

前言

本教程是在Linux下安装oracle12c数据库，由于在有些情况下并没有图形化安装界面，所以这里介绍在linux下通用的安装方式：静默安装，通俗的说就是在linux的命令行窗口安装，这里使用的是oracle linux7.6。

1. 安装前准备工作

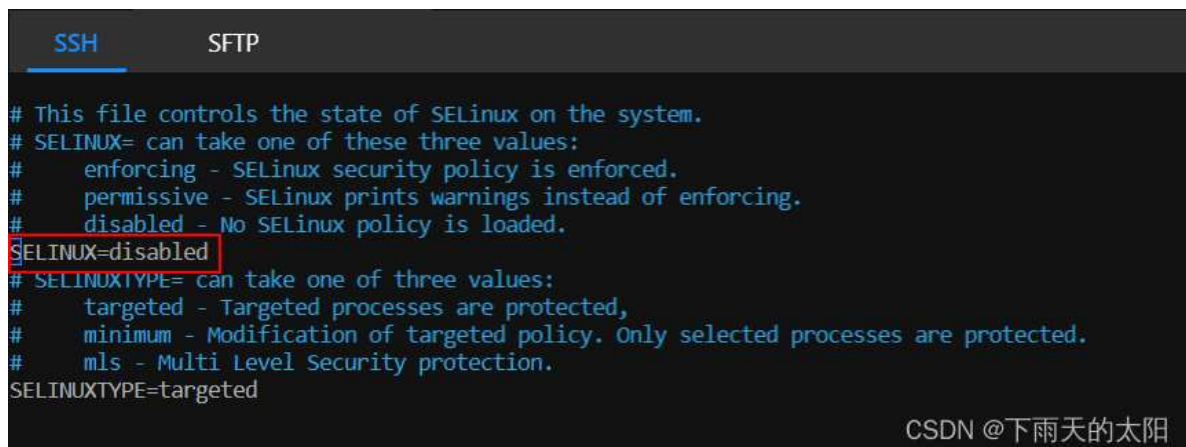
(1) 关闭防火墙

执行以下命令禁用并关闭防火墙

```
systemctl disable firewalld
systemctl stop firewalld
```

(2) 关闭selinux

执行vim /etc/selinux/config修改编辑config文件,将SELINUX设置成disabled，如下所示



```
SSH SFTP
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of three values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted

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```

(3) 修改Linux内核参数

执行vim /etc/sysctl.conf，在sysctl.conf文件末尾添加如下参数，然后执行sysctl -p命令，使得配置的内核参数生效

```
fs.aio-max-nr=1048576
fs.file-max=6815744
kernel.sem=250 32000 100 128
kernel.shmall=2097152
kernel.shmmax=2147483648
kernel.shmmni=4096
net.core.rmem_default=1048576
net.core.rmem_max=4194304
net.core.wmem_default=262144
net.core.wmem_max=1048576
net.ipv4.ip_local_port_range=9000 65500
```

(4) 安装Oracle12c的依赖包

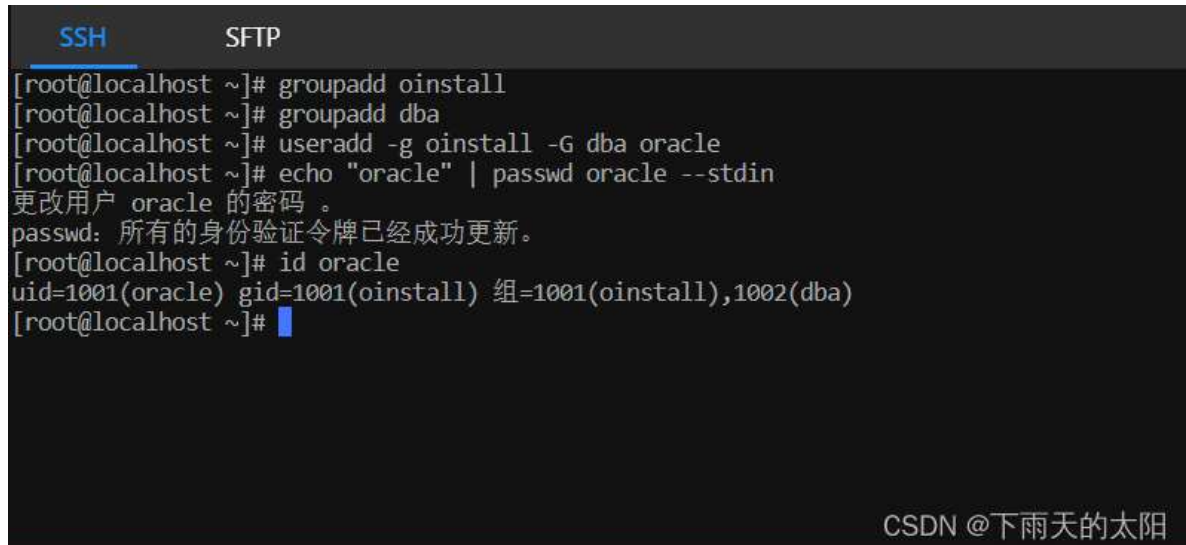
yum安装oracle数据库所需要依赖包，如果一次安装失败，可以多试几次，是可以安装成功的

