Oracle Database 12c Release 1 (12.1) Installation On Oracle Linux 7.8

This article describes the installation of Oracle Database 12c Release 1 (12.1) (64-bit) on Oracle Linux 7.8 (64-bit). The is based on a server installation with a minimum of 3G swap, with SELinux set to permissive and the firewall disabled.

Download Software:

Download the Oracle software from OTN or MOS depending on your support status.

- OTN: Oracle Database 12c Release 1 (12.1.0.2) Software (64-bit).
- edelivery: Oracle Database 12c Release 1 (12.1.0.2) Software (64-bit)

Unpack Files:

Unzip the files.

➢ You should now have a single directory called "database" containing installation files.

Oracle Installation Prerequisites:

Perform either the Automatic Setup or the Manual Setup to complete the basic prerequisites. The Additional Setup is required for all installations.

Automatic Setup:

If you plan to use the "oracle-rdbms-server-12cR1-preinstall" package to perform all your prerequisite setup, issue the following command.

Command : yum install oracle-rdbms-12cR1-preinstall -y

```
PR_node1 [Running] - Oracle VM VirtualBox : 1
File   Machine   View   Input   Devices   Help
 Applications   Places   Terminal
                                                    root@pr_node1:~
File  Edit  View  Search  Terminal  Help
[root@pr_node1 ~]#
[root@pr_node1 ~]# yum install oracle-database-server-12cR2-preinstall -y
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package oracle-database-server-12cR2-preinstall.x86_64 0:1.0-5.el7 will be installed
--> Processing Dependency: ksh for package: oracle-database-server-12cR2-preinstall-1.0-5.el7.x86_64
--> Processing Dependency: libaio-devel for package: oracle-database-server-12cR2-preinstall-1.0-5.el7.x86_64
--> Running transaction check
---> Package ksh.x86_64 0:20120801-144.0.1.el7_9 will be installed
---> Package libaio-devel.x86_64 0:0.3.109-13.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package                    Arch      Version              Repository    Size
================================================================================
Installing:
 oracle-database-server-12cR2-preinstall   x86_64    1.0-5.el7           ol7_latest    19 k
Installing for dependencies:
 ksh                        x86_64    20120801-144.0.1.el7_9   ol7_latest   882 k
 libaio-devel               x86_64    0.3.109-13.el7       ol7_latest    12 k

Transaction Summary
================================================================================
Install  1 Package (+2 Dependent packages)

Total download size: 913 k
Installed size: 3.2 M
Downloading packages:
warning: /var/cache/yum/x86_64/7Server/ol7_latest/packages/libaio-devel-0.3.109-13.el7.x86_64.rpm: Header V3 RSA/SHA256 Signature, key ID ec551f03: NOKEY
Public key for libaio-devel-0.3.109-13.el7.x86_64.rpm is not installed
(1/3): libaio-devel-0.3.109-13.el7.x86_64.rpm                    |  12 kB  00:00:00
(2/3): oracle-database-server-12cR2-preinstall-1.0-5.el7.x86_64.rpm    |  19 kB  00:00:00
(3/3): ksh-20120801-144.0.1.el7_9.x86_64.rpm                     | 882 kB  00:00:01
--------------------------------------------------------------------------------
Total                                          589 kB/s | 913 kB  00:00:01
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
Importing GPG key 0xEC551F03:
 Userid     : "Oracle OSS group (Open Source Software group) <build@oss.oracle.com>"
 Fingerprint: 4214 4123 fecf c55b 9086 313d 72f9 7b74 ec55 1f03
 Package    : 7:oraclelinux-release-7.8-1.0.7.el7.x86_64 (@anaconda/7.8)
 From       : /etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
Running transaction check
```

Earlier versions of Oracle Linux required manual setup of the Yum repository by following the instructions at http://public-yum.oracle.com.
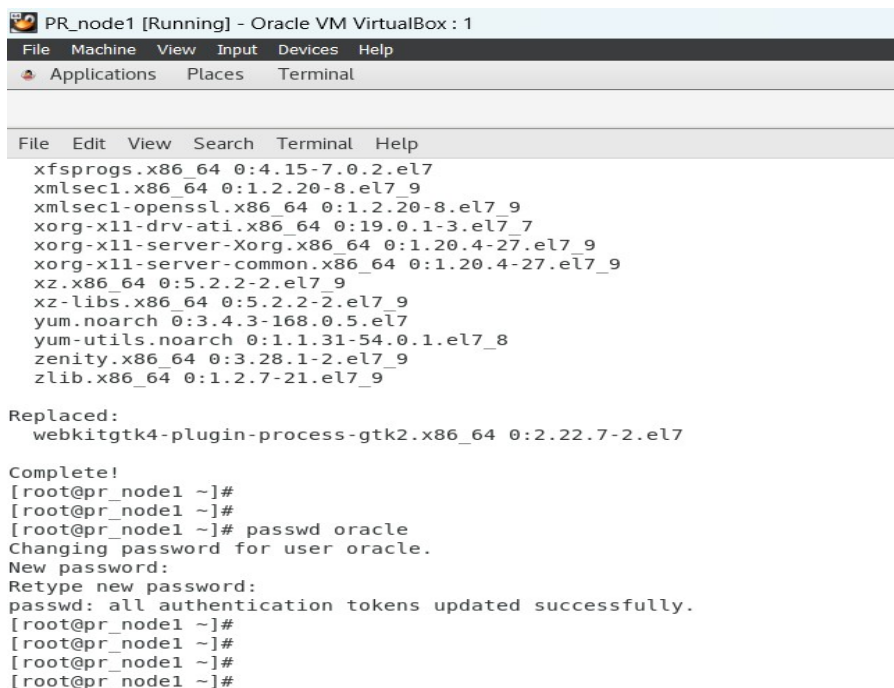
It is probably worth doing a full update as well, but this is not strictly speaking necessary.

 # yum update

```
[root@pr_node1 ~]# yum update -y
Loaded plugins: langpacks, ulninfo
Resolving Dependencies
--> Running transaction check
---> Package ModemManager.x86_64 0:1.6.10-3.el7 will be updated
---> Package ModemManager.x86_64 0:1.6.10-4.el7 will be an update
---> Package ModemManager-glib.x86_64 0:1.6.10-3.el7 will be updated
---> Package ModemManager-glib.x86_64 0:1.6.10-4.el7 will be an update
---> Package NetworkManager.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-adsl.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-adsl.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-config-server.noarch 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-config-server.noarch 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-glib.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-glib.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-libnm.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-libnm.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-ppp.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-ppp.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-team.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-team.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-tui.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-tui.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package NetworkManager-wifi.x86_64 1:1.18.4-3.el7 will be updated
---> Package NetworkManager-wifi.x86_64 1:1.18.8-2.0.1.el7_9 will be an update
---> Package SDL.x86_64 0:1.2.15-16.el7 will be updated
---> Package SDL.x86_64 0:1.2.15-17.el7 will be an update
---> Package abrt.x86_64 0:2.1.11-57.0.1.el7 will be updated
---> Package abrt.x86_64 0:2.1.11-60.0.3.el7 will be an update
---> Package abrt-addon-ccpp.x86_64 0:2.1.11-57.0.1.el7 will be updated
---> Package abrt-addon-ccpp.x86_64 0:2.1.11-60.0.3.el7 will be an update
---> Package abrt-addon-kerneloops.x86_64 0:2.1.11-57.0.1.el7 will be updated
---> Package abrt-addon-kerneloops.x86_64 0:2.1.11-60.0.3.el7 will be an update
---> Package abrt-addon-pstoreoops.x86_64 0:2.1.11-57.0.1.el7 will be updated
---> Package abrt-addon-pstoreoops.x86_64 0:2.1.11-60.0.3.el7 will be an update
---> Package abrt-addon-python.x86_64 0:2.1.11-57.0.1.el7 will be updated
---> Package abrt-addon-python.x86_64 0:2.1.11-60.0.3.el7 will be an update
```

Additional Setup:

