Installation Oracle db23ai, Apex 24.1, JDK 17, ORDS 24.1 (Oracle Rest Database Service)

4.1. Install Oracle Database 23ai

Download Oracle Database 23ai, and copy the download link address from Oracle Database Free Get Started page.

```
# mkdir downloads
# cd downloads/
# wget https://download.oracle.com/otn-pub/otn_software/db-free/oracle-database-

$ ls
oracle-database-free-23ai-1.0-1.el8.x86_64.rpm

dnf install -y oracle-database-free*
```

```
libXxf86dga-1.1.5-1.el8.x86_64
libXxf86misc-1.0.4-1.el8.x86_64
libXxf86vm-1.1.4-9.el8.x86_64
libdmx-1.1.4-3.el8.x86_64
oracle-database-free-23ai-1.0-1.x86_64
oracle-database-preinstall-23ai-1.0-2.el8.x86_64
xorg-x11-utils-7.5-28.el8.x86_64
xorg-x11-xauth-1:1.0.9-12.el8.x86_64

Complete!
```

Figure 4.1 Oracle DB 23ai Installation

After Installation go for Configuration

```
Download oracle-database-free-23ai-1.0-1.el9.x86_64.rpm

Run --

dnf install -y oracle-database-free*

Run /etc/init.d/oracle-free-23ai configure
```

Figure 4.2 Oracle DB 23ai Configuration command

4.2 Oracle DB 23ai Configuration

```
-- Configure Oracle Database 23ai --

#  /etc/init.d/oracle-free-23ai configure

Specify a password to be used for database accounts. Oracle recommends that the

used for SYS, SYSTEM and PDBADMIN accounts:
Confirm the password:
Configuring Oracle Listener.
Listener configuration succeeded.
Configuring Oracle Database FREE.
Enter SYS user password:
***********
Enter SYSTEM user password:
*************
Enter PDBADMIN User Password:
```

Figure 4.3 Oracle DB 23ai configuration

if you see this screen, we should be good with our installation.

```
100% complete
Database creation complete. For details check the logfiles at:
 /opt/oracle/cfgtoollogs/dbca/FREE.
Database Information:
Global Database Name:FREE
System Identifier(SID):FREE
Look at the log file "/opt/oracle/cfgtoollogs/dbca/FREE/FREE.l
" for further details.

Connect to Oracle Database using one of the connect strings:
     Pluggable database: devdb23ai/FREEPDB1
     Multitenant container database: devdb23ai
```

Figure 4.4 Oracle DB 23ai Configuration Done

lets try **sqlplus**

```
# sqlplus
-bash: sqlplus: command not found
```

Figure 4.5 sqlplus command not working

➢ When we try to enter in database but the environment variable is not set so
   this command is not working so we have to setup the environment

➢ Time to set few paths –

```
# cd $HOME
# ls -a

.bash_profile

# vi .bash_profile
```

Figure 4.6 Going Bash Profile

➢ Add the following lines.

```
# User specific environment and startup programs
export ORACLE_SID=FREE
export ORACLE_HOME=/opt/oracle/product/23ai/dbhomeFree
export ORAENV_ASK=NO
export PATH=$ORACLE_HOME/bin:$PATH
```

Figure 4.7 Adding Environment Variable

➢ set some environment variable
➢ Our .bash_profile file would look like this.

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
        . ~/.bashrc
fi

# User specific environment and startup programs
export ORACLE_SID=FREE
export ORACLE_HOME=/opt/oracle/product/23ai/dbhomeFree
export ORAENV_ASK=NO
export PATH=$ORACLE_HOME/bin:$PATH


PATH=$PATH:$HOME/bin

export PATH
```

Figure 4.8 Bash Profile Final look

➢ Save and source the profile file.

```
# source .bash_profile
# sqlplus

SQL*Plus: Release 23.0.0.0.0 - Production on Mon May 6 17:32:01 2024
Version 23.4.0.24.05

Copyright (c) 1982, 2024, Oracle.  All rights reserved.
```

Figure 4.9 Bash Profile Saving

➢ So far so good, let's try to connect to database as SYS user. Replace <Your-SYS-Password> as you had setup during installation.

```
sqlplus sys/<Your-SYS-Password>@localhost:1521/FREEPDB1 as sysdba

or

sqlplus sys@localhost:1521/FREEPDB1 as sysdba
```

Figure 4.10 Login in DB with sqlplus

➢ Run a simple select statement.

