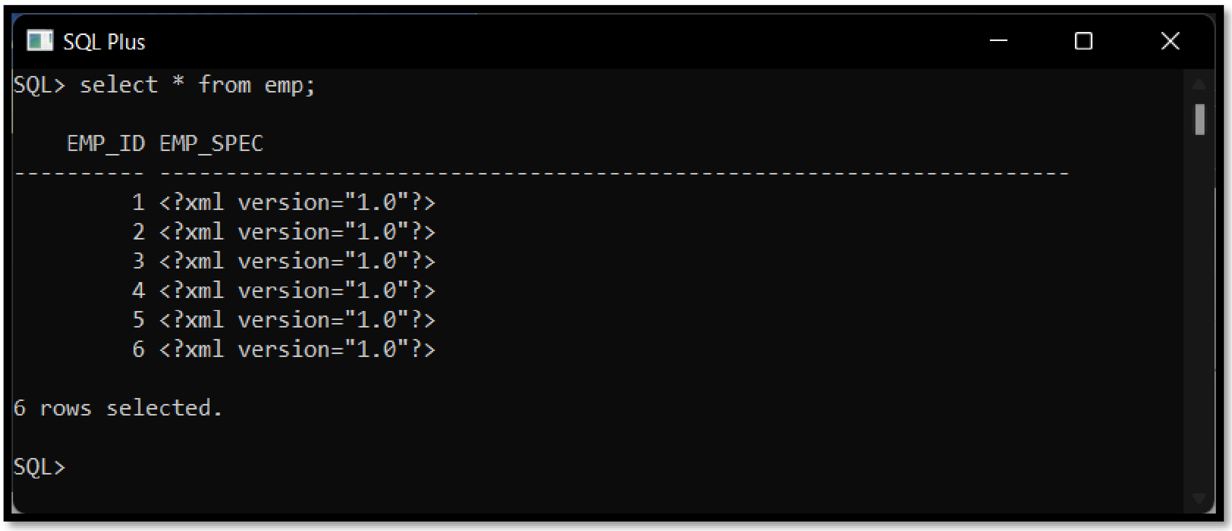
About Oracle Enterprise Manager



```
SQL> Insert into emp values (1,xmltype('<?xml version="1.0"?>
     <employee id="emp01">
             <firstname>Aayushman</firstname>
             <lastname>Ojha</lastname>
             <title>Manager</title>
             <division>IT</division>
             <building>212</building>
             <room>11g</room>
         </employee>’));

1 row created.

SQL> Insert into emp values (2,xmltype('<?xml version="1.0"?>
       <employee id="emp02">
             <firstname>Joye</firstname>
             <lastname>Dale</lastname>
             <title>Engineer</title>
             <division>Materials</division>
             <building>327</building>
             <room>19</room>
             <supervisor>sup01</supervisor>
         </employee>’));

1 row created.

SQL> Insert into emp values (3,xmltype('<?xml version="1.0"?>
       <employee id="emp03">
             <firstname>Enrique</firstname>
             <lastname>Iglesias</lastname>
             <title>Engineer</title>
             <division>Materials</division>
             <building>328</building>
             <room>18</room>
             <supervisor>sup02</supervisor>
         </employee>’));

1 row created.

SQL> Insert into emp values (4,xmltype('<?xml version="1.0"?>
         <employee id="emp04">
             <firstname>Sandra</firstname>
             <lastname>Rogers</lastname>
             <title>Engineering</title>
             <division>Materials</division>
```

