



**K. J. Somaiya Polytechnic, Mumbai-77**

**Batch: C1**

**Enrollment No.: FCOG18120**

**Experiment No.: 02**

**Experiment Name: Creation of database using DBCA tools.**



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**Experiment No.: 02**

**Experiment Name: Creation of database using DBCA tools.**

**Learning Outcome:**

**O13RA64.1**

**Install Oracle and create database using DBCA tools.**

**Theory:**

### **A] DBCA TOOL:**

- DBCA is one of the common tools for database administration.
- DBCA creates a database from templates that are supplied by oracle or we can create our own also.
- Here templates are definitions of database that we can create & store and later use in order to create similar database.
- DBCA enables us to copy a preconfigured seed database thus saving the time and efforts of generating and customizing database from scratch.
- DBCA can be launched by the Oracle Universal Installer (OUI), depending upon the type of install that you select.
- Database Configuration Assistant (DBCA) is the preferred way to create a database, because it is a more automated approach, and your database is ready to use when DBCA completes.

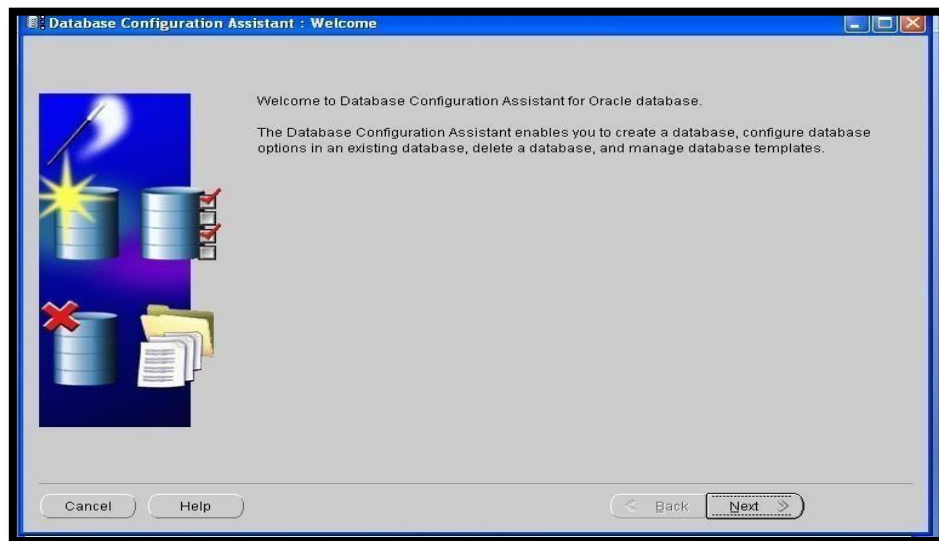


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### B] Steps for creating database using DBCA:

#### ● Step 1: Start DBCA:

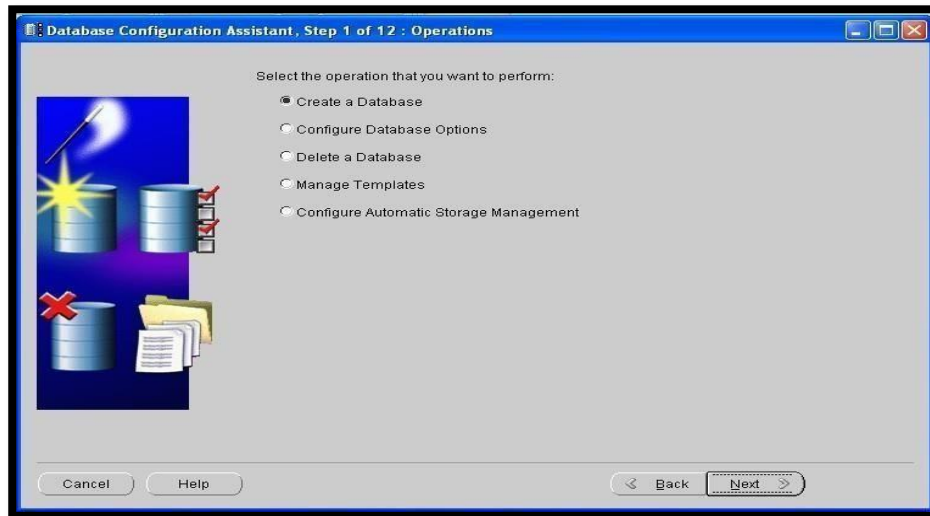
- Log on to computer as a member of administrative group that is authorized to install oracle database s/w and to create and run database.
- To start DBCA on microsoft windows OS, Click start, Select programs then oracle\_HOME\_NAME Then configuration and migration tools and then databaseconfiguration assistant.



Here you can see all the operations which you can perform with database configuration assistant DBCA. You can create a new database or configure the existing database, delete a database and manage template if you have any. As we are creating a new database thus we will choose the first option here which is “Create a Database”.



