Management and administration of Databases - PRACTICE Nº5

Creation of a Oracle Database.

Objectives of the practice:
- learn to create listeners
- learn to manipulate the listeners by means of `lsnctrl`
- learn to interpret the `listeners.ora` file
- learn to create straightforward databases ORACLE by means of the use of the wizard
- revise some of the concepts relative to the ORACLE architecture
- create users and roles including frequent privileges

Necessary theory:

- Lesson 3 of theory

- Mini-videos 1 and 2

- Tutor of AJPD software on the installation of databases Oracle 11g

Number of sessions: 1

Installation notes:

This practice is intended to be developed by using a Windows virtual machine. Therefore, you must install a Windows machine including an Oracle installation.

1. Open unit D: and execute the file "Windows Oracle without BBDD group X", where X is your practices group number
2. VirtualBox will ask you to confirm the service preferences. Check the following parameters:
   a. Name: "Windows Oracle group xxx" where xxx is your practices user
   b. Memory: 2048 MB
   c. Make sure you that the virtual machine directory is "D:\virtual machines" (parameter "Image of virtual disk")
3. As soon as the virtual machine was installed, proceed to start it. Once in the virtual machine, it is useful to create an environment variable named ORACLE_HOME as the Oracle location, whose value should be "C:\app\pc-prueba\product\11.2.0\dbhome_1"
4. It is advisable to add %ORACLE_HOME %\bin to the PATH variable

In this practice we are going to install a database from a clean installation of the DBMS of Oracle. Thus, every PC has available a virtual machine including Oracle 11g standard edition. Every user is admin of their virtual machine. **From now on, it is strongly recommended to use always use the same PC** since each one is the only responsible for the administration of their own virtual machine.

1. Creation of a *listener*. Since we have available just the Oracle software, without any database, it is advisable to create a *listener* at least. It is required to deal with the communication between the database and clients. In order to solve this exercise, **it is highly recommended to see the mini-video 1 and read the tutor of AJPD software.** The following steps are:
   a. Using the `lnsctrl` utility, verify that there is no listener working
   b. Verify that the **listener.ora** file does not exist or is empty
   c. Execute the **configuration network assistant** to create a listener named `LISTENER1` which will listen TCP/IP port 1521
   d. Verify the **listener.ora** file again. At this moment, it should include the listener `LISTENER1` defined for TCP as well as `IPC` (`IPC` is added by default, it is required to get local connection to the Oracle service, for example if we login from the same server machine)
   e. Use `lsnrctl` to verify if the listener is working. In other case, start it by using. You must obtain an prompt looks similar to this one:

```
Recibiendo en:
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=Practicas)(PORT=1521)))


Conectándose a (ADDRESS=(PROTOCOL=tcp)(HOST=)(PORT=1521))
ESTADO del LISTENER
------------------------
Alias                     LISTENER
Versión                   TNSLSNR for 64-bit Windows: Version 11.2.0.1.0 -
Produ
ction
Fecha de Inicio      30-JUL-2013 18:00:55
Tiempo Actividad    0 días 0 hr. 0 min. 5 seg.
Nivel de Rastreo       off
Seguridad                ON: Local OS Authentication
SNMP                     OFF
Parámetros del Listener
D:\app\ora_user\product\11.2.0\dbhome_1\network\admin\
listener.ora
Log del Listener
d:\app\ora_user\diag\tnslsnr\Practicas\listener\alert\
log.xml
Recibiendo Resumen de Puntos Finales...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=Practicas)(PORT=1521)))
El listener no soporta ningún servicio
El comando ha terminado correctamente
```

   f. Stop the `listener` and start it again
   g. Since we have not created any database, note that `lsnrctl` output reveals that there is no service attached to the listener ("`The listener does not support any service`")

2. Creation of a straightforward database by using the **Oracle database configuration wizard. In order to solve this exercise it is strongly**

advisable to watch mini-video 2 and read AJPD tutorial. The database to be created must include the following characteristics:

a. Template to be used: `General use or Transaction management`

b. Name of the Database: `db_xxxx.domain` where `xxxx` is your practice user name and `domain` is the domain name where the server is located (for example, ujaen.es)

c. The name of the instance `db_xxxx`

d. Make sure that Enterprise Manager is marked (step 4).

e. Write the password to be used for the four default users. It is possible to write a different password for each of them.

f. Step 6: `Location of Database Files` as default value.

g. Step 7: `Configuration of Recovery` as default value.

h. Step 8: `Content of Database` as default value.

i. Step 9: `Initialization parameters` as default value.

j. Step 10: `Database Storage` default value.

k. Step 11: Choose "Generation of script for the creation of the database" and save the script with the name db_xxxx.sql

Try to get connection to the database using `sql-plus` or `SQL Developer (host: localhost, port:1521, user:sys, pwd:` the one that you write). Also you can try to get connected to your database across Enterprise Manager (`http:localhost:1158/em`, using Google Chrome)

NOTES OF INSTALLATION:

o Keep default values for those steps and options that have not been named along point 2 of this document

o Among the DB installation process, It can happen that the wizard requests at least a `listener` running. In such case, the `listener` created in the first part of this practice is stopped. Start it by means of `lnsrctl`.

3. Create users. You have to create two different users. The first one is a specific account intended to administrate the DB. The second one must be allowed to work with the DB as usual (allocate a tablespace, connect to DB, create tables, execute queries and so on).

a. Write and execute `create_dba_user.sql`. In this file we are going to write the SQL sentences to create a specific account for administrative purposes. Follow the next step by using SQL*Developer or SQL*Plus:
    i. Open a connection in the database that you have created using a user with `DBA` privileges. For example, the user `SYS`
    ii. Create a user named `dba_user`. This user must have the following privileges:
        1. `CREATE USER, ALTER USER, DROP USER`
        2. `CREATE SESSION` so that it could get connected to the database
        3. `CREATE TABLE`
        4. `CREATE SEQUENCE`
        5. `CREATE PROCEDURE`
        6. `CREATE TRIGGER`
        7. `DEBUG ANY PROCEDURE`
        8. `DEBUG CONNECT SESSION`
        9. `DATABASE LINK,` necessary to get access to remote databases

        IMPORTANT: since it a dba account, all these privileges must be granted `with admin option`.
        From now on we will use `dba_user` for administration tasks. In general, you must avoid to use `SYS` or other similar users, with a practically full control on the database. This is a frequent practice because of security.

b. Create and execute `create_user_xxxx.sql` where `xxxx` is your practice user. This scripts contains the SQL sentences in order to create the first "standard user" of our new database. Follow next steps:
    i. Connect as `dba_user` in the database that you have created.
    ii. Create a new user named as your user in `micerino`. This user must be provided with the following characteristics:
        1. Disk quota: 4 Mb
        2. Default tablespace
        3. `CREATE SESSION`
        4. `CREATE TABLE`
        5. `CREATE SEQUENCE`
        6. `CREATE PROCEDURE`
        7. `CREATE TRIGGER`
        8. `CREATE ANY PROCEDURE`
        9. `CREATE CONNECT SESSION`
    iii. Connect to your database with the new user. Try to create some test table and insert some row. If everything is fine do not forget to drop such test table.