➢ Set the password for the "oracle" user.


```
PR_node1 [Running] - Oracle VM VirtualBox : 1
File  Machine  View  Input  Devices  Help
  Applications    Places    Terminal


File  Edit  View  Search  Terminal  Help
 xfsprogs.x86_64 0:4.15-7.0.2.el7
 xmlsec1.x86_64 0:1.2.20-8.el7_9
 xmlsec1-openssl.x86_64 0:1.2.20-8.el7_9
 xorg-x11-drv-ati.x86_64 0:19.0.1-3.el7_7
 xorg-x11-server-Xorg.x86_64 0:1.20.4-27.el7_9
 xorg-x11-server-common.x86_64 0:1.20.4-27.el7_9
 xz.x86_64 0:5.2.2-2.el7_9
 xz-libs.x86_64 0:5.2.2-2.el7_9
 yum.noarch 0:3.4.3-168.0.5.el7
 yum-utils.noarch 0:1.1.31-54.0.1.el7_8
 zenity.x86_64 0:3.28.1-2.el7_9
 zlib.x86_64 0:1.2.7-21.el7_9

Replaced:
 webkitgtk4-plugin-process-gtk2.x86_64 0:2.22.7-2.el7

Complete!
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]# passwd oracle
Changing password for user oracle.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]#
```

➢ Set secure Linux to permissive by editing the "/etc/selinux/config" file, making sure the SELINUX flag is set as follows.

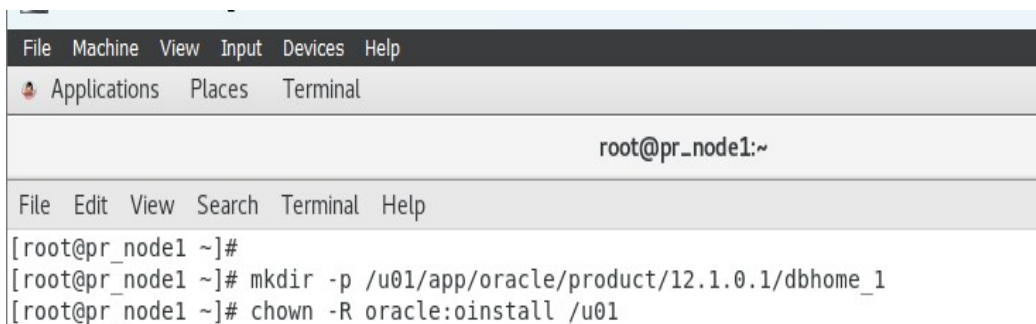# **SELINUX=permissive** >> In { vi /etc/selinux/config }

Once the change is complete, restart the server or run the following command.

setenforce Permissive

If you have the Linux firewall enabled, you will need to disable or configure it, as shown here or here. To disable it, do the following.

```
[root@pr_node1 ~]#
[root@pr_node1 ~]# hostname -i
172.20.10.2
[root@pr_node1 ~]#
[root@pr_node1 ~]# systemctl disable firewalld.service
Removed symlink /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed symlink /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@pr_node1 ~]# systemctl stop firewalld.service
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]#
```

➢ Create the directories in which the Oracle software will be installed.

```
File   Machine   View   Input   Devices   Help
 Applications    Places    Terminal

                          root@pr_node1:~

File   Edit   View   Search   Terminal   Help
[root@pr_node1 ~]#
[root@pr_node1 ~]# mkdir -p /u01/app/oracle/product/12.1.0.1/dbhome_1
[root@pr_node1 ~]# chown -R oracle:oinstall /u01
```

Putting mount points directly under root without mounting separate disks to them is typically a bad idea. It's done here for simplicity, but for a real installation "/" storage should be reserved for the OS.

➢ Unless you are working from the console, or using SSH tunnelling, login as root and issue the following command.

```
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]# xhost +
access control disabled, clients can connect from any host
[root@pr_node1 ~]#
[root@pr_node1 ~]#
[root@pr_node1 ~]# echo $DISPLAY
:0
[root@pr_node1 ~]#
```

➢ Add the following lines at the end of the "/home/oracle/.bash_profile" file.

```
|oracle@pr_node1 ~]$
[oracle@pr_node1 ~]$
[oracle@pr_node1 ~]$
[oracle@pr_node1 ~]$ cat .bash_profile
# .bash_profile

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

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin

export PATH
[oracle@pr_node1 ~]$
[oracle@pr_node1 ~]$
```

 # Oracle Settings

export TMP=/tmp

export TMPDIR=$TMP

export ORACLE_HOSTNAME=dr.node1.localdomain

export ORACLE_UNQNAME=orcl

export ORACLE_BASE=/u01/app/oracle

export ORACLE_HOME=$ORACLE_BASE/product/12.1.0.2.0/dbhome_1

export ORACLE_SID=orcl

export PATH=/usr/sbin:$PATH

export PATH=$ORACLE_HOME/bin:$PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib

export CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib

Installation:

➤ Set the Display environmental variable same as root user in oracle user.

Log into the oracle user. If you are using X emulation then set the DISPLAY environmental variable.
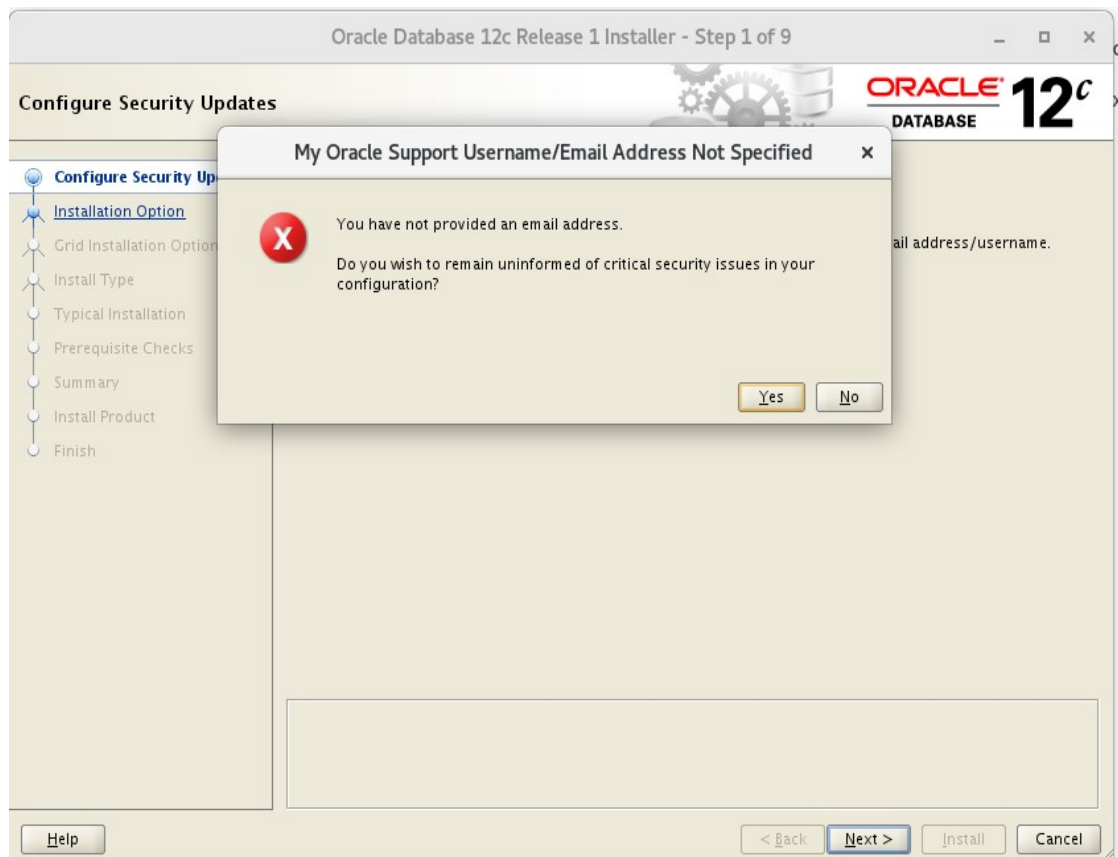