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### ● Step 2: Database Template:

This window allows us to select type of database to create. We can use templates supplied by oracle or from templates that you created. Here in step 2 of DBCA we have to choose the template of our database which means that we have to choose what kind of database we want to create. For complex environment we can select custom database, otherwise select default General Purpose. Here we have 3 options:

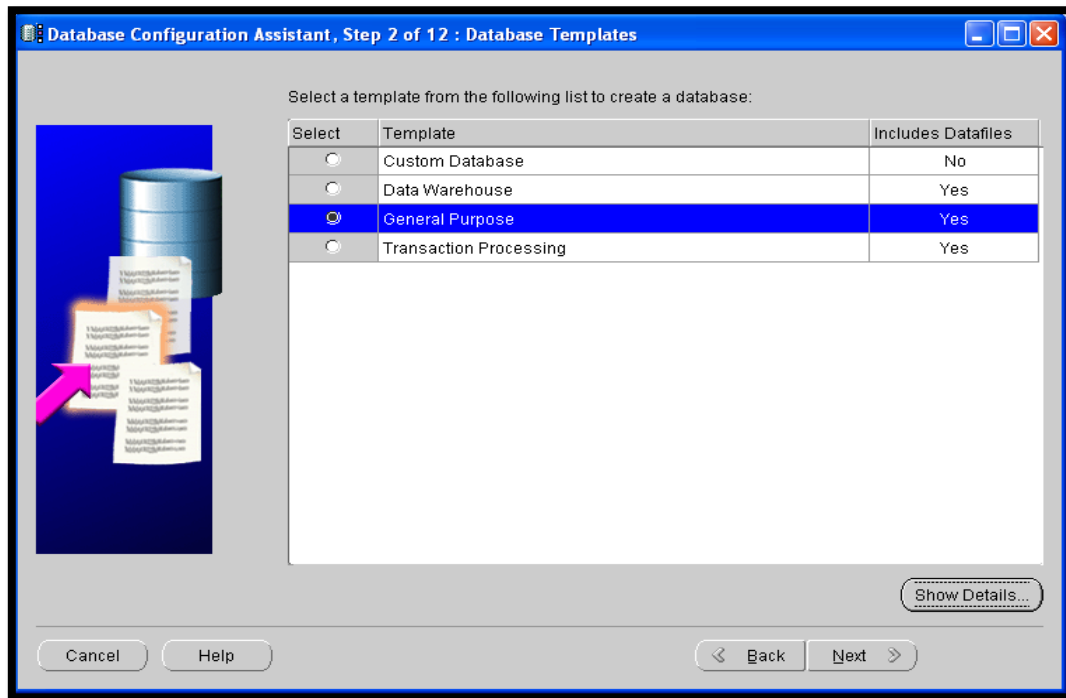
1. First one is general purpose of Transaction processing. You must have come across this kind of database. These are the often used database for example Retail billing system general purpose Database and ATM Automatic teller machine. Both of which are very good examples of transaction processing database.
2. The 2nd one is Custom Database. Pretty similar to the general purpose one but it's a bit more flexible. Here you can choose individual component of the database which you want to use such as oracle extension for dot net, Oracle OLAP, text, lab Security and enterprise manager repository etc. You can even assign your desired table space to all these database components.
3. The third one is Data warehouse. Data warehouse is also a type of



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relational database which is basically used for query and analysis rather than for transaction processing. So if you want to create a data warehouse then choose this one.

Since we are creating a general purpose database thus we will select the first option which is “General purpose or Transaction processing”.

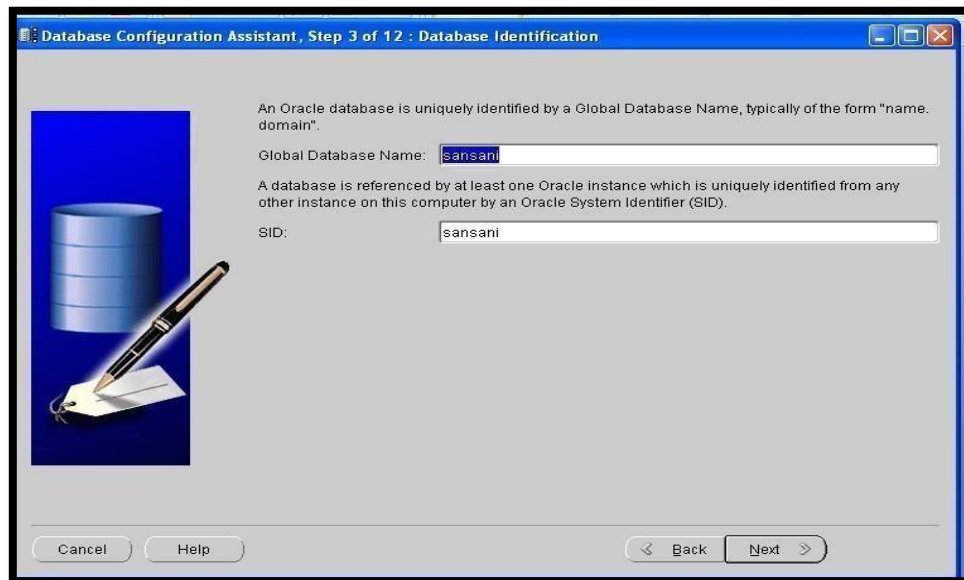


### ● **Step 3: Database Identification:**

In the Global Database Name field, enter the database name in the form “database\_name.domain\_name”. This is also an oracle recommended format for global database name. But you can give whatever name you want. This helps you in uniquely identifying your database.