```
yum install binutils gcc gcc-c++ glibc glibc-devel ksh libaio libaio-devel  
libgcc libstdc++ libstdc++-devel libxext libxtst libx11 libxau libxcb libxi make  
sysstat libnsl.x86_64
```

(5) 创建Oracle用户和用户组

依次执行下面命令创建oracle用户和用户组，然后执行id oracle，如果显示如下图那样，说明创建成功

```
groupadd oinstall  
groupadd dba  
useradd -g oinstall -G dba oracle  
echo "oracle" | passwd oracle --stdin
```



The screenshot shows a terminal window with a dark background. At the top, there are two tabs: 'SSH' (highlighted in blue) and 'SFTP'. The terminal output shows the following commands and their results:

```
[root@localhost ~]# groupadd oinstall  
[root@localhost ~]# groupadd dba  
[root@localhost ~]# useradd -g oinstall -G dba oracle  
[root@localhost ~]# echo "oracle" | passwd oracle --stdin  
更改用户 oracle 的密码。  
passwd: 所有的身份验证令牌已经成功更新。  
[root@localhost ~]# id oracle  
uid=1001(oracle) gid=1001(oinstall) 组=1001(oinstall),1002(dba)  
[root@localhost ~]#
```

At the bottom right of the terminal window, there is a watermark: 'CSDN @下雨天的太阳'.

(6) 修改oracle用户权限文件

执行vim /etc/security/limits.conf，在文件中添加以下内容

```
oracle soft    nofile 65536  
oracle hard    nofile 65536  
oracle soft    nproc 2047  
oracle hard    nproc 16384  
oracle soft    stack 10240
```

执行vim /etc/pam.d/login，在文件中添加以下内容

```
session required    /lib64/security/pam_limits.so  
session required    pam_limits.so
```

执行vim /etc/profile，在文件中添加以下内容,然后执行source /etc/profile使得修改生效

```
#oracle config  
if [ $USER = "oracle" ]; then  
    if [ $SHELL = "/bin/ksh" ]; then  
        ulimit -p 16384  
        ulimit -n 65536  
    else  
        ulimit -u 16384 -n 65536  
    fi  
fi
```

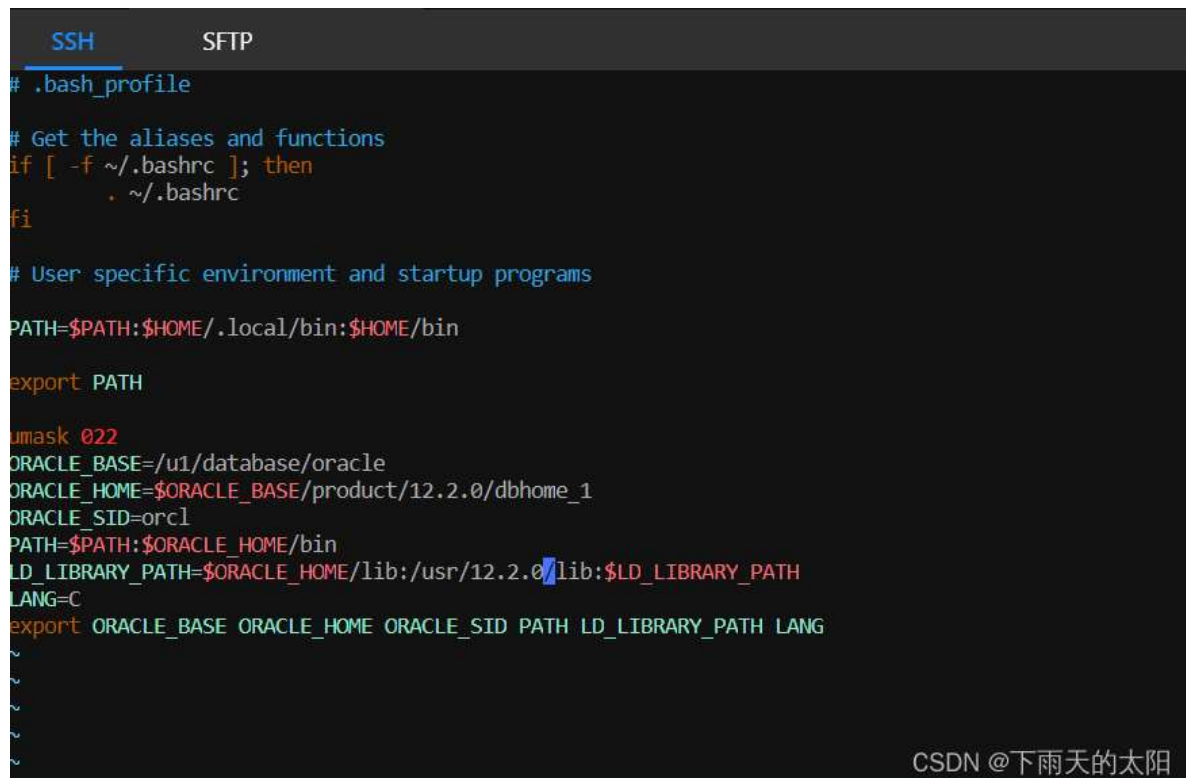
(7) 创建安装目录和文件权限