```
Connected to:
Oracle Database 23ai Free Release 23.0.0.0.0 - Develop, Learn, and Run for Free
Version 23.4.0.24.05

SQL> select sysdate;

SYSDATE
---------
06-MAY-24

SQL> exit;

Disconnected from Oracle Database 23ai Free Release 23.0.0.0.0 - Develop, Learn,
Version 23.4.0.24.05
```
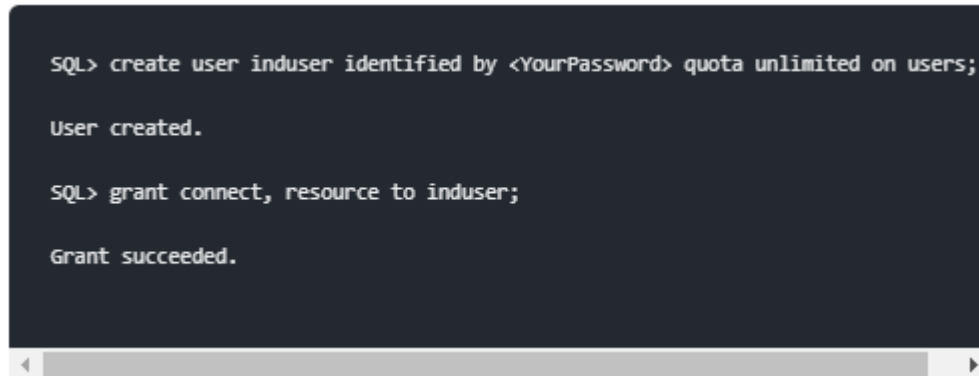
Figure 4.11 Simple Statement in DB23ai

➢ Running Simple statement in Oracle DB 23ai

Create Database User.

➢ Login as an SYS user and create a new Database user; we will use this user later in our Oracle APEX application

```
SQL> create user induser identified by <YourPassword> quota unlimited on users;

User created.

SQL> grant connect, resource to induser;

Grant succeeded.
```
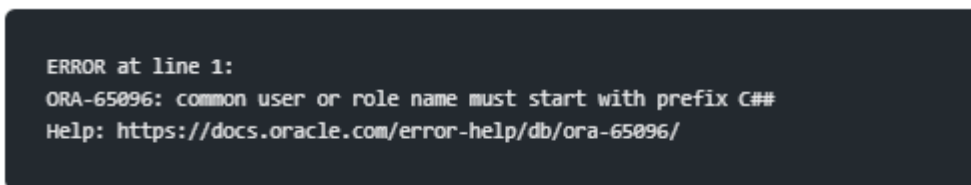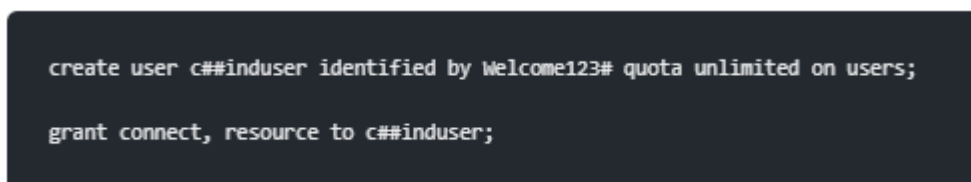
Figure 4.12 User Creation in DB for Apex

➢ If you come across this error message

```
ERROR at line 1:
ORA-65096: common user or role name must start with prefix C##
Help: https://docs.oracle.com/error-help/db/ora-65096/
```

Figure 4.13 Error during User creation in DB23ai

➢ If this error occurred during user creation then try with Below Image

➢ Create user with c##

```
create user c##induser identified by Welcome123# quota unlimited on users;

grant connect, resource to c##induser;
```

Figure 4.14 User Creation in DB for Apex

4.3 Oracle Apex 24.1 Installation

Install Oracle APEX
- ➢ Copy the file download link from Oracle APEX download page.

```
mkdir downloads

cd downloads

wget https://download.oracle.com/otn_software/apex/apex_23.2_en.zip

unzip apex_23.2_en.zip -d /opt/oracle/product

--- If you plan to download 24.1 then ---

wget https://download.oracle.com/otn_software/apex/apex_24.1.zip

unzip apex_24.1.zip -d /opt/oracle/product

-- this will create apex folder at /opt/oracle/product

cd /opt/oracle/product/apex

-- connect to database as sys user

sqlplus sys@localhost:1521/FREEPDB1 as sysdba

-- run the APEX Installer script.
-- General format
-- @apxrtins.sql tablespace_apex tablespace_files tablespace_temp images

SYS> @apexins.sql SYSAUX SYSAUX TEMP /i/
```

Figure 4.15 Apex 24.1 Download with Wget

- ➢ Download Apex 24.1 and unzip it in your personalize directory and start installation

If you will see this the installation is successfully completed

```
ices is as follows:
http://host:port/ords/apex_admin

The structure of the link to the Oracle APEX development
ce is as follows:
http://host:port/ords


timing for: Phase 3 (Switch)
Elapsed:    0.15


timing for: Complete Installation
Elapsed:    4.75
```

Figure 4.16 Apex Installation Completed

- ➢ Apex Installation Completed

4.4 Oracle Apex 24.1 Configuration

```
-- change password

SYS> @apxchpwd.sql
```

Figure 4.17 Apex configuration Start

```
SQL> @apxchpwd.sql
...set_appun.sql
===================================================
================
This script can be used to change the password of an Ora
instance administrator. If the user does not yet exist,
ecord will be
created.
===================================================
================
Enter the administrator's username [ADMIN]
User "ADMIN" does not yet exist and will be created.
Enter ADMIN's email [ADMIN]
Enter ADMIN's password []
Created instance administrator ADMIN.
```

Figure 4.18 Apex Configuration Completed