In SID field, enter the system identifier it will have default value as database name and uniquely identifies the instance that runs the database.

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### ● Step 4: Management options:

This window will set up our database, so it can be managed with Oracle Enterprises Manager (OEM). Here in this step you will choose whether you want to configure enterprise manager or not. Oracle enterprise manager is a web-based management tool for individual database, and central management tools for managing your entire Oracle environment.

Select Configure Enterprise Manager to use Enterprise Manager. Then select following one option :

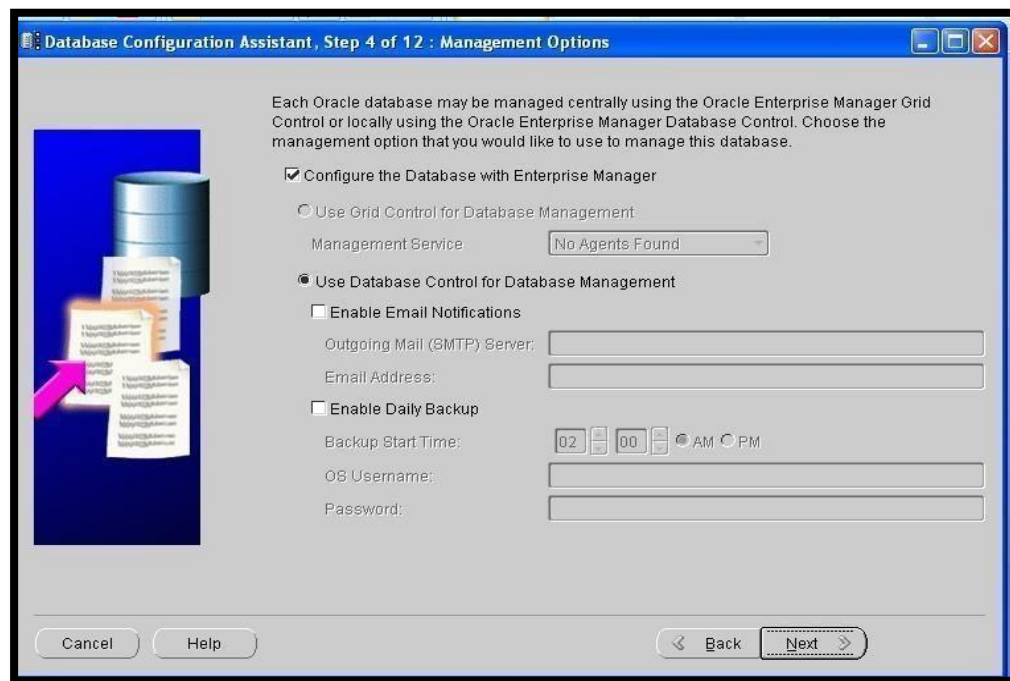
1. If the Oracle Management Agent is installed on your host computer, then you can choose central management by selecting Register with Grid Control for centralized management and then selecting the Management Service.
2. To manage your database locally, select Configure Database Control for local management. You can then optionally configure e-mail notification of database alerts or a daily backup of the database.

Along with enterprise manager you can also configure your alerts. Supply your email server details and this will send you all the alerts on your emails.



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Moreover you can even configure daily disk back up if you want. But make sure that automatic maintenance tasks are enabled.

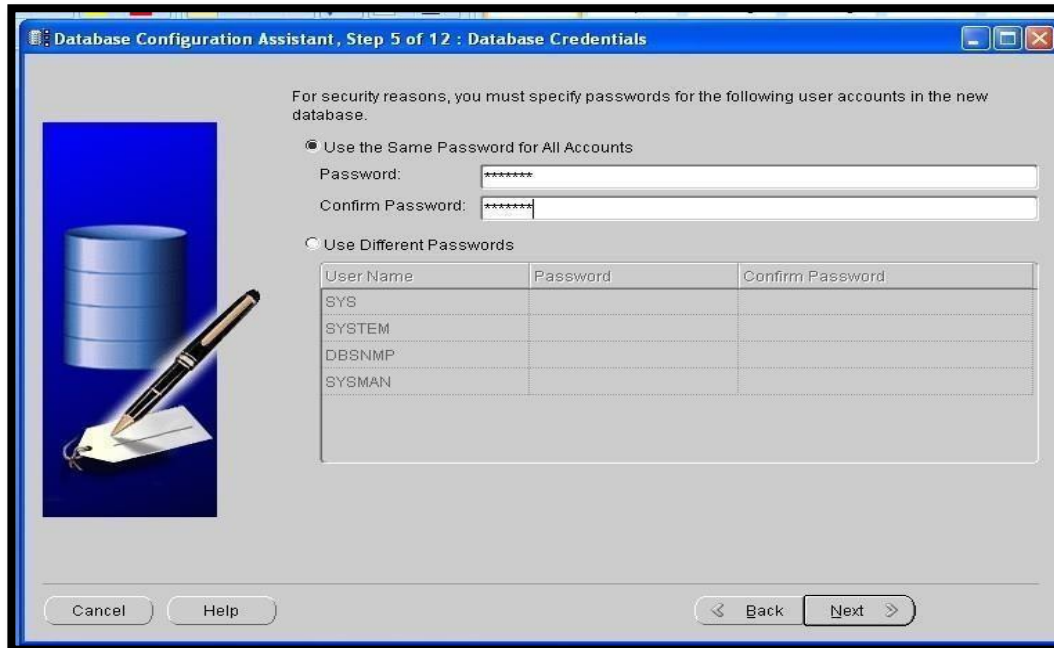


#### **● Step 5: Database Credentials:**

Here you have to configure the security for all these accounts. These are few administratively mandatory and by default configure accounts. Here you have 2 options either you can configure separate passwords for each of them or you can assign same password to all of them. Specify passwords for administrative accounts such as SYS and SYSTEM.