```
mkdir -p /u1/database/oracle/product/12.2.0
mkdir /u1/database/oracle/oradata
mkdir /u1/database/oracle/inventory
mkdir /u1/database/oracle/fast_recovery_area
chown -R oracle:oinstall /u1/database/oracle/
chmod -R 755 /u1/database/oracle/
```

(8) 配置Oracle环境变量

执行vim /home/oracle/.bash_profile, 在文件中添加如下内容, 然后执行source /home/oracle/.bash_profile,使得环境变量生效

```
umask 022
ORACLE_BASE=/u1/database/oracle
ORACLE_HOME=$ORACLE_BASE/product/12.2.0/dbhome_1
ORACLE_SID=orcl
PATH=$PATH:$ORACLE_HOME/bin
LD_LIBRARY_PATH=$ORACLE_HOME/lib:/usr/12.2.0/lib:$LD_LIBRARY_PATH
LANG=C
export ORACLE_BASE ORACLE_HOME ORACLE_SID PATH LD_LIBRARY_PATH LANG
```



```
SSH SFTP
# .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

umask 022
ORACLE_BASE=/u1/database/oracle
ORACLE_HOME=$ORACLE_BASE/product/12.2.0/dbhome_1
ORACLE_SID=orcl
PATH=$PATH:$ORACLE_HOME/bin
LD_LIBRARY_PATH=$ORACLE_HOME/lib:/usr/12.2.0/lib:$LD_LIBRARY_PATH
LANG=C
export ORACLE_BASE ORACLE_HOME ORACLE_SID PATH LD_LIBRARY_PATH LANG

~
~
~
~
```

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(9) 编辑hosts和hostname文件

执行vim /etc/hostname,添加如下内容
jamyson
执行vim /etc/hosts, 添加如下内容, 这里192.168.227.73地址可以通过执行ifconfig查询到
192.168.227.73 jamyson
然后执行init 6重启后, 可以看到修改已经生效

```
SSH      SFTP
[root@jaminsong ~]#
```

(10) 上传oracle12c的二进制安装包并解压

[官方下载地址](#)

这里将linuxx64_12201_database.zip上传到/usr/local/src文件夹下，然后执行unzip linuxx64_12201_database.zip来解压

```
SSH      SFTP
[root@jaminsong src]# ls -la
总用量 3372760
drwxr-xr-x. 3 root root      57 1月 20 22:51 .
drwxr-xr-x. 12 root root    4096 1月 16 09:31 ..
drwxr-xr-x. 7 root root    4096 1月 27 2017 database
-rw-rw-rw-. 1 root root 3453696911 1月 20 22:51 linuxx64_12201_database.zip
[root@jaminsong src]# cd database/
[root@jaminsong database]# ls
install response rpm runInstaller sshsetup stage welcome.html
[root@jaminsong database]#
```

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然后将response文件夹整个复制到/home/oracle/

```
cp -R /usr/local/src/database/response /home/oracle/
chmod -R 777 /home/oracle/response
```