```
SQL> ALTER USER APEX_PUBLIC_USER ACCOUNT UNLOCK;

SQL> ALTER USER APEX_PUBLIC_USER IDENTIFIED BY <Your-Apex-user-pawd>;
```

Figure 4.19 Apex Public User Unlocking

Note: > if you forget to unlock the APEX_PUBLIC_USER you might get following error, Account is locked 570

Account Is Locked

HTTP Status Code: 570

Request ID: ibVogKRXo6VaGScYVTKoFQ
Request Timestamp: 2024-07-03T07:49:31.052910880Z

ORDS was unable to make a connection to the database. ORDS is not able to proxy to the target user because that user is locked. The connection pool named: |default|lo|/FREEPDB1 had the following error(s): ORA-28000: The account is locked; login denied.
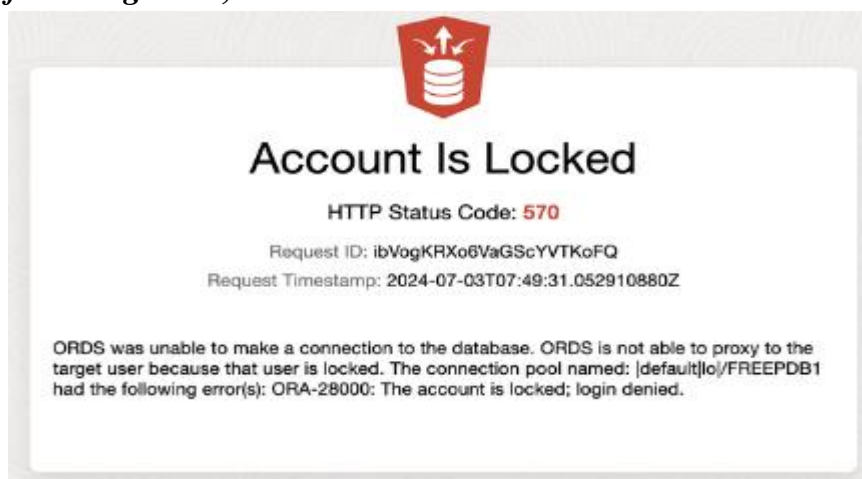
Figure 4.20 Error of apex

➤ if you forget to unlock the APEX_PUBLIC_USER you might get following error, Account is locked 570

➢ Set Ora Env

```
# . /opt/oracle/product/23ai/dbhomeFree/bin/oraenv

The Oracle base has been set to /opt/oracle
```

Figure 4.21 Setting Environment Variable for Apex

➢ Configuring RESTful Services and set passwords for

```
SQL> @apex_rest_config.sql

Enter the administrator's username [ADMIN]      <just hit enter button>
User "ADMIN" does not yet exist and will be created.
Enter a password for the APEX_LISTENER user              *******
Enter a password for the APEX_REST_PUBLIC_USER user      *****
```

Figure 4.22 Apex Listener User Unlock and password Creation

4.5 Download and Install JDK

Get JDK 17 URL from Java Download page.

```
cd $HOME/downloads

--Download JDK 17 --

wget https://download.oracle.com/java/17/latest/jdk-17_linux-x64_bin.rpm

ls

jdk-17_linux-x64_bin.rpm

yum -y install jdk-17_linux-x64_bin.rpm
```

Figure 4.23 JDK Download

➢ After Installation we should see

```
Installed: jdk-17-2000:22.0.1-8.x86_64

Complete!

# java -version

java version "17.0.1"

-- or you might see the one below

java version "17.0.11" 2024-04-16 LTS
Java(TM) SE Runtime Environment (build 17.0.11+7-LTS-207)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.11+7-LTS-207, mixed mode, sharing)
```

Figure 4.24 JDK Installation Complete

4.6 ORDS 24.1(Oracle Rest Database Service) Installation

Install ORDS

```
# yum install ords

Package ords-24.1.0-16.el8.noarch is installed.
Dependencies resolved.