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### ● Step 6: Storage options and Database File Locations:

Here in this step you have to specify the type of storage you would like your database to use.

In the storage type we have 2 options first is file system and the second is ASM automatic storage management. If you have configured ASM then recommended to choose the same otherwise go for file system. After choosing Storage type you have to specify the storage location.

For storage location we have 3 options:

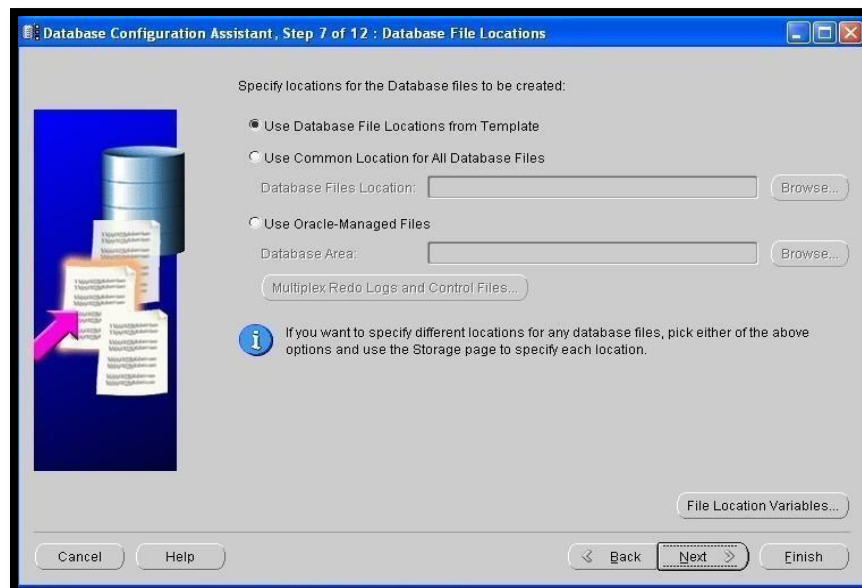
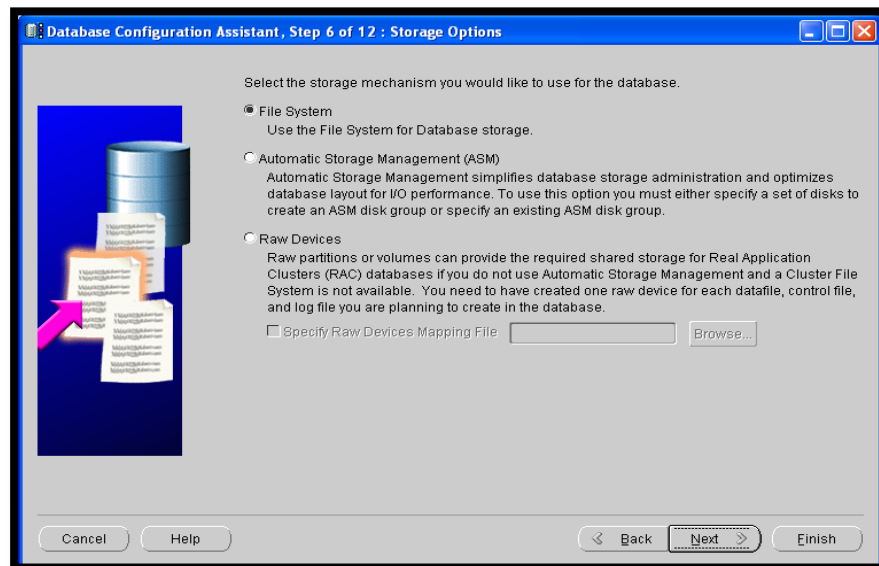
1. First one is Use Database File Locations from Template. By using this option you don't need to do anything instead DBCA will create an ORACLE HOME directory for you.
2. Second one is Use Common Location for All Database Files Here you can choose your own directory. DBCA will set the chosen directory as your ORACLE HOME and then all the database files will get created at this location.
3. Last and third one is Use Oracle Managed Files. This option instructs





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3. Oracle Database to directly manage operating system files. It provides you with a flexible way for multiplexing online redo log and control file. This is recommended for security purposes.