```
SSH      SFTP
[root@jaminsong database]# ls
install response rpm runInstaller sshsetup stage welcome.html
[root@jaminsong database]# cp -R response /home/oracle/
[root@jaminsong database]# cd /home/oracle/
[root@jaminsong oracle]# ls
response
[root@jaminsong oracle]#
```

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```
[root@jaminsong oracle]# cd response/
[root@jaminsong response]# ls
dbca.rsp db_install.rsp netca.rsp
[root@jaminsong response]# vim db_install.rsp
```

执行vim db_install.rsp,将db_install.rsp脚本中这些变量值设置成如下内容（有的参数修改值，没有的参数新增即可）：

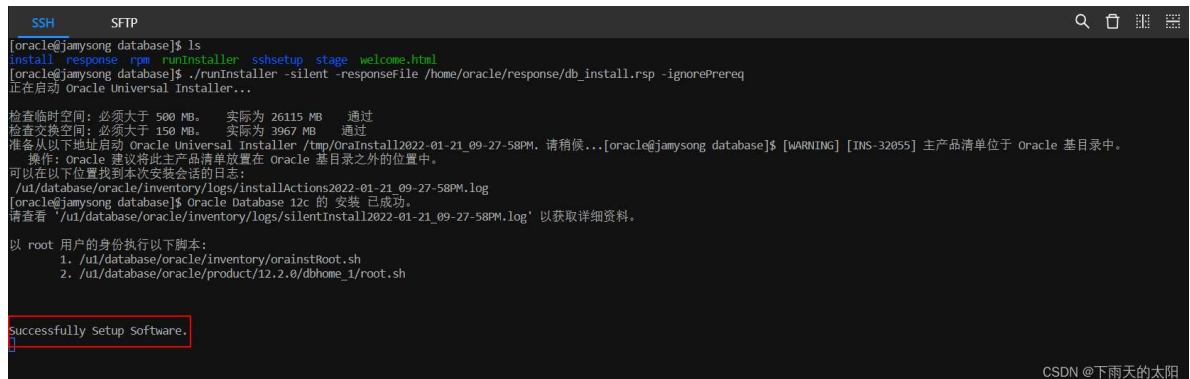
```
oracle.install.option=INSTALL_DB_SWONLY
ORACLE_HOSTNAME=jaminsong
UNIX_GROUP_NAME=oinstall
INVENTORY_LOCATION=/u1/database/oracle/inventory
SELECTED_LANGUAGES=en,zh_CN
ORACLE_HOME=/u1/database/oracle/product/12.2.0/dbhome_1
ORACLE_BASE=/u1/database/oracle
oracle.install.db.InstallEdition=EE
oracle.install.db.OSDBA_GROUP=dba
oracle.install.db.OSOPER_GROUP=dba
```

```
oracle.install.db.OSBACKUPDBA_GROUP=dba
oracle.install.db.OSDGDBA_GROUP=dba
oracle.install.db.OSKMDBA_GROUP=dba
oracle.install.db.OSRACDBA_GROUP=dba
DECLINE_SECURITY_UPDATES=true
```

2. 安装数据库软件

先切换到oracle用户下执行安装数据库软件，如果出现如下页面表示安装成功

```
su oracle
source /home/oracle/.bash_profile
cd /usr/local/src/database/
./runInstaller -silent -responseFile /home/oracle/response/db_install.rsp -
ignorePrereq
```



```
SSH SFTP
[oracle@jamsong database]$ ls
install_response rpm runInstaller sshsetup stage welcome.html
[oracle@jamsong database]$ ./runInstaller -silent -responseFile /home/oracle/response/db_install.rsp -ignorePrereq
正在启动 Oracle Universal Installer...

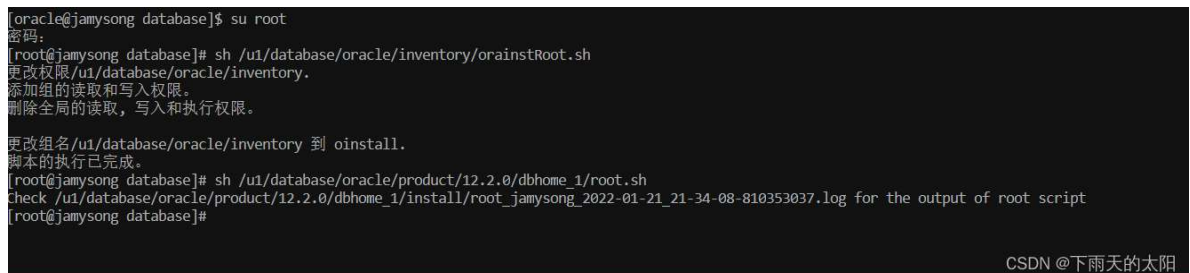
检查临时空间: 必须大于 500 MB。 实际为 26115 MB 通过
检查交换空间: 必须大于 150 MB。 实际为 3967 MB 通过
准备从以下地址启动 Oracle Universal Installer /tmp/OraInstall2022-01-21_09-27-58PM。请稍候...[oracle@jamsong database]$ [WARNING] [INS-32055] 主产品清单位于 Oracle 基目录中。
操作: Oracle 建议将此主产品清单放置在 Oracle 基目录之外的位置。
可以在以下位置找到本次安装会话的日志:
/u1/database/oracle/inventory/logs/installActions2022-01-21_09-27-58PM.log
[oracle@jamsong database]$ Oracle Database 12c 的安装 已成功。
请查看 '/u1/database/oracle/inventory/logs/silentInstall2022-01-21_09-27-58PM.log' 以获取详细资料。

以 root 用户的身份执行以下脚本:
1. /u1/database/oracle/inventory/orainstRoot.sh
2. /u1/database/oracle/product/12.2.0/dbhome_1/root.sh

Successfully Setup Software.
```