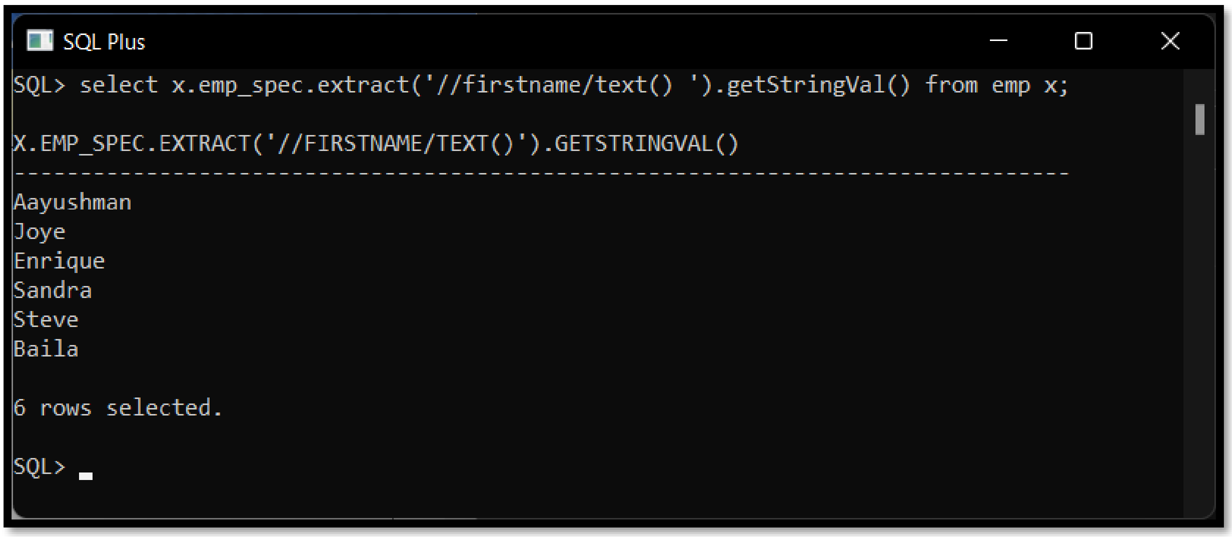


```
SQL> Insert into emp values (4,xmltype('<?xml version="1.0"?>
       <employee id="emp04">
           <firstname>Sandra</firstname>
           <lastname>Rogers</lastname>
           <title>Engineering</title>
           <division>Materials</division>
           <building>312</building>
           <room>22</room>
       </employee>'));

1 row created.

SQL> Insert into emp values (5,xmltype('<?xml version="1.0"?>
       <employee id="emp05">
           <firstname>Steve</firstname>
           <lastname>Casey</lastname>
           <title>Engineering</title>
           <division>Materials</division>
           <building>345</building>
           <room>24</room>
       </employee>'));

1 row created.

SQL> Insert into emp values (6,xmltype('<?xml version="1.0"?>
       <employee id="emp06">
           <firstname>Baila</firstname>
           <lastname>Conmigo</lastname>
           <title>COO</title>
           <division>Management</division>
           <building>216</building>
           <room>264</room>
       </employee>'));

1 row created.

SQL>
```



```
SQL> select * from emp;

    EMP_ID EMP_SPEC
---------- --------------------------------------------------------------------
         1 <?xml version="1.0"?>
         2 <?xml version="1.0"?>
         3 <?xml version="1.0"?>
         4 <?xml version="1.0"?>
         5 <?xml version="1.0"?>
         6 <?xml version="1.0"?>

6 rows selected.

SQL>
```