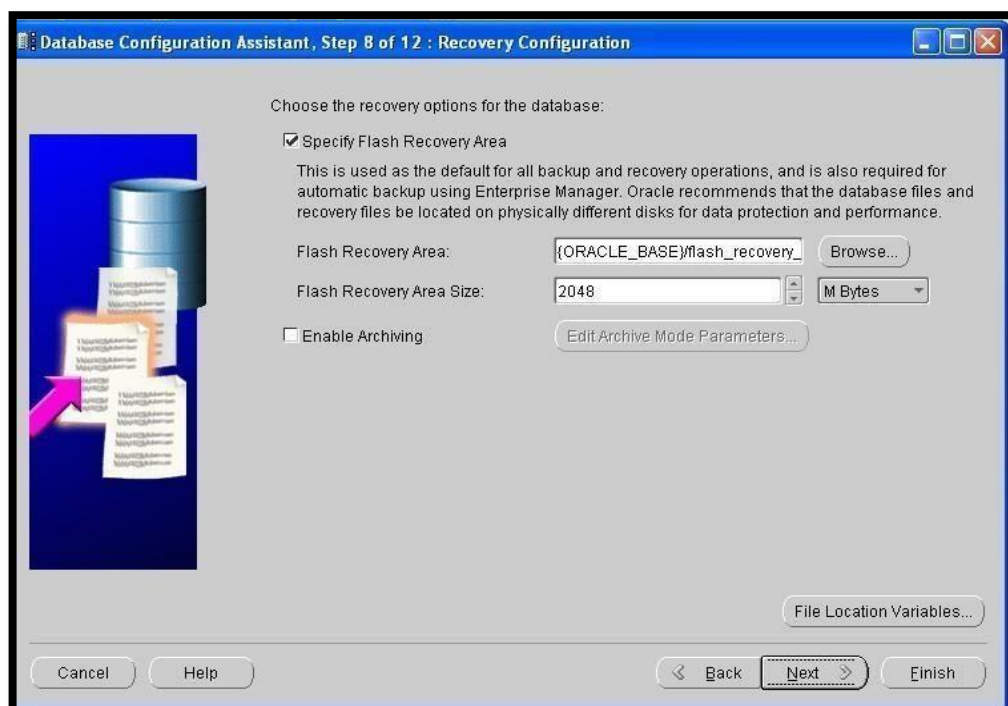
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### ● Step 7: Recovery configuration:

It is recommended you to choose enable Archiving. And with archiving it becomes mandatory to set at least one archive log destination thus here you have to enable flashbackrecovery area.

**Specify flash Recovery Area—** You can go for this option in order to specify a backup and recovery area as well as its directory location and size. You can even use variables to identify standard locations. The flash recovery area size should at least be twice the database size.

**Enable Archiving—** Select this option to enable the archiving of database online redo log files, which can be used to recover a database. Selecting this option is the same as enabling Archive Log Mode in Oracle Enterprise Manager Database Control or running the database in ARCHIVELOG mode.





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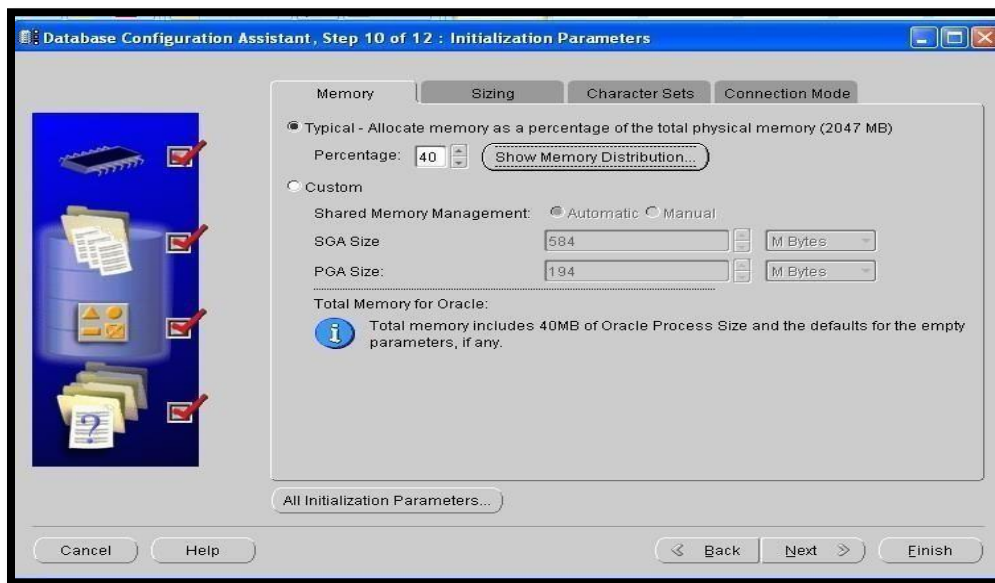
### ● Step 8: Database content:

When we create our database we can load it with data using either of the following methods:

- Sample Schema- to include sample schema (example) tablespaces in our database.
- Custom Scripts- to specify SQL script to run after db is created.

### ● Step 9: Initialization parameter:

With the help of this step you can change the default initialization parameter settings that include Memory, Sizing, Character set and Connection mode.