然后切换到root用户下执行下面命令

```
su root
sh /u1/database/oracle/inventory/orainstRoot.sh
sh /u1/database/oracle/product/12.2.0/dbhome_1/root.sh
```



```
[oracle@jamsong database]$ su root
密码:
[root@jamsong database]# sh /u1/database/oracle/inventory/orainstRoot.sh
更改权限/u1/database/oracle/inventory。
添加组的读取和写入权限。
删除全局的读取，写入和执行权限。

更改组名/u1/database/oracle/inventory 到 oinstall。
脚本的执行已完成。
[root@jamsong database]# sh /u1/database/oracle/product/12.2.0/dbhome_1/root.sh
Check /u1/database/oracle/product/12.2.0/dbhome_1/install/root_jamsong_2022-01-21_34-08-810353037.log for the output of root script
[root@jamsong database]#
```

3. 配置监听

再次执行su oracle切换到oracle用户下执行下面命令，此时直接执行可能会报如下错误

```
netca /silent /responseFile /home/oracle/response/netca.rsp
```



```
SSH      SFTP
[oracle@jiamysong database]# su oracle
[oracle@jiamysong database]$ netca /silent /responseFile /home/oracle/response/netca.rsp
bash: netca: 未找到命令...
[oracle@jiamysong database]$
```