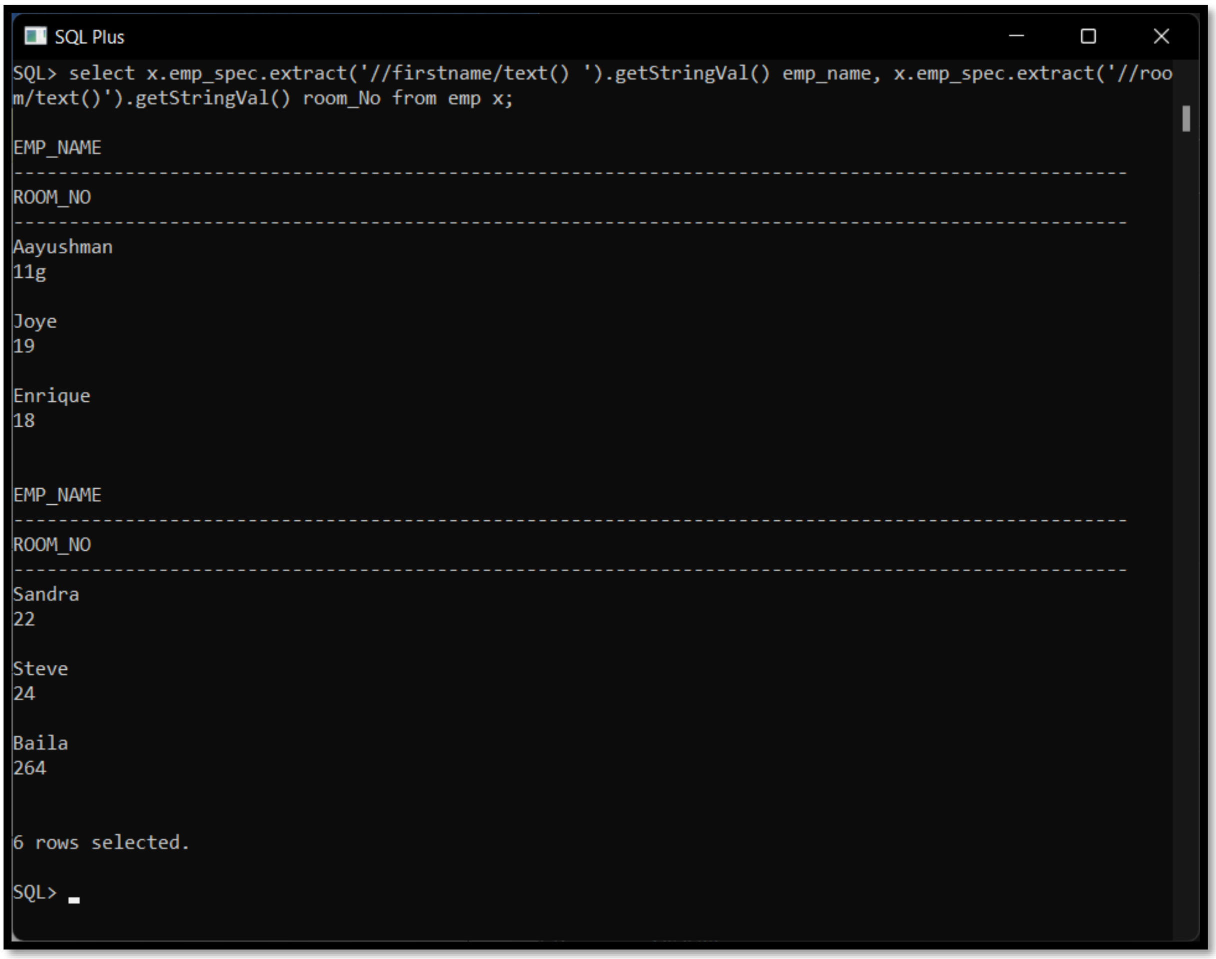
3. Get the first name:



SQL Plus

```
SQL> select x.emp_spec.extract('//firstname/text() ').getStringVal() from emp x;

X.EMP_SPEC.EXTRACT('//FIRSTNAME/TEXT()').GETSTRINGVAL()
--------------------------------------------------------------------------------
Aayushman
Joye
Enrique
Sandra
Steve
Baila

6 rows selected.

SQL>
```