Start the Oracle Universal Installer (OUI) by issuing the following command in the database directory.
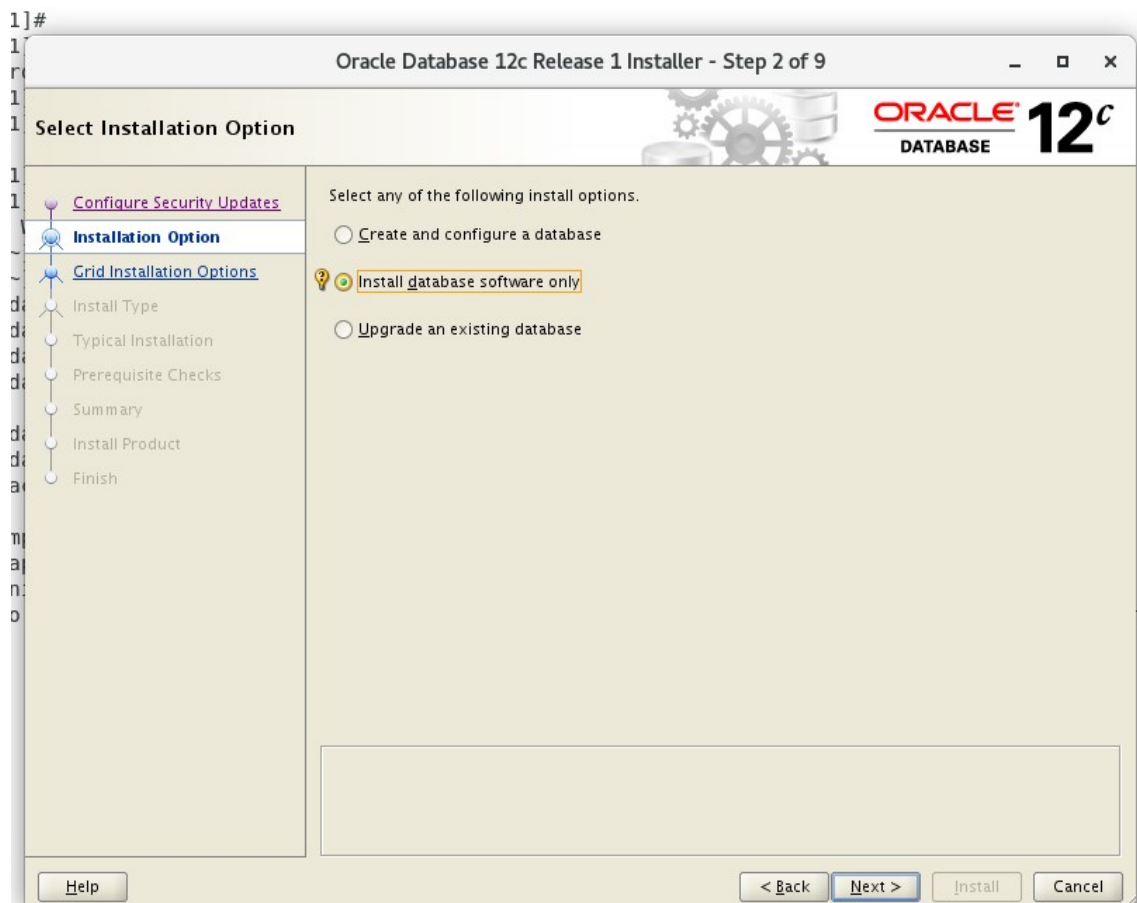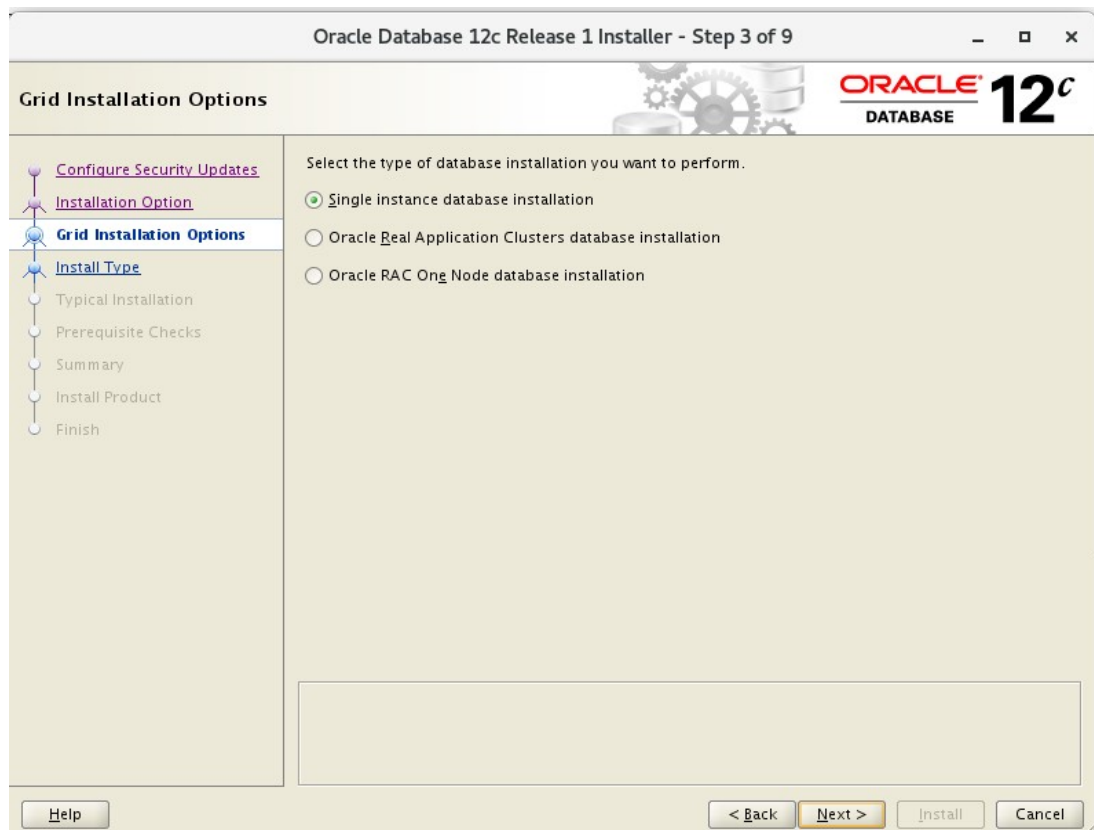
 # ./runInstaller