那么先执行下source ~/.bash_profile,如果出现如图所示,那么就可以执行上面的命令了

```
SSH      SFTP
[oracle@jiamysong database]$ netca /silent /responseFile /home/oracle/response/netca.rsp
bash: netca: 未找到命令...
[oracle@jiamysong database]$ source ~/.bash_profile
[oracle@jiamysong database]$ env
bash: env: command not found...
[oracle@jiamysong database]$ env
XDG_SESSION_ID=1
HOSTNAME=jiamysong
SHELL=/bin/bash
TERM=xterm-256color
HISTSIZE=1000
SSH_CLIENT=192.168.227.1 56592 22
SSH_TTY=/dev/pts/0
USER=oracle
LD_LIBRARY_PATH=/u1/database/oracle/product/12.2.0/dbhome_1/lib:/usr/12.2.0/lib:
LS_COLORS=rs=0:di=38;5;27:ln=38;5;51:mh=44;38;5;15:pi=40;38;5;11:so=38;5;13:do=38;5;5:bd=48;5;232;38;5;11:cd=48;5;232;38;5;3:or=48;5;232;38;5;9:mi=05;48;5;232;38;5;15:su=48;5;196;38;5;15:sg=48;5;111;38;5;16:ca=48;5;196;38;5;226:tw=48;5;10;38;5;16:ow=48;5;10;38;5;21:st=48;5;21;38;5;15:ex=38;5;34:*tar=38;5;9:*tgz=38;5;9:*arc=38;5;9:*arj=38;5;9:*taz=38;5;9:*lha=38;5;9:*lzh=38;5;9:*lzm=38;5;9:*tlz=38;5;9:*txz=38;5;9:*tzo=38;5;9:*t7z=38;5;9:*zip=38;5;9:*z=38;5;9:*Z=38;5;9:*dz=38;5;9:*gz=38;5;9:*lrz=38;5;9:*lzo=38;5;9:*xz=38;5;9:*bzip2=38;5;9:*bz=38;5;9:*tbz=38;5;9:*tbz2=38;5;9:*t7z=38;5;9:*deb=38;5;9:*rpm=38;5;9:*jar=38;5;9:*war=38;5;9:*ear=38;5;9:*sar=38;5;9:*rar=38;5;9:*alz=38;5;9:*ace=38;5;9:*zoo=38;5;9:*cpio=38;5;9:*7z=38;5;9:*rz=38;5;9:*cab=38;5;9:*jpg=38;5;13:*jpeg=38;5;13:*gif=38;5;13:*bmp=38;5;13:*pbm=38;5;13:*pgm=38;5;13:*ppm=38;5;13:*tga=38;5;13:*xpm=38;5;13:*tif=38;5;13:*tiff=38;5;13:*png=38;5;13:*svg=38;5;13:*svgz=38;5;13:*mng=38;5;13:*pcx=38;5;13:*mov=38;5;13:*mpg=38;5;13:*mpeg=38;5;13:*m2v=38;5;13:*m4v=38;5;13:*webm=38;5;13:*ogm=38;5;13:*m4p=38;5;13:*m4v=38;5;13:*mp4=38;5;13:*vob=38;5;13:*dt=38;5;13:*nuv=38;5;13:*wmv=38;5;13:*asf=38;5;13:*rm=38;5;13:*rmvb=38;5;13:*flc=38;5;13:*avi=38;5;13:*fli=38;5;13:*flv=38;5;13:*gl=38;5;13:*dl=38;5;13:*xcf=38;5;13:*xwd=38;5;13:*yuv=38;5;13:*cgm=38;5;13:*emf=38;5;13:*axv=38;5;13:*anx=38;5;13:*ogv=38;5;13:*ogx=38;5;13:*aac=38;5;45:*au=38;5;45:*flac=38;5;45:*mid=38;5;45:*midi=38;5;45:*mka=38;5;45:*mp3=38;5;45:*mpc=38;5;45:*ogg=38;5;45:*ra=38;5;45:*wav=38;5;45:*xa=38;5;45:*oga=38;5;45:*spx=38;5;45:*xspf=38;5;45:
ORACLE_SID=orcl
ORACLE_BASE=/u1/database/oracle
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/root/bin:/home/oracle/.local/bin:/home/oracle/bin:/u1/database/oracle/product/12.2.0/dbhome_1/bin
PWD=/var/spool/mail/root
PWD=/usr/local/src/database
LANG=C
HISTCONTROL=ignoredups
HOME=/home/oracle
SHLVL=6
LOGNAME=oracle
SSH_CONNECTION=192.168.227.1 56592 192.168.227.73 22
XDG_DATA_DIRS=/root/.local/share/flatpak/exports/share:/var/lib/flatpak/exports/share:/usr/local/share:/usr/share
LESSOPEN=|/usr/bin/lesspipe.sh %s
XDG_RUNTIME_DIR=/run/user/0
ORACLE_HOME=/u1/database/oracle/product/12.2.0/dbhome_1
_=/usr/bin/env
[oracle@jiamysong database]$
```

执行env后,能在PATH变量中看到这个路径,就可以继续执行后面的命令了

再次执行netca /silent /responseFile /home/oracle/response/netca.rsp,看到如下图就说明监听成功启动

```
[oracle@jiamysong database]$ netca /silent /responseFile /home/oracle/response/netca.rsp

Parsing command line arguments:
  Parameter "silent" = true
  Parameter "responsefile" = /home/oracle/response/netca.rsp
Done parsing command line arguments.
Oracle Net Services Configuration:
Profile configuration complete.
Oracle Net Listener Startup:
Running Listener Control:
  /u1/database/oracle/product/12.2.0/dbhome_1/bin/lsnrctl start LISTENER
  Listener Control complete.
  Listener started successfully.
Listener configuration complete.
Oracle Net Services configuration successful. The exit code is 0
[oracle@jiamysong database]$
```

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执行netstat -tunlp | grep 1521,查看监听的端口号,如下图所示这样,到此监听配置完毕

```
[oracle@jiamysong database]$ netstat -tunlp | grep 1521
(Not all processes could be identified, non-owned process info
will not be shown, you would have to be root to see it all.)
tcp6      0      0 :::1521          :::*              LISTEN      11966/tnslsnr
[oracle@jiamysong database]$
```