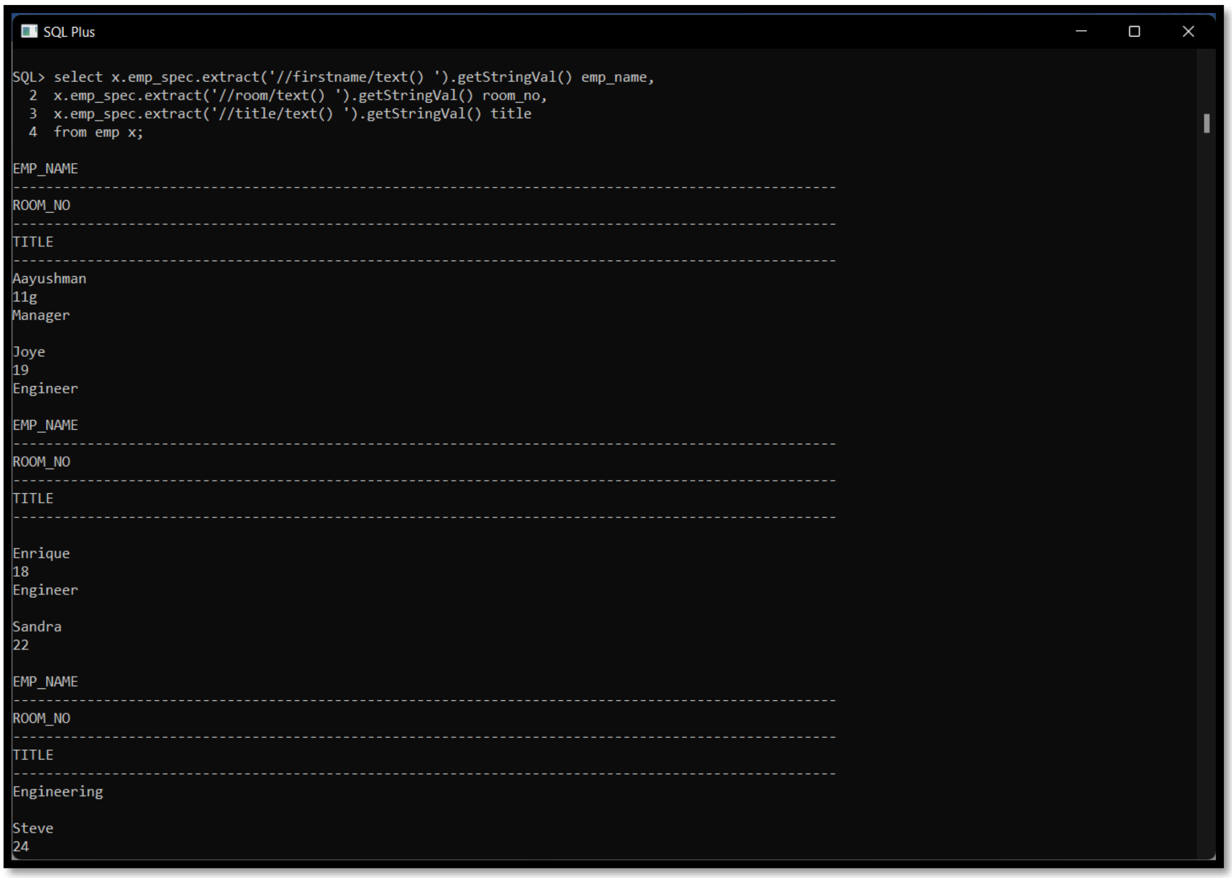
4. Get the first name and room number



SQL Plus

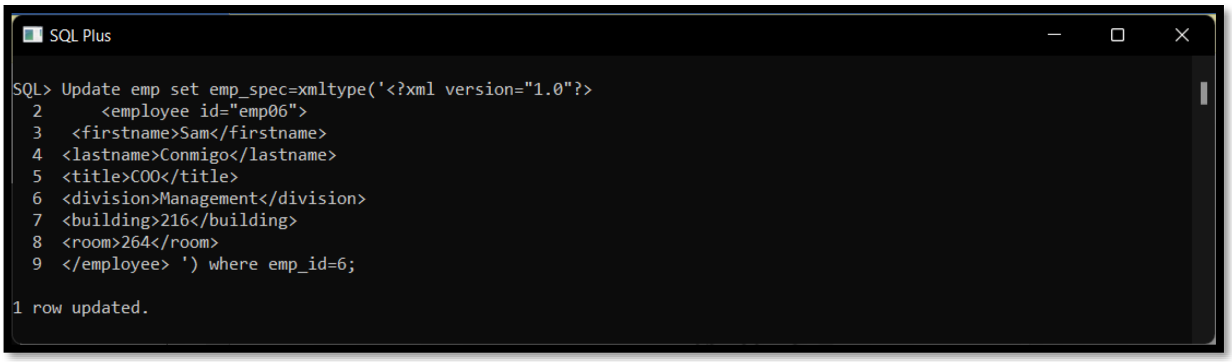
```
SQL> select x.emp_spec.extract('//firstname/text() ').getStringVal() emp_name, x.emp_spec.extract('//roo
m/text()').getStringVal() room_No from emp x;

EMP_NAME
--------------------------------------------------------------------------------
ROOM_NO
--------------------------------------------------------------------------------
Aayushman
11g

Joye
19

Enrique
18


EMP_NAME
--------------------------------------------------------------------------------
ROOM_NO
--------------------------------------------------------------------------------
Sandra
22

Steve
24

Baila
264


6 rows selected.

SQL>
```