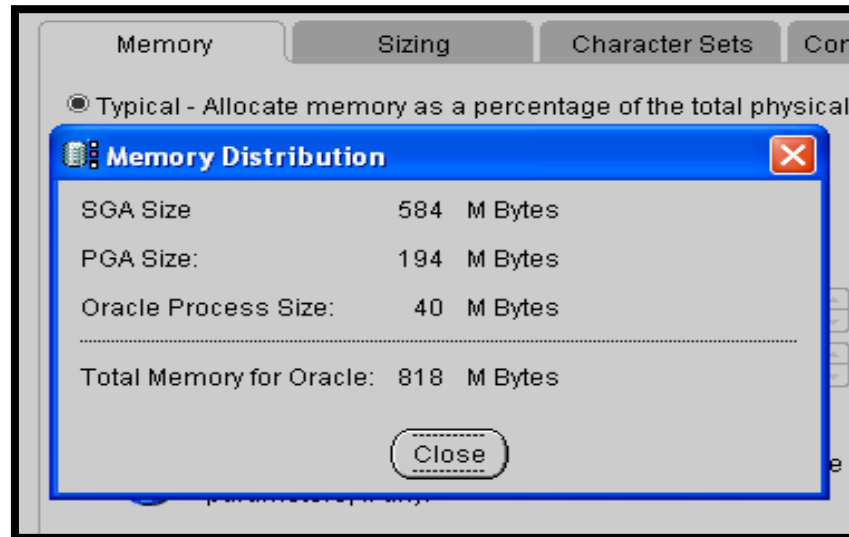




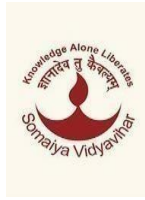
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1. **Memory:** You can use this window to set the initialization parameters that control how the database manages its memory. You can choose among the below mentioned methods for memory management:
  1. **Typical** — Very little configuration is required in this method. It allocates memory as a percentage of total overall physical system memory. Select Typical and enter a percentage value. You can click Show Memory Distribution to see how much memory DBCA assigns to the System Global Area (SGA) and the aggregate Program Global Area (PGA).
  2. **Custom** — This method usually requires more configuration than the previously discussed Typical option, but gives you more control over how the database instance uses system memory. You can directly specify memory sizes for the SGA and aggregate PGA and their substructures, such as the shared pool and buffer cache.
  3. **Automatic Shared Memory Management** – This allows you to allocate specific amounts of memory to the SGA and aggregate PGA. With this setting, automatic shared memory management is enabled for the SGA, and memory is allocated to the individual PGAs as needed.
  4. **Manual Shared Memory Management** – It allows you to enter specific values for each SGA component and the aggregate PGA. This disables automatic shared memory management and enables you to determine how the SGA memory is distributed among the SGA memory components.

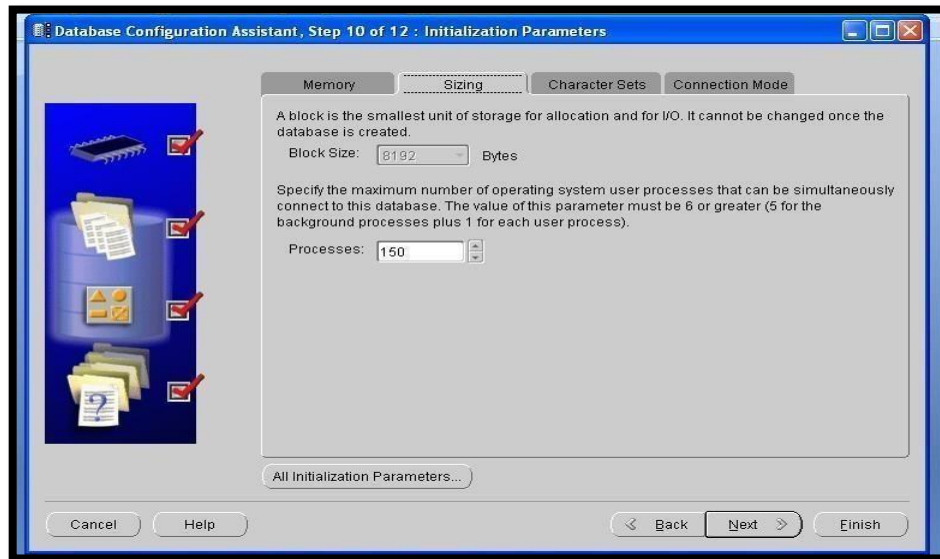
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2. **Sizing:** This tab enables you to specify the smallest block size and the maximum number of operating system user processes that can simultaneously connect to the database.