查看监听状态 lsnrctl status
启动监听器: lsnrctl start
关闭监听器: lsnrctl stop

4. 创建数据库

执行vim /home/oracle/response/dbca.rsp命令编辑文件,设置以下内容,下面两个应答文件二选一即可

应答文件一: 使用此应答文件创建的数据库在创建用户时需要在用户名前加上C##

```
responseFileVersion=/oracle/assistants/rspfmt_dbca_response_schema_v12.2.0
gdbName=orcl
sid=orcl
databaseConfigType=SI
createAsContainerDatabase=true
numberOfPDBs=1
pdbName=orclpdb
templateName=/u1/database/oracle/product/12.2.0/dbhome_1/assistants/dbca/templates/General_Purpose.dbc
emExpressPort=5500
omsPort=0
characterSet=AL32UTF8
listeners=LISTENER
memoryPercentage=40
automaticMemoryManagement=false
totalMemory=0
```

应答文件二：使用此应答文件创建的数据库在创建用户时不需要在用户名前加上C##

```
responseFileVersion=/oracle/assistants/rspfmt_dbca_response_schema_v12.2.0
gdbName=orcl
sid=orcl
databaseConfigType=SI
createAsContainerDatabase=false
templateName=/u1/database/oracle/product/12.2.0/dbhome_1/assistants/dbca/templates/General_Purpose.dbc
emExpressPort=5500
omsPort=0
characterSet=AL32UTF8
listeners=LISTENER
memoryPercentage=40
automaticMemoryManagement=false
totalMemory=800
```

然后执行如下命令创建数据库实例，分别要给SYS,SYSTEM,PDBADMIN三个用户设置密码

```
dbca -silent -createDatabase -responseFile /home/oracle/response/dbca.rsp
```

如图所示，表示创建数据库实例完成

```
SSH SFTP
[WARNING] [DBT-06208] The 'SYS' password entered does not conform to the Oracle recommended standards.
CAUSE:
a. Oracle recommends that the password entered should be at least 8 characters in length, contain at least 1 uppercase character, 1 lower case character and 1 digit [0-9].
b. The password entered is a keyword that Oracle does not recommend to be used as password
ACTION: Specify a strong password. If required refer Oracle documentation for guidelines.
[WARNING] [DBT-06208] The 'SYSTEM' password entered does not conform to the Oracle recommended standards.
CAUSE:
a. Oracle recommends that the password entered should be at least 8 characters in length, contain at least 1 uppercase character, 1 lower case character and 1 digit [0-9].
b. The password entered is a keyword that Oracle does not recommend to be used as password
ACTION: Specify a strong password. If required refer Oracle documentation for guidelines.
[WARNING] [DBT-06208] The 'PDBADMIN' password entered does not conform to the Oracle recommended standards.
CAUSE:
a. Oracle recommends that the password entered should be at least 8 characters in length, contain at least 1 uppercase character, 1 lower case character and 1 digit [0-9].
b. The password entered is a keyword that Oracle does not recommend to be used as password
ACTION: Specify a strong password. If required refer Oracle documentation for guidelines.
Copying database files
1% complete
3% complete
5% complete
Creating and starting Oracle instance
26% complete
30% complete
31% complete
35% complete
38% complete
39% complete
41% complete
Completing Database Creation
42% complete
43% complete
44% complete
46% complete
49% complete
50% complete
Creating Pluggable Databases
55% complete
75% complete
Executing Post Configuration Actions
100% complete
Look at the log file "/u1/database/oracle/cfgtoollogs/dbca/orcl/orcl.log" for further details.
oracle@jamyong response]$
```

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登录数据库

```
sqlplus / as sysdba
```

创建数据库用户

```
create user 用户名 identified by 口令[即密码];
例如:create user c##jamy identified by 123456;
这里一定注意：用户名前一定要加c##,否则会报错
```