-- or you might see the one below --

Installed:
ords-24.2.0-6.el8.noarch
```

<p align="center">Figure 4.25 ORDS Install</p>

➢ Install Ords with yum command and after installation configuration start

4.7 ORDS 24.1(Oracle Rest Database Service) Configuration

Most Important step here is to configure ORDS.

[opc@devdb23ai ~]$ sudo su -
Last login: Mon May 6 17:15:19 GMT 2024 on pts/0

 # ords --config /etc/ords/config install

ORDS: Release 24.1 Production on Mon May 06 18:43:46 2024

Copyright (c) 2010, 2024, Oracle.

Configuration:
 /etc/ords/config
...
Enter a number to select the TNS net service name to use or specify the database connection
   [1] FREE   SERVICE_NAME=FREE
   [S] Specify the database connection
  Choose [1]: 1
...
Provide database username with administrator privileges.
   Enter the administrator username: SYS

Enter the database password for SYS AS SYSDBA: *****

....
PDB FREEPDB1 - install ORDS 24.1.0.r1080942
PDB FREEPDB1 - configure PL/SQL gateway user APEX_PUBLIC_USER in ORDS version 24.1.0.r1080942

...
Install ORDS in the database
   [1] Yes
   [2] No
  Choose [1]: 1

...
Enter a number to update the value or select option A to Accept and Continue
   [1] Connection Type: TNS
   [2]   TNS   Connection: TNS_NAME=FREE
TNS_FOLDER=/opt/oracle/product/23ai/dbhomeFree/network/admin
       Administrator User: SYS AS SYSDBA
   [3] Database password for ORDS runtime user (ORDS_PUBLIC_USER): <generate>
   [4] ORDS runtime user and schema tablespaces: Default: SYSAUX Temporary TEMP
   [5] Additional Feature: Database Actions
   [6] Configure and start ORDS in Standalone Mode: Yes
   [7]   Protocol: HTTP
   [8]   HTTP Port: 8080
   [9]   APEX static resources location:
   [A] Accept and Continue - Create configuration and Install ORDS in the database
   [Q] Quit - Do not proceed. No changes
  Choose [A]: A

...
standalone.static.context.path=/ords
database.api.enabled=true
db.username=ORDS_PUBLIC_USER
standalone.http.port=8080
restEnabledSql.active=true
resource.templates.enabled=false
plsql.gateway.mode=proxied
feature.sdw=true
config.required=true
db.connectionType=tns

....
Oracle REST Data Services version: 24.1.0.r1080942
Oracle REST Data Services server info: jetty/10.0.20
Oracle REST Data Services java info: Java Hotspot(TM) 64-Bit Server VM 22.0.1+8-16
Note >: if the above installation does not return back to command prompt, then press control + c button on keyboard to proceed.

Start ORDS

```
# /etc/init.d/ords start
INFO: Starting Oracle REST Data Services...
INFO: Oracle REST Data Services started with PID 64712
INFO: Obtaining the port binding information...
INFO: Oracle REST Data Services is bounded to ports 8080
```

Figure 4.26 Start ORDS

Set up network and open Linux firewall ports.
Please check step 1 while setting up compute instance to open any required network ports on cloud.oracle.com VCN.

In the Linux console we will alter the firewall settings as shown below.