➤ Configure Security Updates:
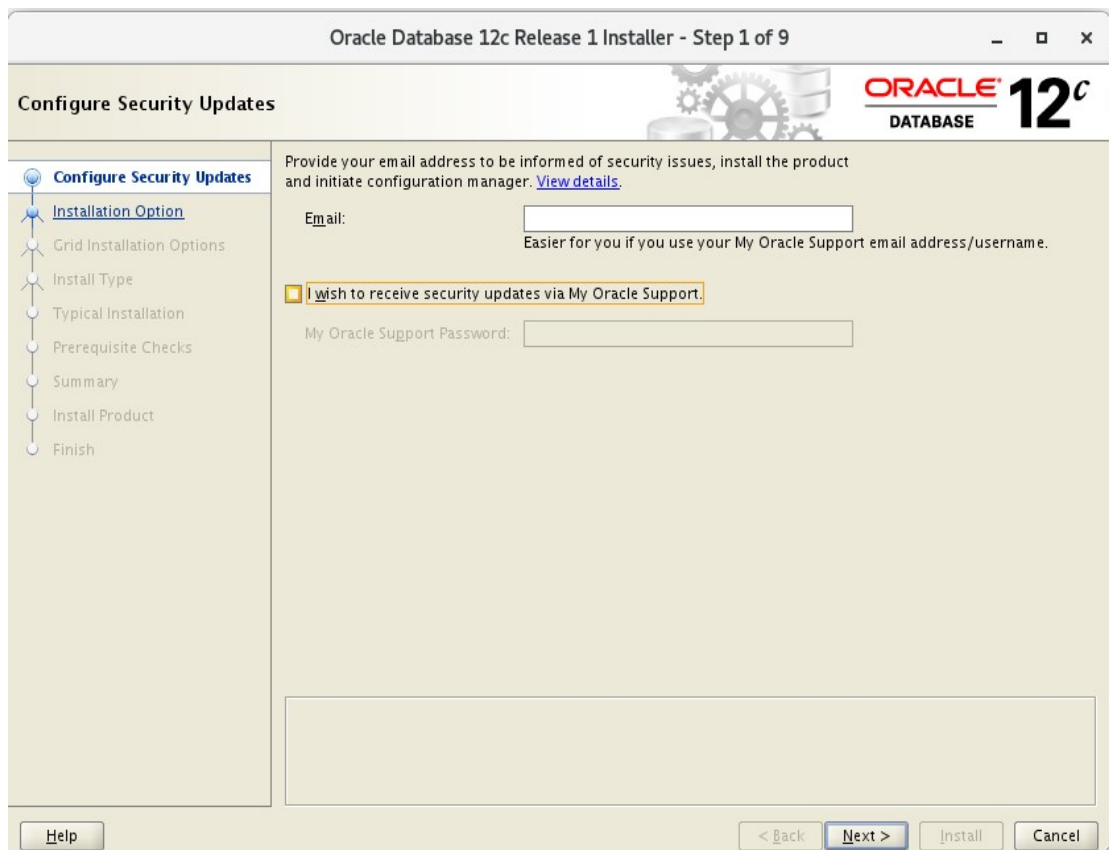
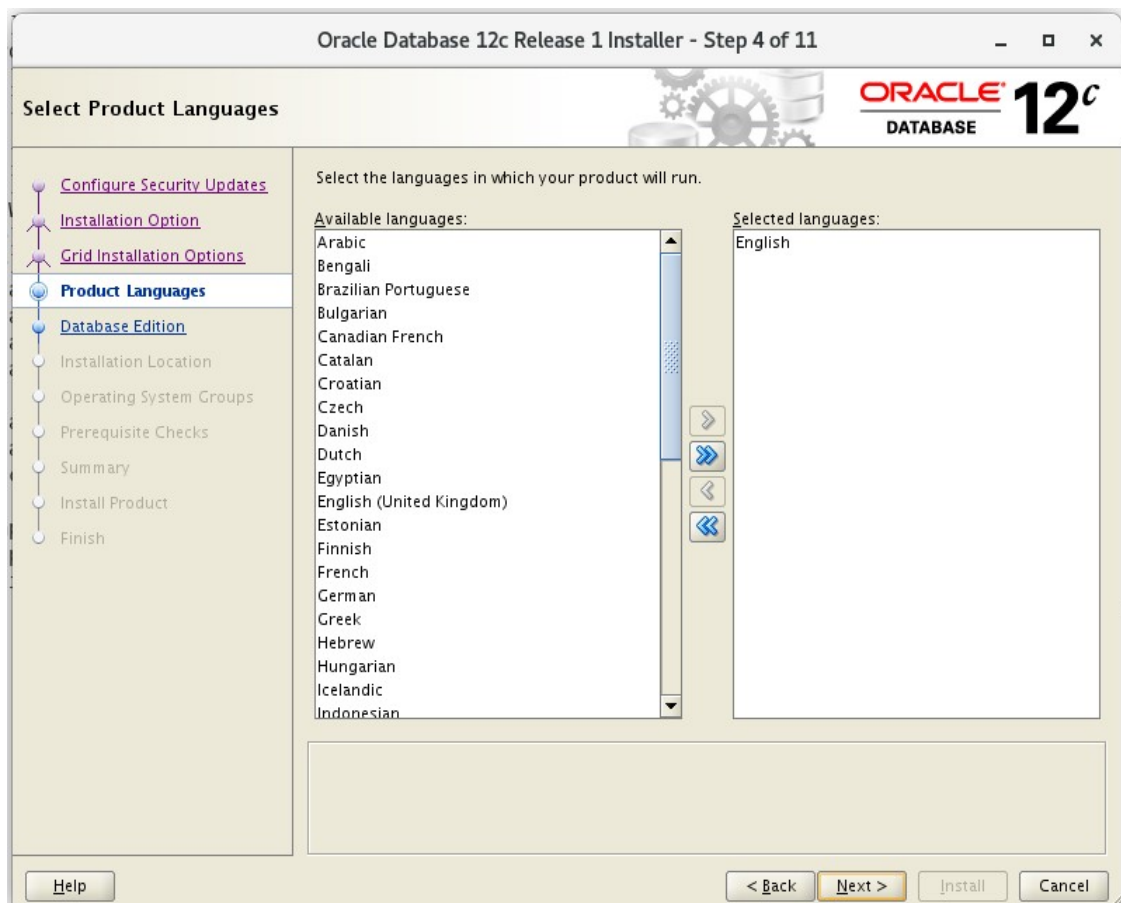➤ My Oracle Support Credentials:

➤ Select Installation Type:

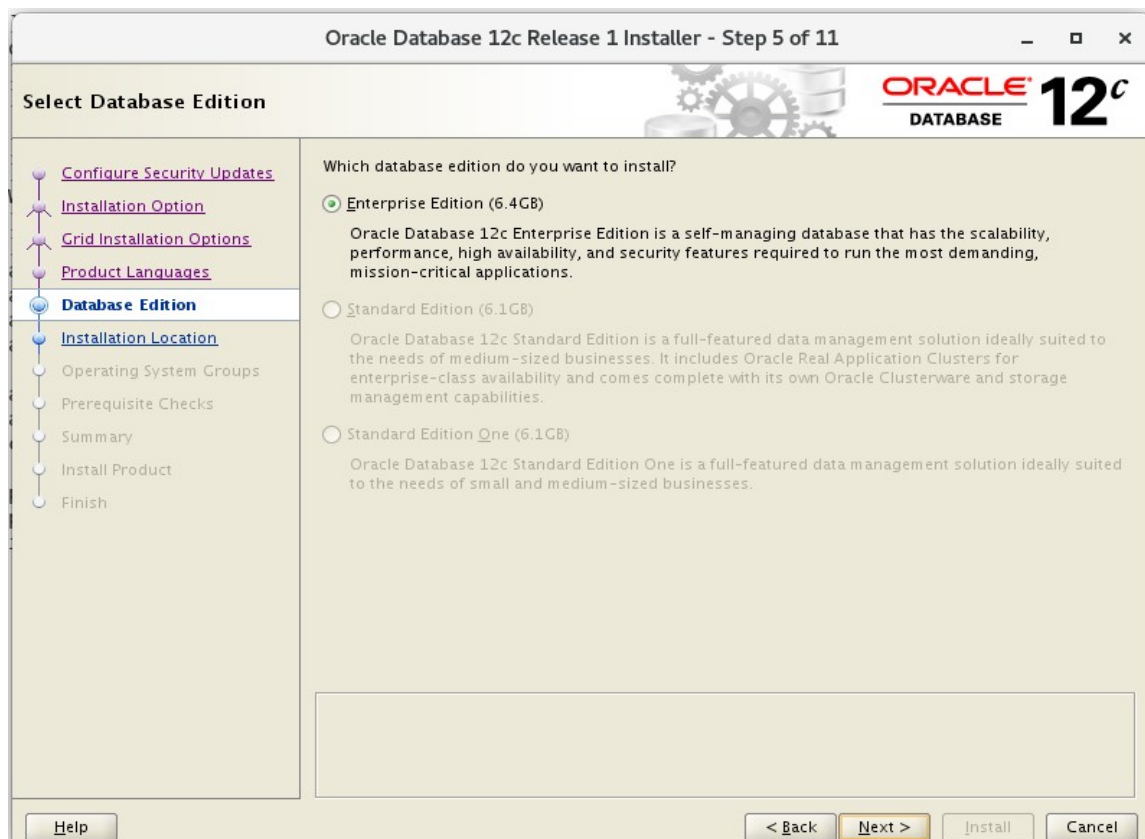➢ Grid Installation Options: Select single or RAC installation & Click Next.
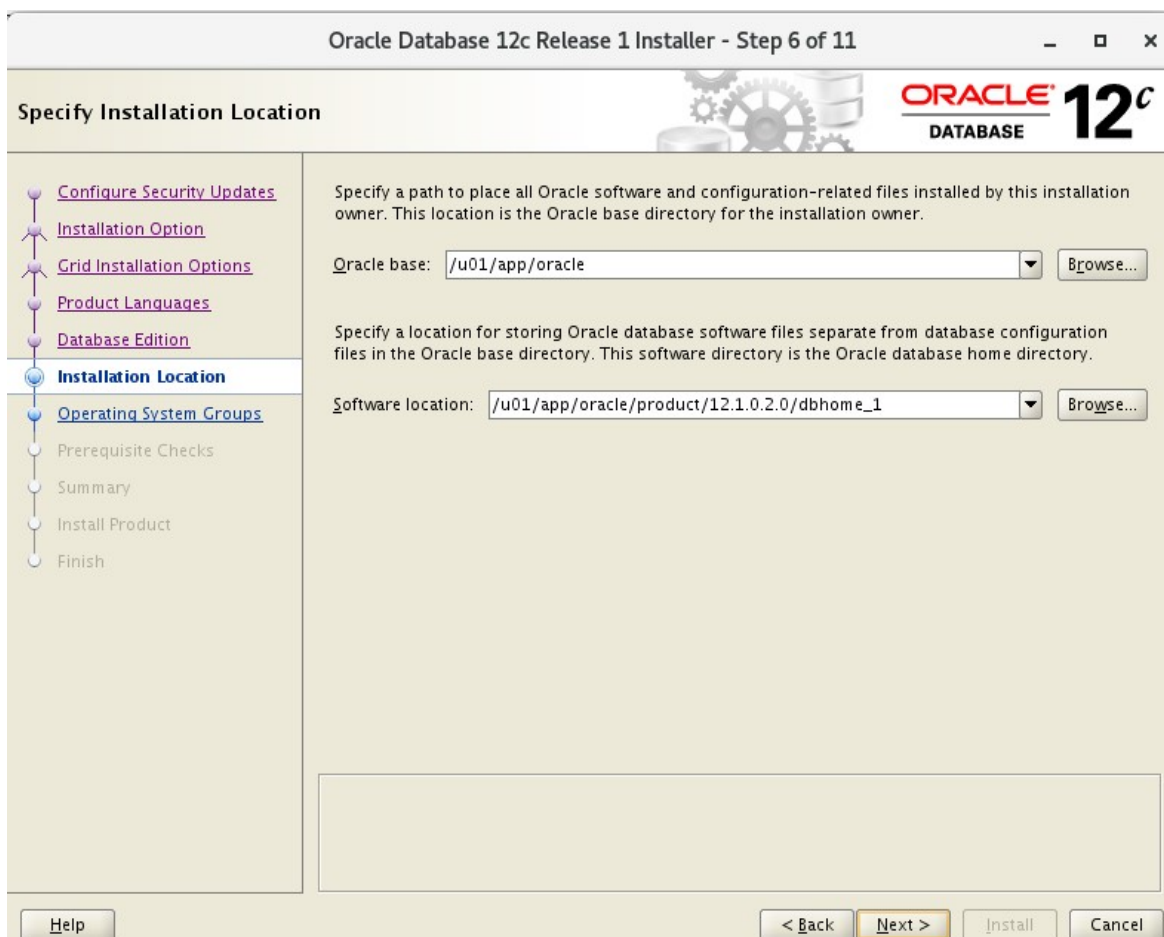

➢ Select product Languages:

➤ Database Edition: Select & Click Next.

➤ Installation location: Specify the Oracle_home location for installation.

➢ Operating system groups: Click Next.

➢ Summary:

➢ Install Product: After the progress complete, click on install.
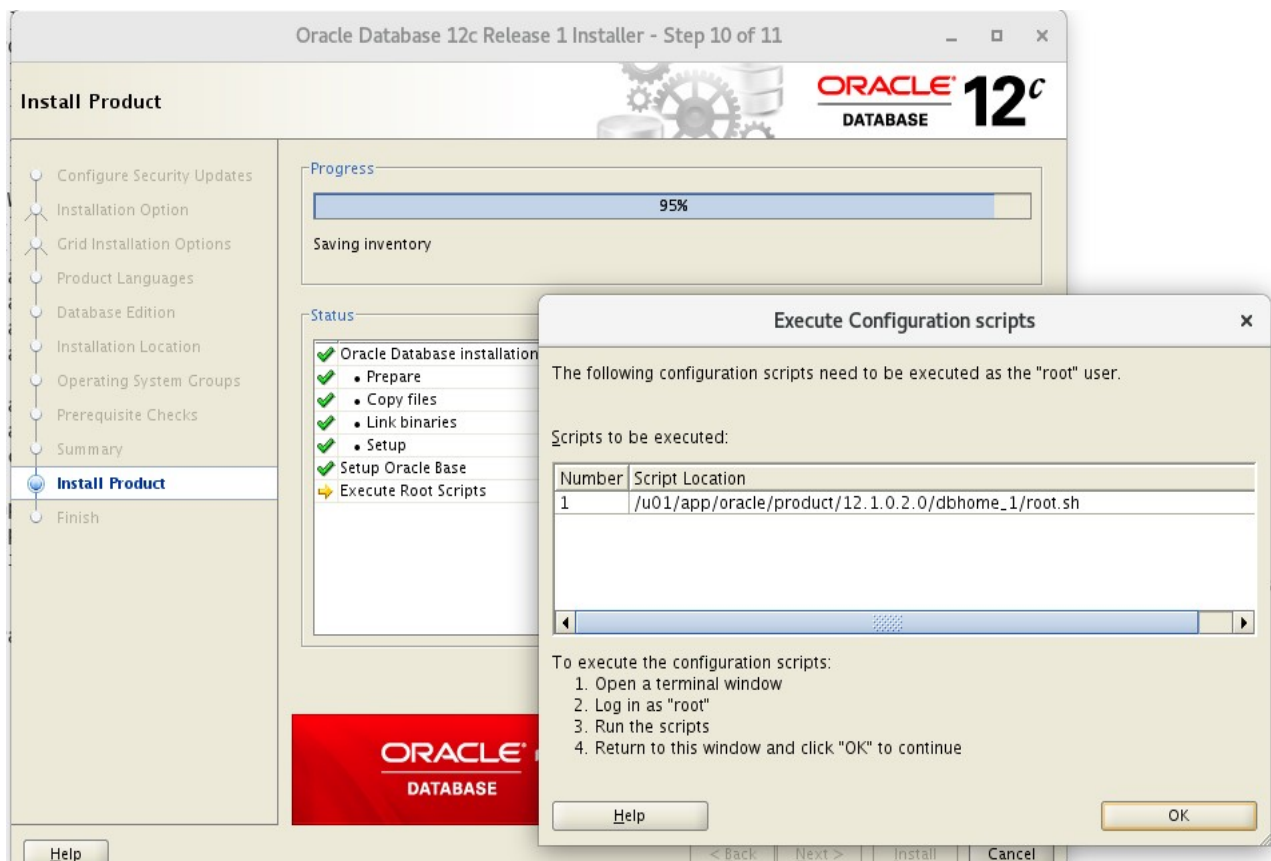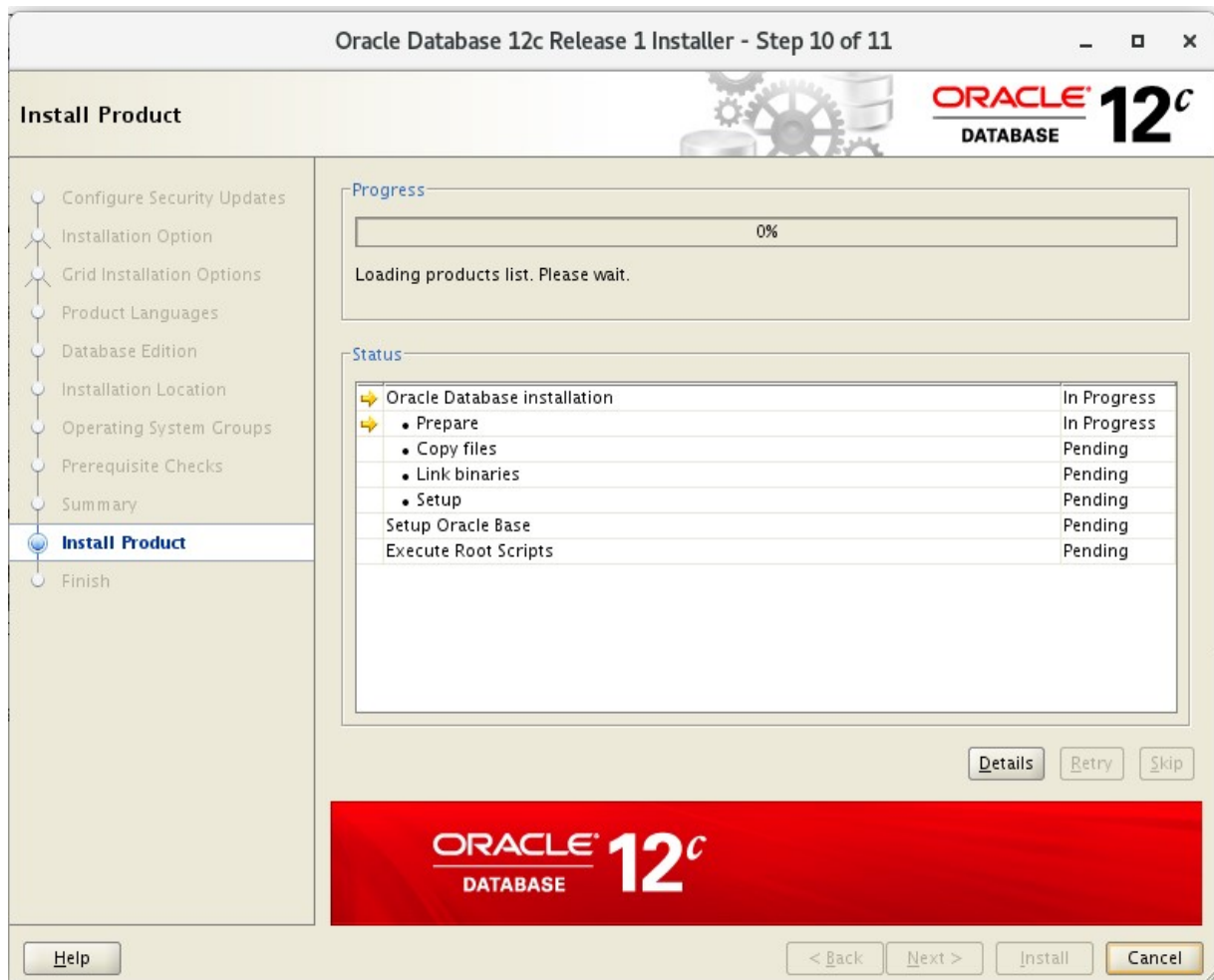
➢ Copy & Run in root user and just enter:

```
[root@pr ~]# /u01/app/oraInventory/orainstRoot.sh
Changing permissions of /u01/app/oraInventory.
Adding read,write permissions for group.
Removing read,write,execute permissions for world.

Changing groupname of /u01/app/oraInventory to oinstall.
The execution of the script is complete.
[root@pr ~]#
[root@pr ~]# /u01/app/oracle/product/12.1.0.2.0/dbhome_1/root.sh
Performing root user operation.

The following environment variables are set as:
    ORACLE_OWNER= oracle
    ORACLE_HOME=  /u01/app/oracle/product/12.1.0.2.0/dbhome_1

Enter the full pathname of the local bin directory: [/usr/local/bin]:
    Copying dbhome to /usr/local/bin ...
    Copying oraenv to /usr/local/bin ...
    Copying coraenv to /usr/local/bin ...


Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
[root@pr ~]#
```