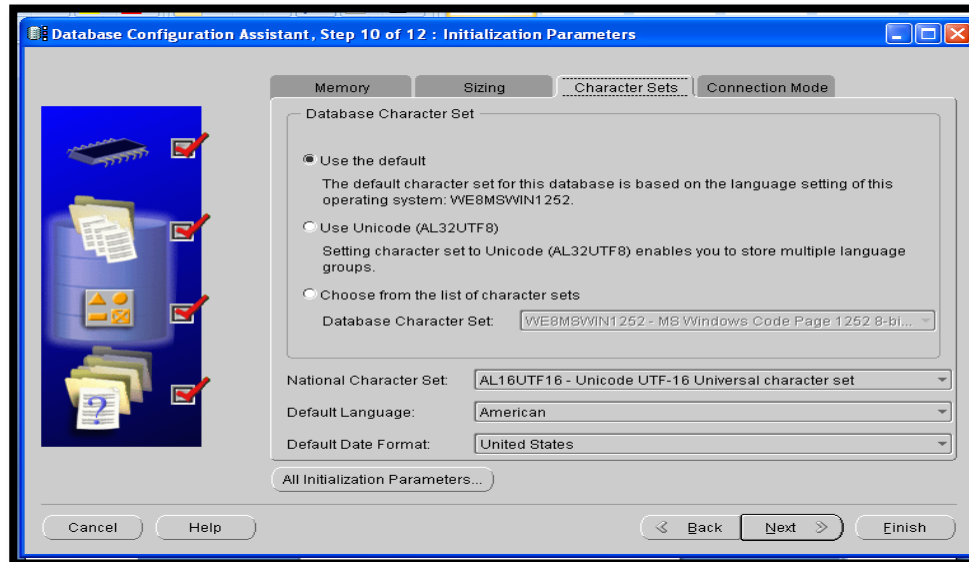
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1. **Character Sets:** You can utilize this tab to define the character sets used by your database. Character sets are the encoding schemes used to display characters on your computer screen. They determine what languages can be represented in the database.



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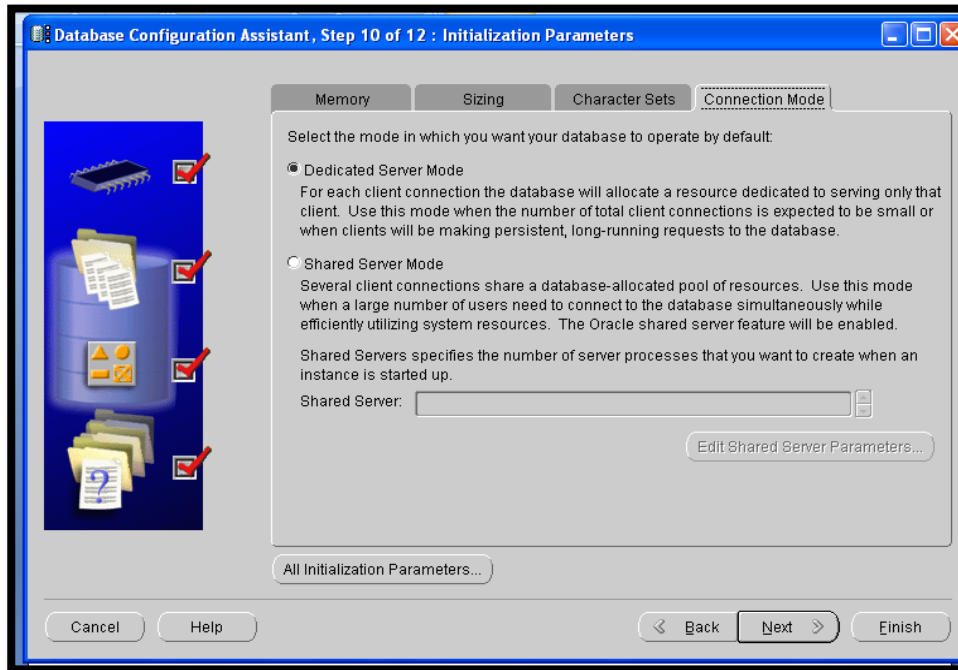
1. **Connection Mode:** With the help of this window you can select the database mode. You have following mode options which can run the database

A. **Dedicated Server Mode**— It allows a dedicated server process for each user process. You can opt for this option when the number of total clients is expected to be small, for example, 50 or fewer. You might also choose this option when database clients typically make persistent, long-running requests to the database. By default, the database is configured for dedicated server processes.

B. **Shared Server Mode**— It allows several client connections to share a database- allocated pool of resources. You can use this mode in such configurations where the client load is expected to cause a strain on memory and other system resources. If you choose shared server mode, then you must indicate the number of server processes you want to create when a database instance is started.