5. Get the first name and room number and title

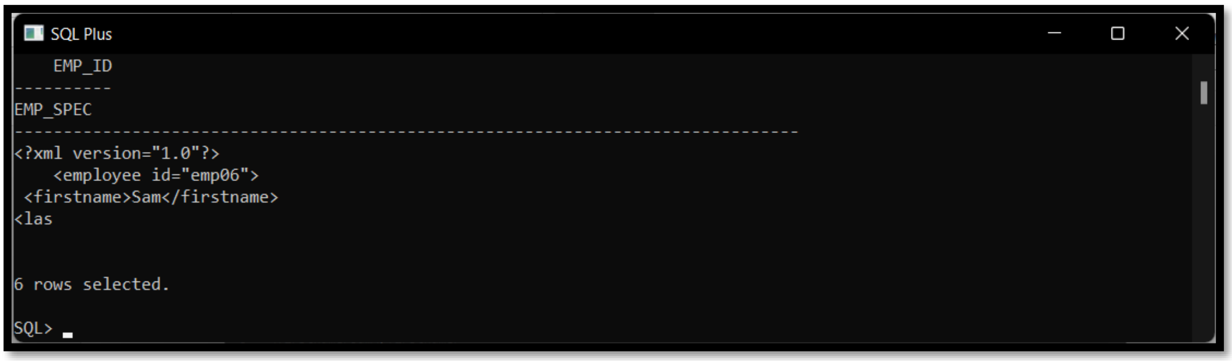


```
SQL> select x.emp_spec.extract('//firstname/text() ').getStringVal() emp_name,
x.emp_spec.extract('//room/text() ').getStringVal() room_no,
x.emp_spec.extract('//title/text() ').getStringVal() title
from emp x;

EMP_NAME
--------------------------------------------------------------------------------
ROOM_NO
--------------------------------------------------------------------------------
TITLE
--------------------------------------------------------------------------------
Aayushman
11g
Manager

Joye
19
Engineer

EMP_NAME
--------------------------------------------------------------------------------
ROOM_NO
--------------------------------------------------------------------------------
TITLE
--------------------------------------------------------------------------------

Enrique
18
Engineer

Sandra
22

EMP_NAME
--------------------------------------------------------------------------------
ROOM_NO
--------------------------------------------------------------------------------
TITLE
--------------------------------------------------------------------------------
Engineering

Steve
24
```

6. Update 6th record from the table:

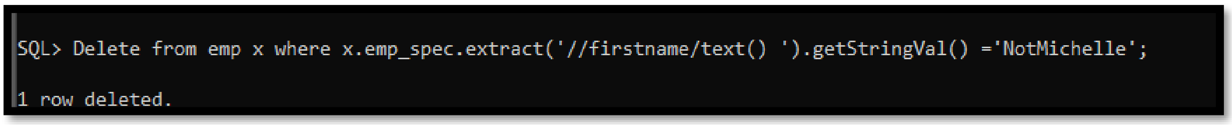


```
SQL> Update emp set emp_spec=xmltype('<?xml version="1.0"?>
    <employee id="emp06">
 <firstname>Sam</firstname>
<lastname>Conmigo</lastname>
<title>COO</title>
<division>Management</division>
<building>216</building>
<room>264</room>
</employee> ') where emp_id=6;

1 row updated.
```



```
    EMP_ID
----------
EMP_SPEC
--------------------------------------------------------------------------------
<?xml version="1.0"?>
    <employee id="emp06">
 <firstname>Sam</firstname>
<las


6 rows selected.

SQL> _
```

7. **Delete a record from the table:**



```
SQL> Delete from emp x where x.emp_spec.extract('//firstname/text() ').getStringVal() ='NotMichelle';

1 row deleted.
```

Conclusion :- Successfully Performed Operation like Create, Read, Update and Delete on XML Database.