```
firewall-cmd --permanent --zone=public  --add-port=1521/tcp
firewall-cmd --permanent --zone=public  --add-port=8080/tcp
firewall-cmd --reload
```

Figure 4.27 Adding Port in Firewall

Access Oracle APEX environment
Reality check access http://<your-public-ip>:8080/ords

Figure 4.28 Oracle Apex Front Page

Figure 4.29 Apex Login

Change PDB to freepdb1 and click on Go button.

You may get this following error message.
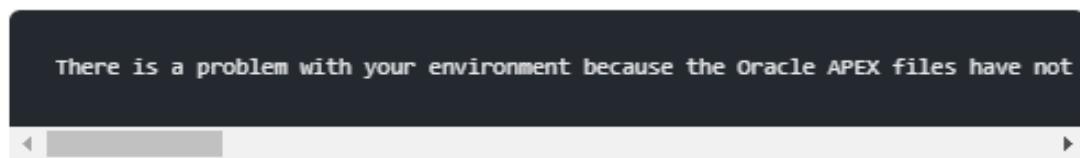
Figure 4.30 Error of apex while login with freepdb

Figure 4.31 Apex Page Not load perfectly

How do we fix this issue? The APEX page seems to be broken.
Troubleshooting APEX Installation
In your VSCode create a Database connection as shown below.
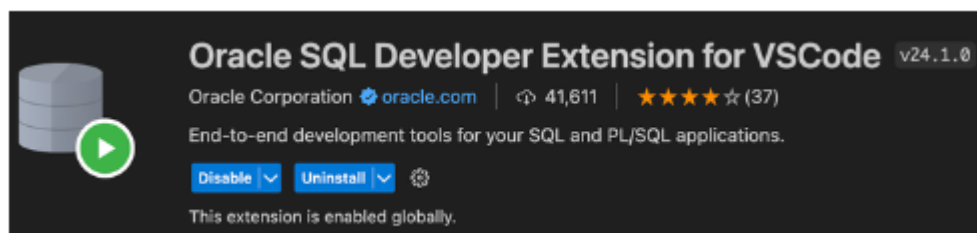
Figure 4.32 Download Extension in VS Code

I have installed SQL Developer Extension for VSCode and created a database connection as SYS user

Connection Parameters:

Hostname <Public IP Address>

User SYS as SYSDBA, Port 1521 and Service Name as FREEPDB1
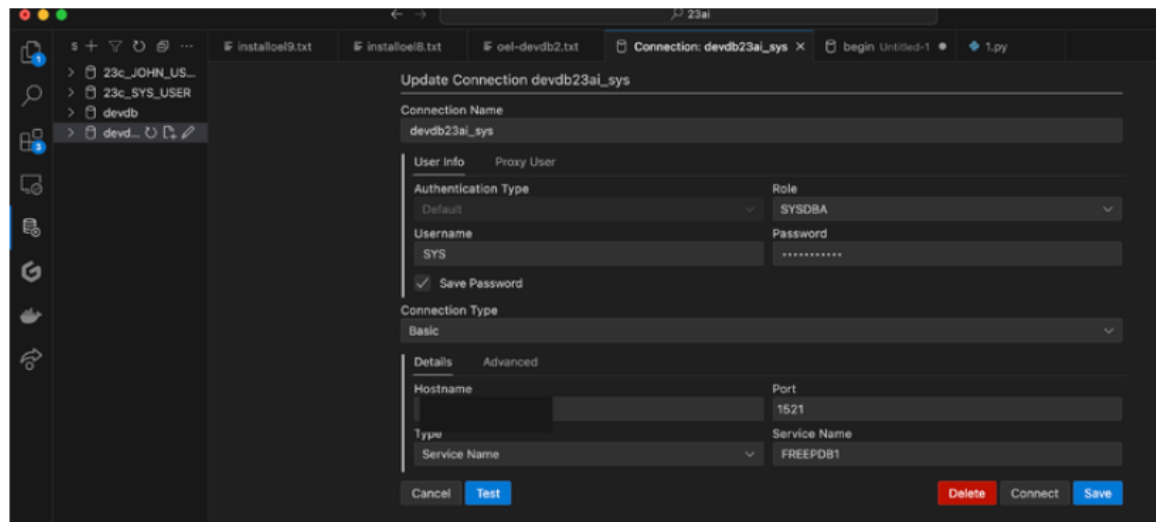
Figure 4.33 Setup Oracle DB in VS Code

Open the worksheet. And run this

begin

apex_instance_admin.set_parameter(p_parameter => 'IMAGE_PREFIX',

                p_value => 'https://static.oracle.com/cdn/apex/23.2.0/');

commit;

end;

if you have a different version of APEX installed the CDN URL might change