➢ Finish:
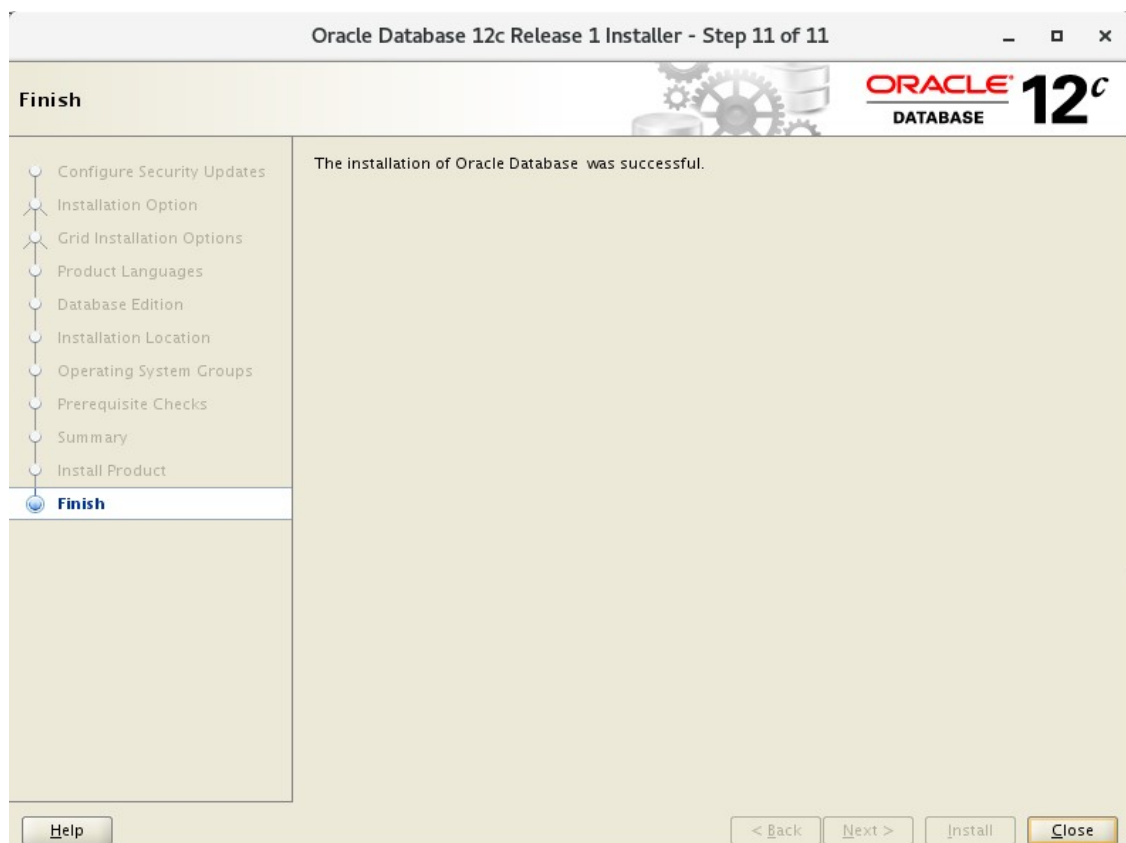
➢ After the installation software only run "dbca" to install and configure database:

```
/u01/app/oraInventory/logs/installActions2024-04-17_10-28-33PM.log

[oracle@pr database]$
[oracle@pr database]$
[oracle@pr database]$
[oracle@pr database]$
[oracle@pr database]$ cd
[oracle@pr ~]$
[oracle@pr ~]$
[oracle@pr ~]$ dbca
[oracle@pr ~]$
[oracle@pr ~]$
```