给用户授权

```
grant connect, resource, dba to 用户名;
例如: grant connect, resource,dba to c##jamy;
```



```

[oracle@jamysong response]$ sqlplus / as sysdba

SQL*Plus: Release 12.2.0.1.0 Production on Fri Jan 21 22:16:08 2022

Copyright (c) 1982, 2016, Oracle. All rights reserved.

Connected to:
Oracle Database 12c Enterprise Edition Release 12.2.0.1.0 - 64bit Production

SQL> create user c##jamy identified by 123456;

User created.

SQL> grant connect, resource, dba to c##jamy;
grant connect, resource, dba to c##jamy
*
ERROR at line 1:
ORA-01919: role 'RESOURCE???DBA' does not exist

SQL> grant connect, resource,dba to c##jamy;

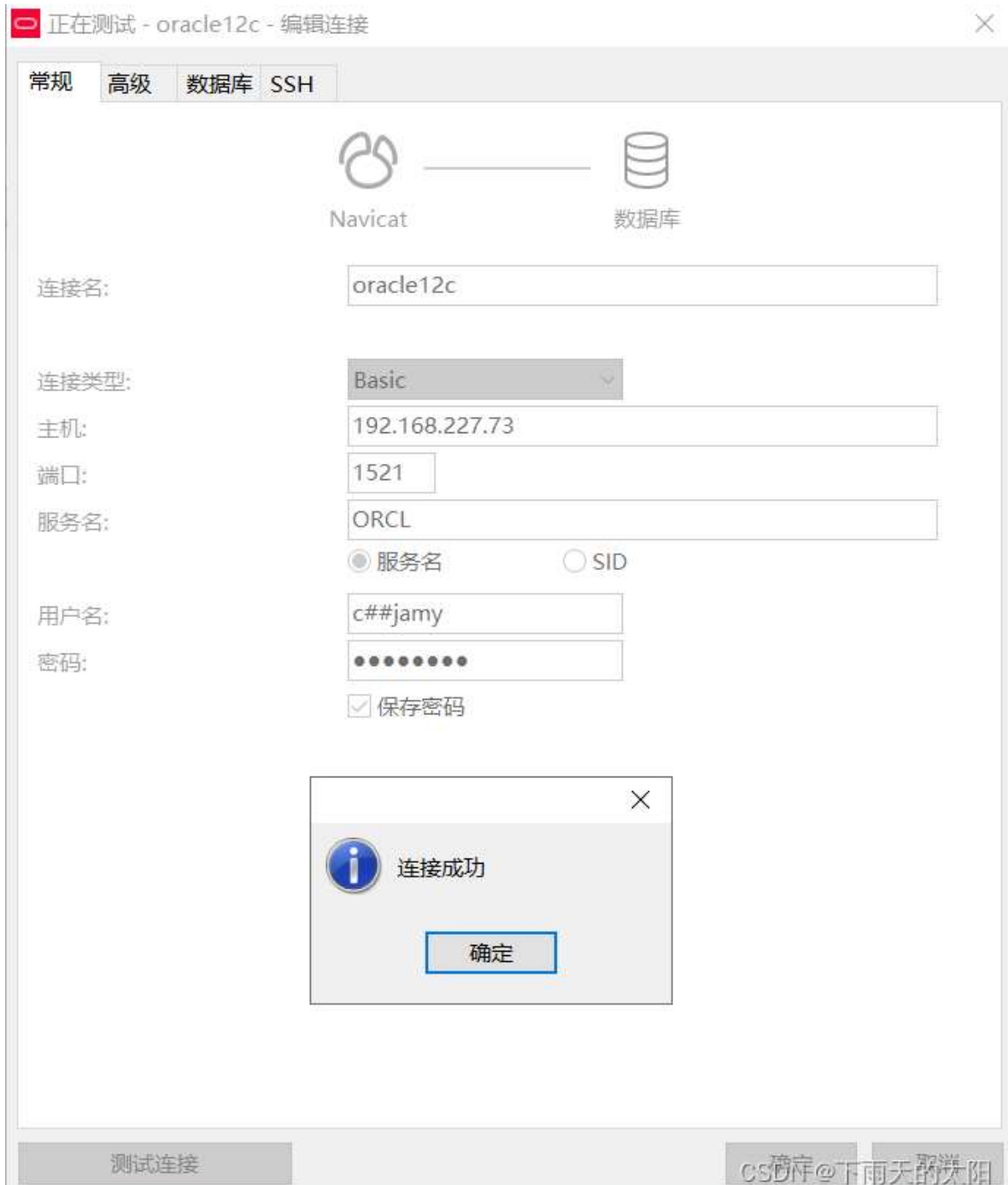
Grant succeeded.

SQL>

```

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客户端工具Navicat登录数据库



如果连接失败

先考虑执行lsnrctl start重启监听

再执行sqlplus / as sysdba登录数据库

执行startup;启动数据库实例如图所示

```
SQL> startup;  
ORACLE instance started.
```

```
Total System Global Area 1241513984 bytes  
Fixed Size                  8792248 bytes  
Variable Size               452986696 bytes  
Database Buffers           771751936 bytes  
Redo Buffers                 7983104 bytes  
Database mounted.  
Database opened.  
SQL> █
```

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