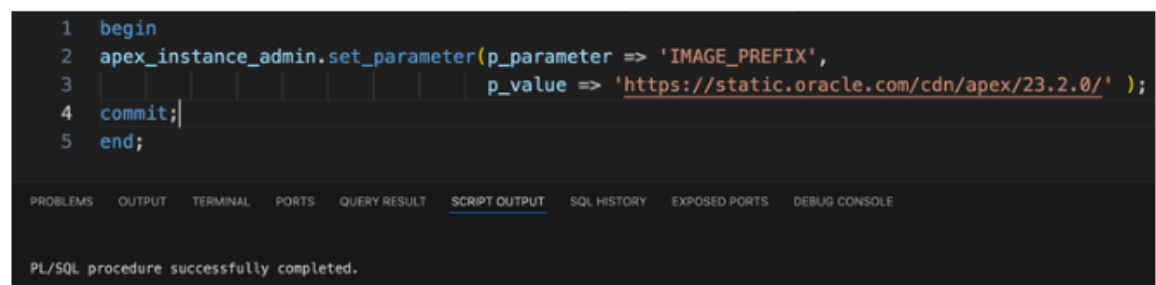
Figure 4.34 run a command in DB in VS Code

Now let us access the ORACLE APEX page again at http://<public-ip>:8080/ords and then select Oracle APEX

This works like a charm
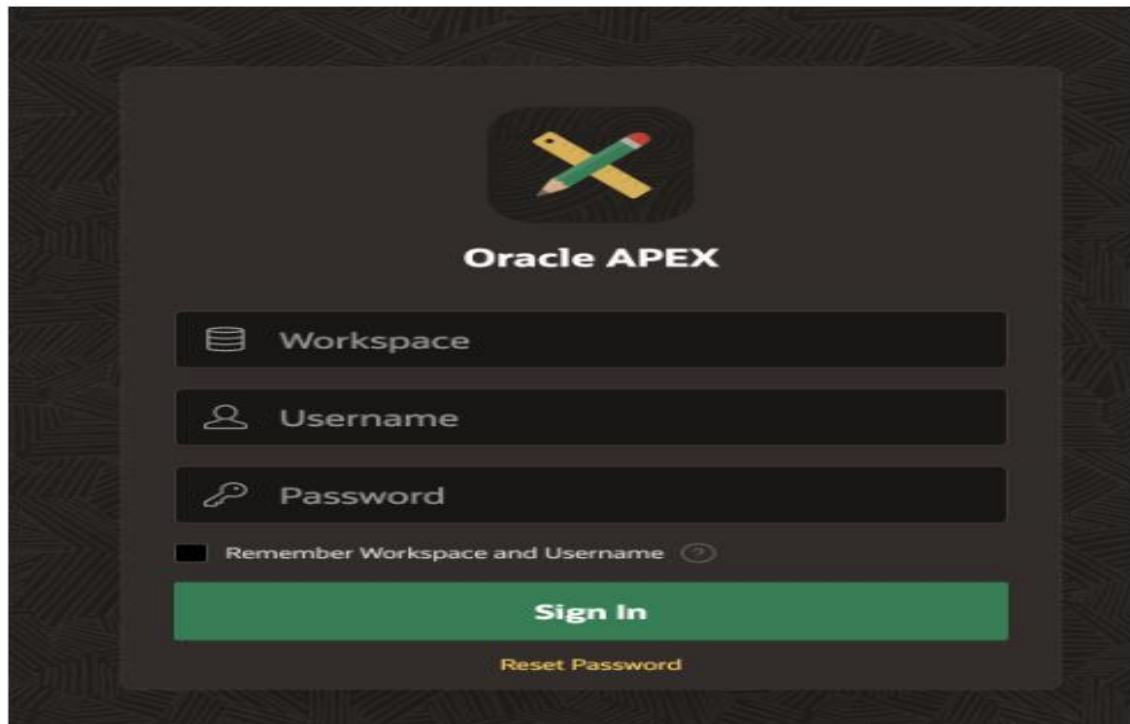
Figure 4.35 Oracle Apex Front Page

Create Oracle APEX workspace

Login as ADMIN user into INTERNAL workspace
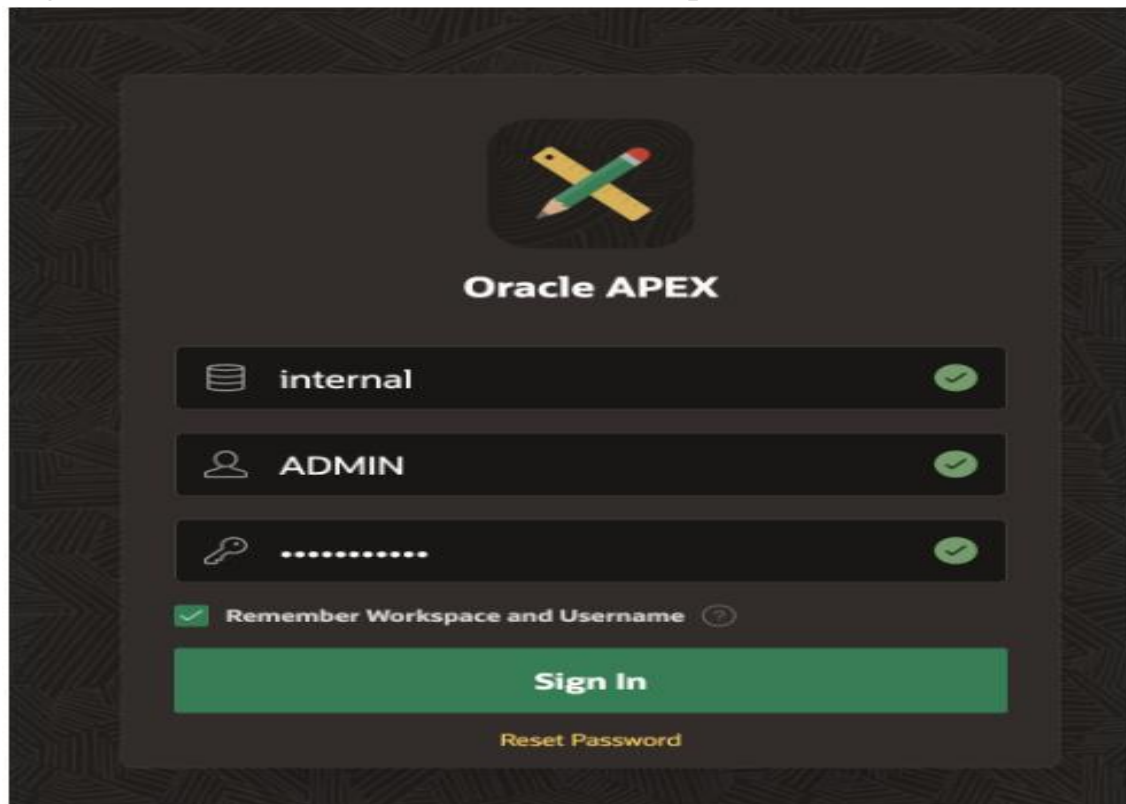
Figure 4.36 Login in Apex with Admin User

4.8 Workspace Creation in Apex

Click on Create Workspace
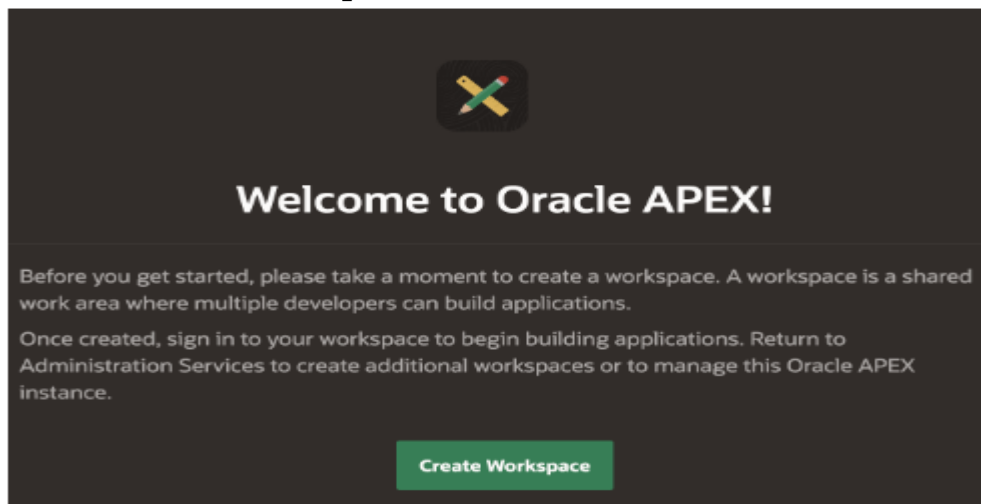
Figure 4.37 Creating Workspace in Apex

Protect Workspace Name, Workspace Description
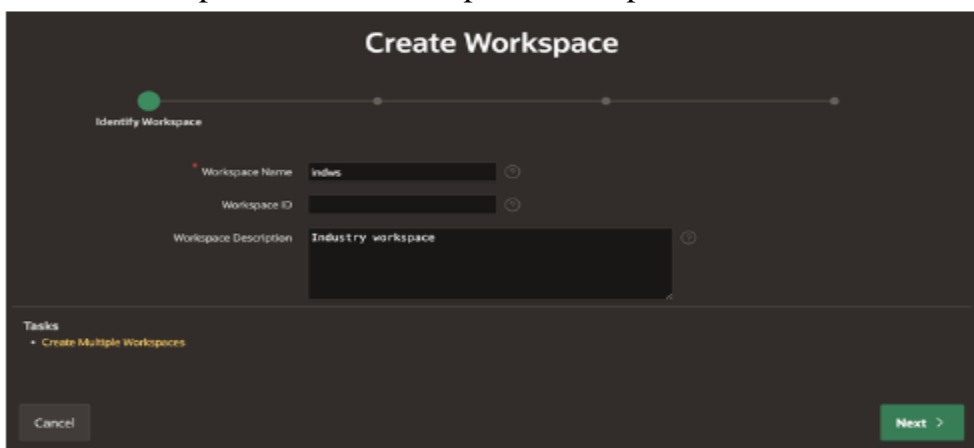