➢ Database Operation: Select Create database & Click Next.
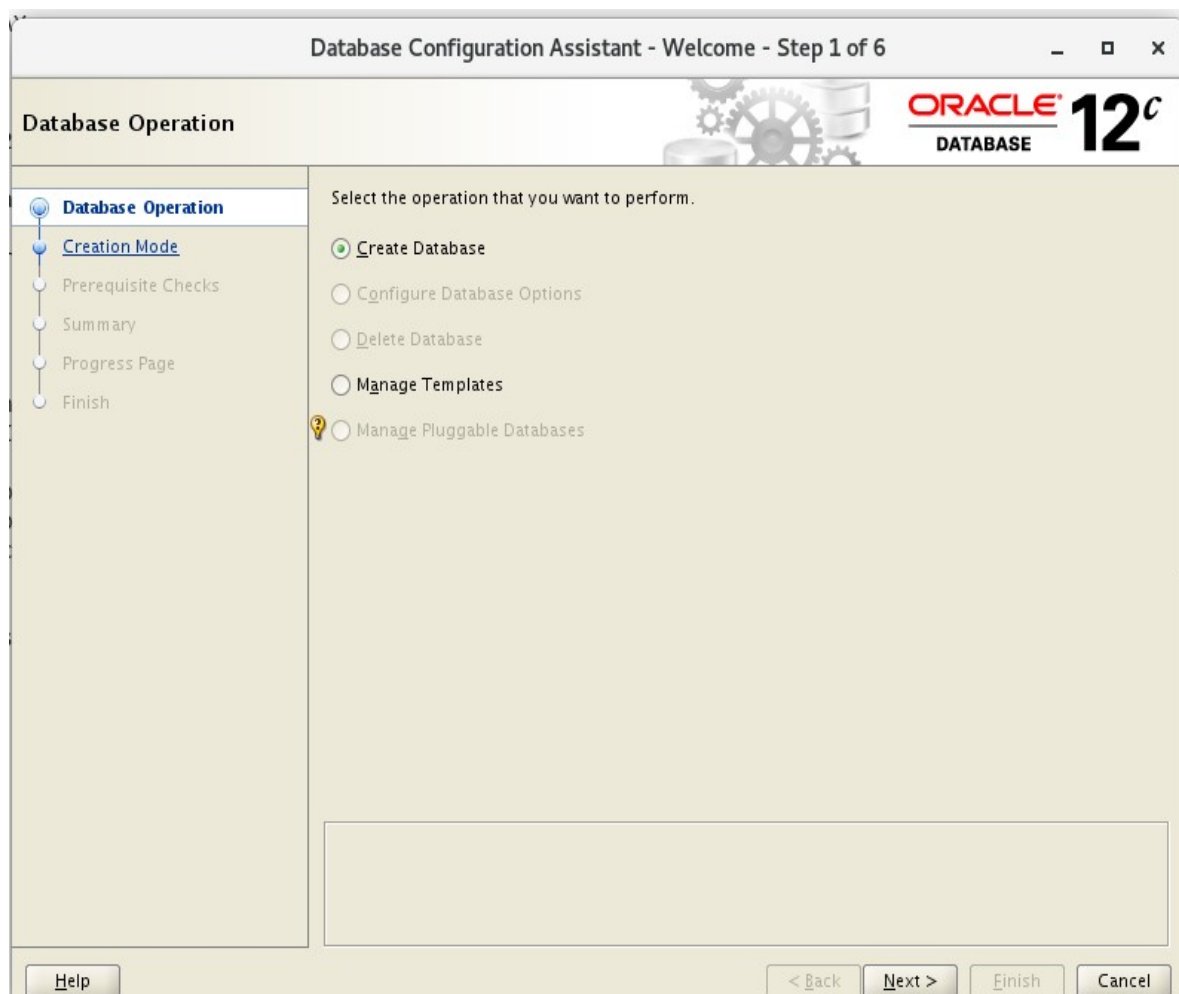
➢   Creation Mode:

    # Give database name (anyname) : orcl
    # Password for database
    # If you want to create Pluggable database check the box if not uncheck the box
       and give the pluggable database name : pdborcl

Click Next.

> Perform Prerequisite Checks:
> Summary : Click finish

Database Configuration Assistant - Create Database - Step 4 of 6

Summary

ORACLE 12c
DATABASE

Database Configuration Assistant: Summary

- Database Operation
- Creation Mode
- Prerequisite Checks
- **Summary**
- Progress Page
- Finish

Create Database – Summary

Database Configuration Summary

Global Database Name:	orcl
Database Configuration Type:	Single Instance
SID:	orcl
Create As Container Database	Yes
Number of Pluggable Databases:	1
Pluggable Database Name:	pdborcl
Storage Type:	File System
Memory Configuration Type:	Automatic Memory Management
Template Name:	General Purpose or Transaction Processing

Database Configuration Details

Database Components

Component	Selected
Oracle JVM	true
Oracle Text	true
Oracle Multimedia	true
Oracle OLAP	true
Oracle Spatial	true
Oracle Label Security	true
Oracle Application Express	true
Oracle Database Vault	true

Initialization Parameters

Name	Value
audit_file_dest	{ORACLE_BASE}/admin/{DB_UNIQUE_NAME}/adump
audit_trail	db
compatible	12.1.0.2.0

Help   < Back   Next >   Finish   Cancel

➢ Progress Page: Click next
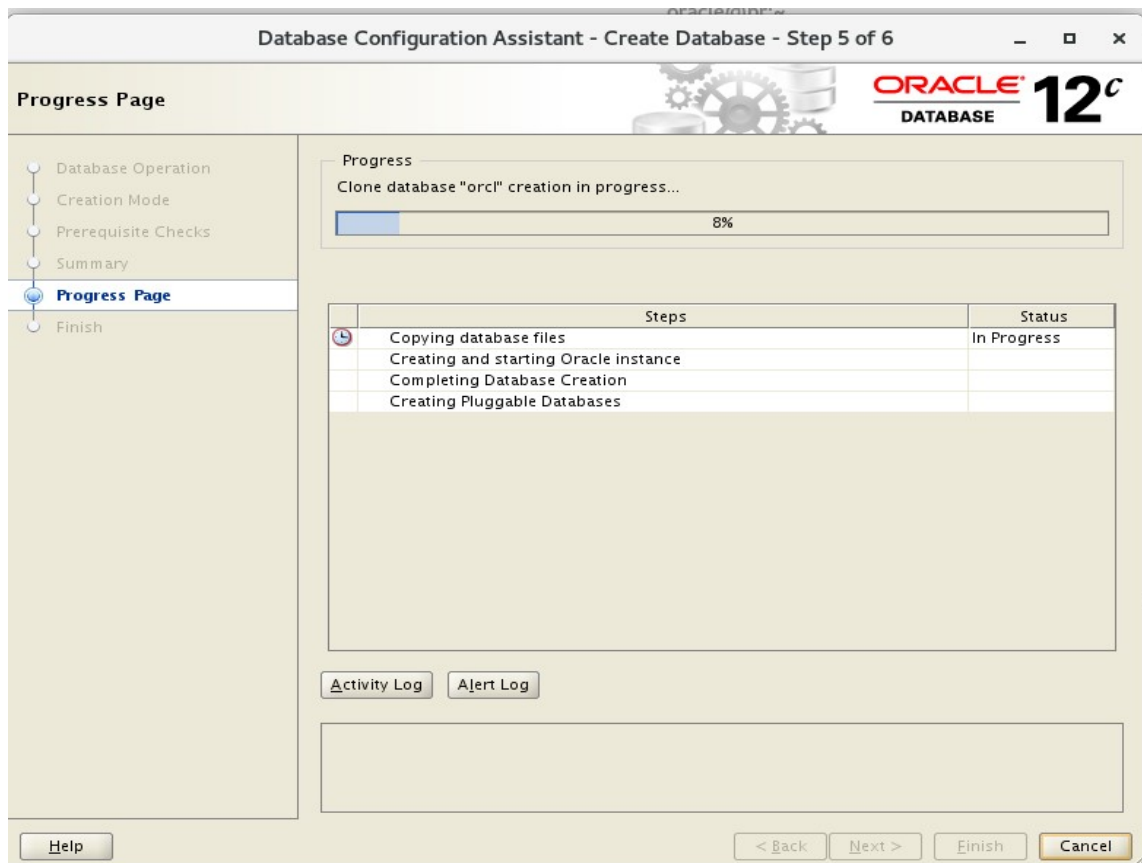
➢ Finish:
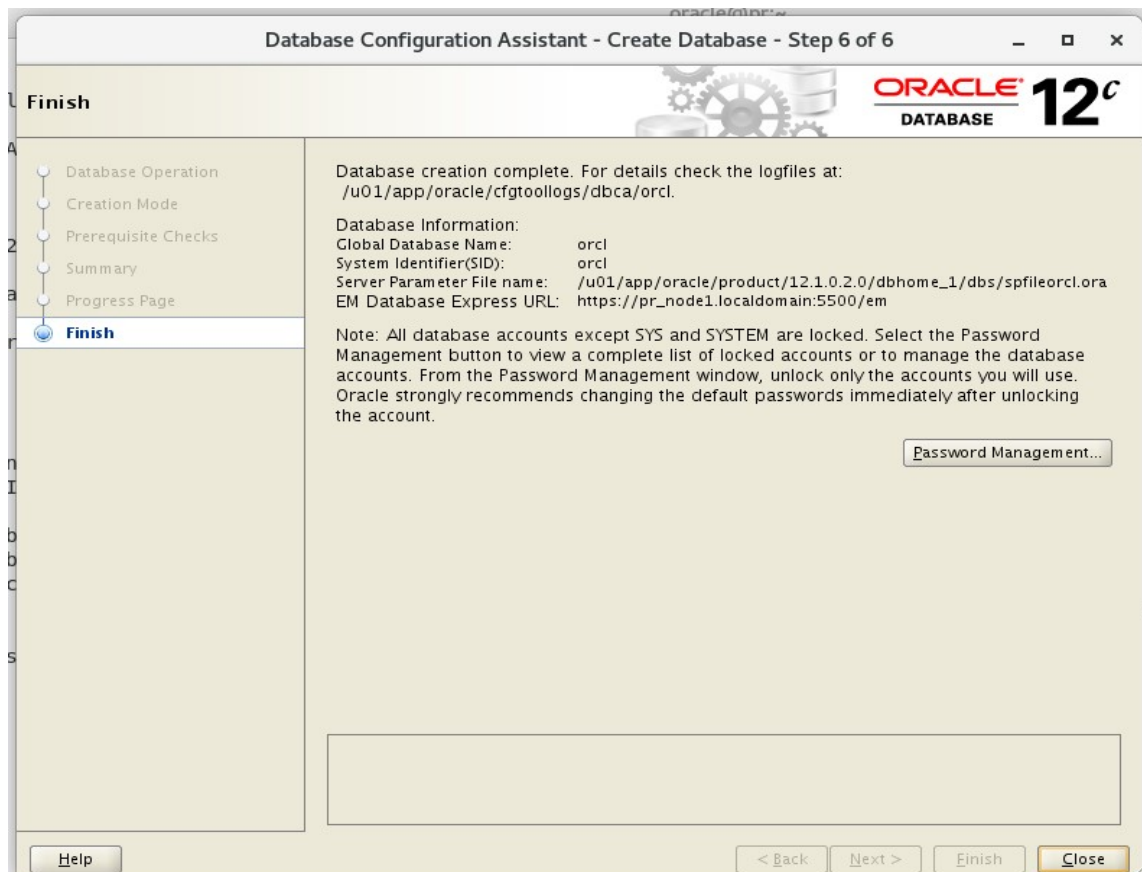
Post Installation:

Edit the "/etc/oratab" file setting the restart flag for each instance to 'Y'.

```
cdb1:/u01/app/oracle/product/12.1.0.2/db_1:Y
```

> ➢ **Oracle Network Configuration[ONC] (Listener.ora, tnsnames.ora & sqlnet.ora):**

```
[oracle@pr admin]$
[oracle@pr admin]$ pwd
/u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin
[oracle@pr admin]$ ll
total 20
-rw-r--r--. 1 oracle oinstall  352 Apr 11 16:24 listener.ora
drwxr-xr-x. 2 oracle oinstall 4096 Apr 11 16:20 samples
-rw-r--r--. 1 oracle oinstall  373 Oct 31  2013 shrept.lst
-rw-r--r--. 1 oracle oinstall  199 Apr 11 16:24 sqlnet.ora
-rw-r------. 1 oracle oinstall  434 Apr 11 16:27 tnsnames.ora
[oracle@pr admin]$
```

```
oracle@pr:/u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin
-rw-r--r--. 1 oracle oinstall  774 Apr 18 16:06 tnsnames.ora
[oracle@pr admin]$
[oracle@pr admin]$ cat listener.ora

# listener.ora Network Configuration File:/u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin/listener.ora
# Generated by Oracle configuration tools.

LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1))
      (ADDRESS = (PROTOCOL = TCP)(HOST = 172.20.10.6)(PORT = 1521))
    )
  )

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = orcl)
      (ORACLE_HOME = /u01/app/oracle/product/12.1.0.2.0/dbhome_1)
      (SID_NAME = orcl)
    )
  )
[oracle@pr admin]$ cat tnsnames.ora

# tnsnames.ora Network Configuration File: /u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin/tnsnames.ora
# Generated by Oracle configuration tools.

LISTENER = (ADDRESS = (PROTOCOL = TCP)(HOST = 172.20.10.6)(PORT = 1521))

ORCL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 172.20.10.6)(PORT = 1521))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = orcl)
    )
  )

PDBORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)(HOST = 172.20.10.6)(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = PDBORCL)
    )
  )
```

➢ **After oracle network configuration, need to start listener:**

Commands: lsnrctl start listener   >>> To start the listener

: lsnrctl status listener   >>> To check the status of listener

oracle@pr:/u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin

```
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options
[oracle@pr admin]$
[oracle@pr admin]$ lsnrctl status

LSNRCTL for Linux: Version 12.1.0.2.0 - Production on 19-APR-2024 22:36:31

Copyright (c) 1991, 2014, Oracle.  All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 12.1.0.2.0 - Production
Start Date                19-APR-2024 22:35:31
Uptime                    0 days 0 hr. 1 min. 0 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File   /u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin/listener.ora
Listener Log File         /u01/app/oracle/diag/tnslsnr/pr/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=172.20.10.6)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=pr.node1)(PORT=5500))(Security=(my_wallet_directory=
Services Summary...
Service "orcl" has 2 instance(s).
  Instance "orcl", status UNKNOWN, has 1 handler(s) for this service...
  Instance "orcl", status READY, has 1 handler(s) for this service...
Service "orclXDB" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this service...
Service "pdborcl" has 1 instance(s).
  Instance "orcl", status READY, has 1 handler(s) for this service...
The command completed successfully
[oracle@pr admin]$
```

> **Pre-check of database:**

```
oracle@pr:/u01/app/oracle/product/12.1.0.2.0/dbhome_1/network/admin

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 parameter name

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
cell_offloadgroup_name               string
db_file_name_convert                 string      /u01/app/oracle/oradata/ORCL,
                                                 /u01/app/oracle/oradata/ORCL_D
                                                 R, /u01/app/oracle/oradata/ORC
                                                 L/164F10280414194EE063060A14AC
                                                 8BF1, /u01/app/oracle/oradata/
                                                 ORCL_DR/PDBORCL
db_name                              string      orcl
db_unique_name                       string      ORCL
global_names                         boolean     FALSE
instance_name                        string      orcl

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
lock_name_space                      string
log_file_name_convert                string      /u01/app/oracle/oradata/ORCL,
                                                 /u01/app/oracle/oradata/ORCL_D
                                                 R
pdb_file_name_convert                string
processor_group_name                 string
service_names                        string      ORCL
SQL>
SQL> select INST_ID,NAME,LOG_MODE,OPEN_MODE,DATABASE_ROLE,CDB from gv$database;

   INST_ID NAME      LOG_MODE     OPEN_MODE            DATABASE_ROLE    CDB
---------- --------- ------------ -------------------- ---------------- ---
         1 ORCL      ARCHIVELOG   READ WRITE           PRIMARY          YES

SQL> show pdbs

    CON_ID CON_NAME                       OPEN MODE  RESTRICTED
---------- ------------------------------ ---------- ----------
         2 PDB$SEED                       READ ONLY  NO
         3 PDBORCL                        MOUNTED
SQL> alter pluggable database PDBORCL open;

Pluggable database altered.

SQL>
```

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~END~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~