Figure 4.38 Identifying Workspace

Re-use existing schema = Yes (since we already have created user)
Schema Name <Select from the one shown in the list>

Figure 4.39 Identifying Schema

Provide Admin username and password.
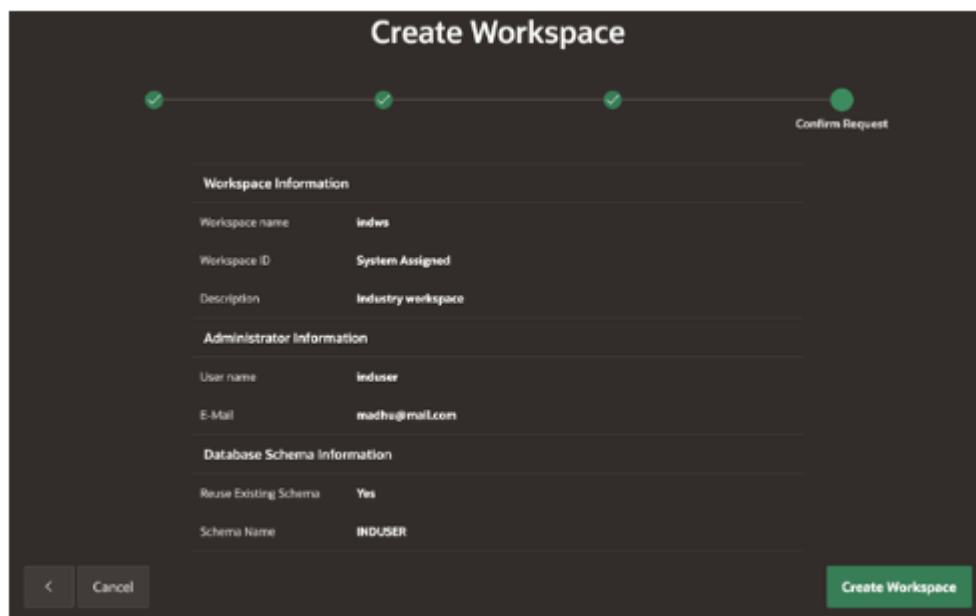
Figure 4.40 User Creation on Apex Workspace

Click Next and Create Workspace

Figure 4.41 Error of apex

After entering all details create workspace

Login to our new workspace with the user previously created in Step 5.
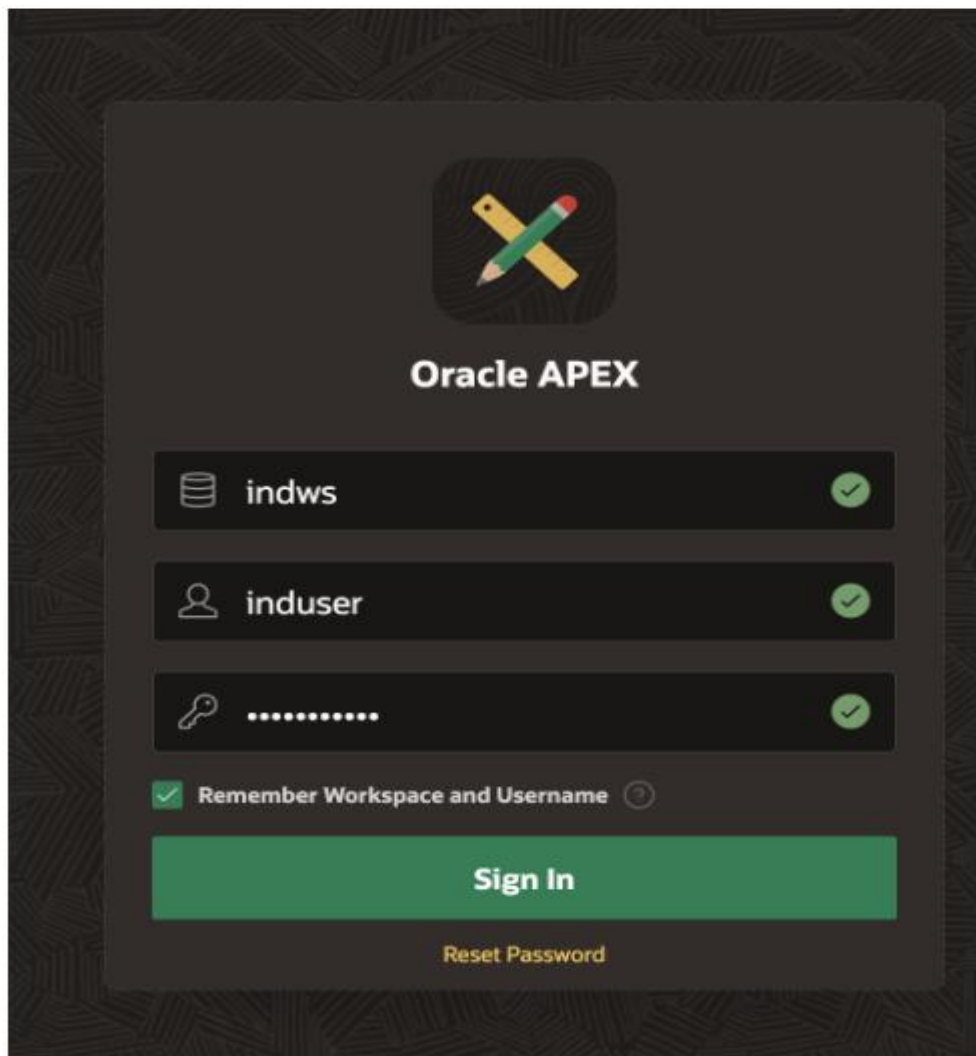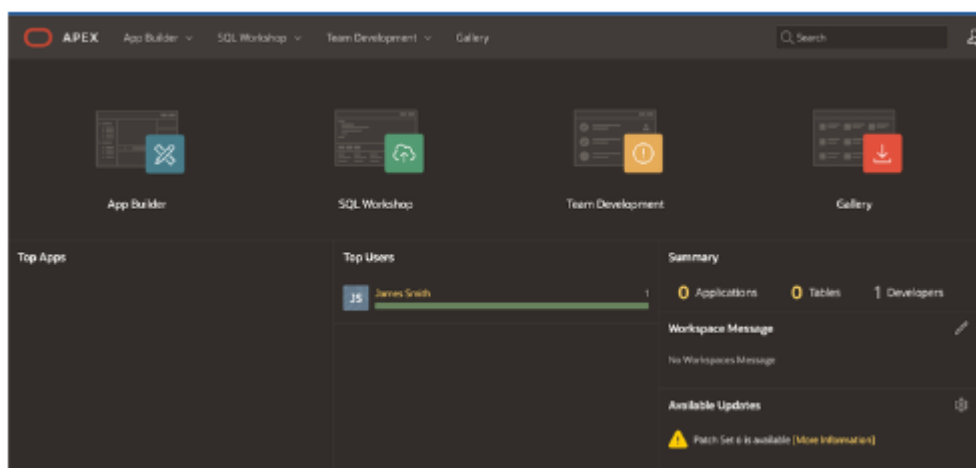

Figure 4.42 Login with Created User

Sign in to APEX workspace.

Figure 4.43 Dashboard of Apex