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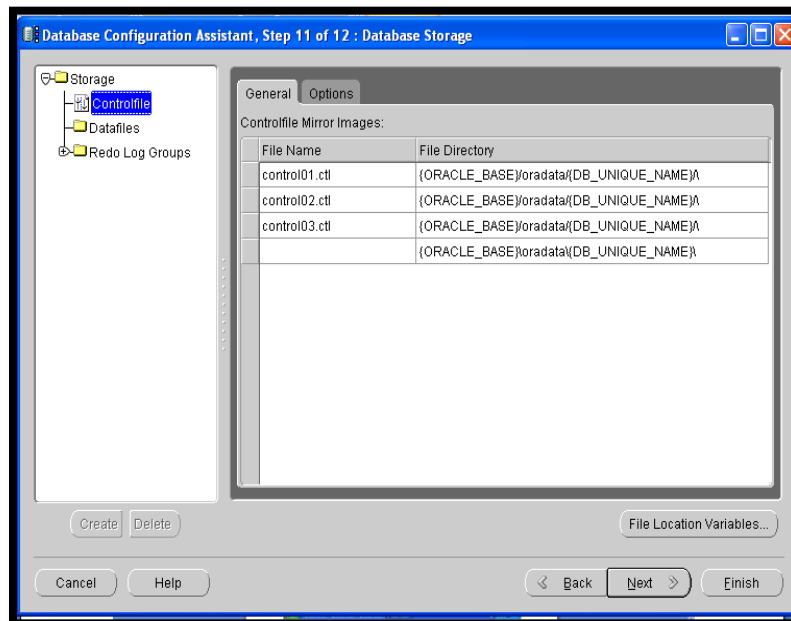
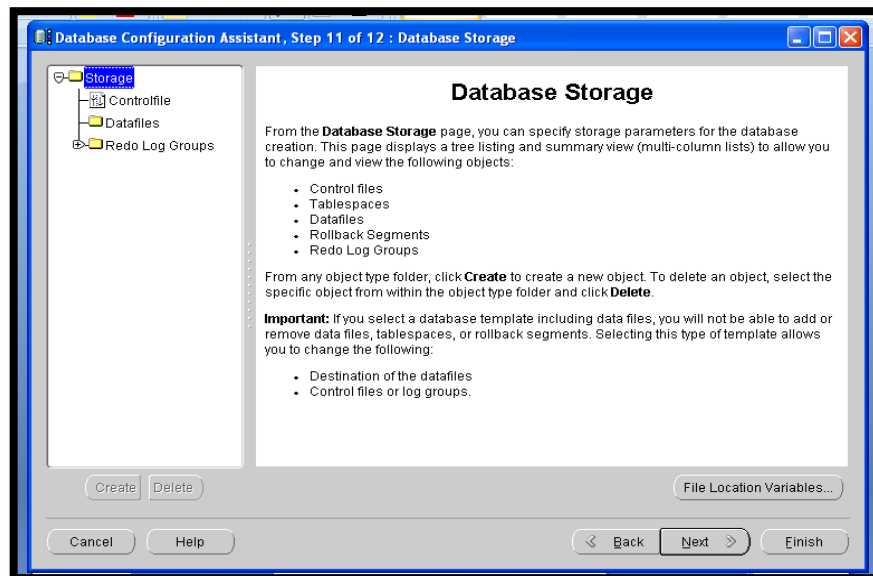
### ● Step 10: Database storage:

At this stage you are presented with a navigation tree display that contains the storage structure of your database including control files, data files, online redo log groups, and so forth. Here you have the option of making changes in case you are not satisfied with the storage structure or parameters.



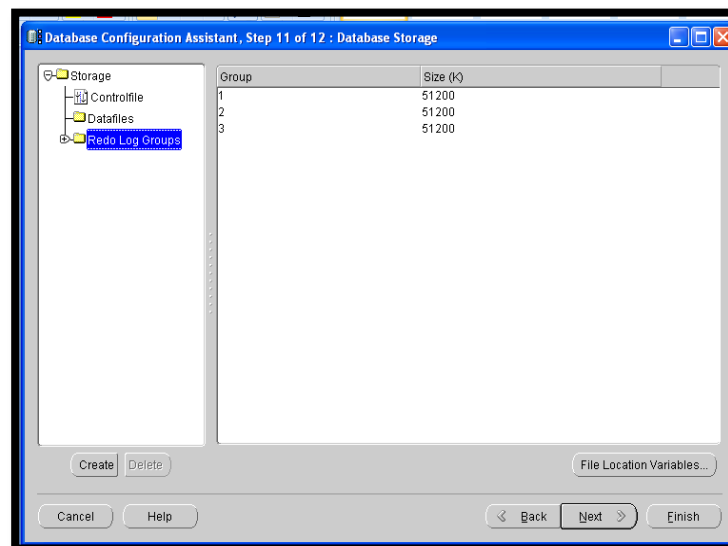
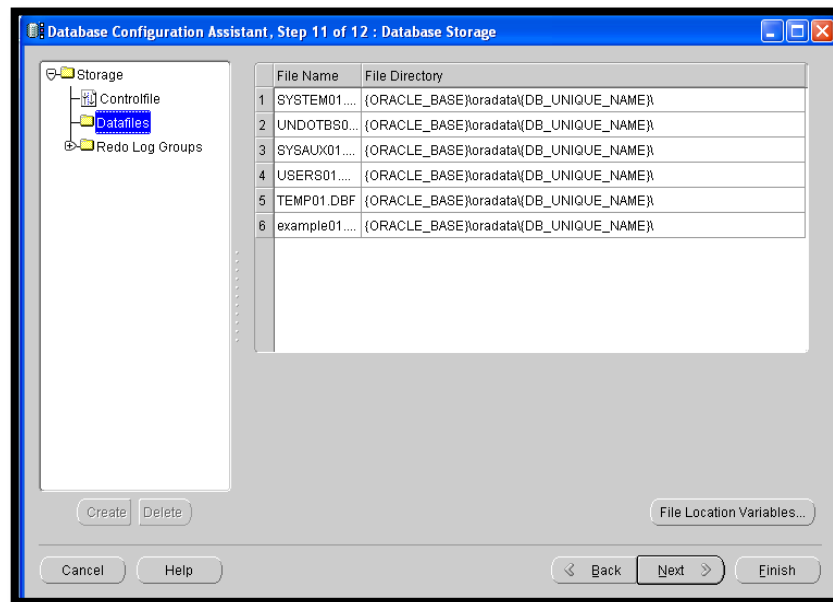


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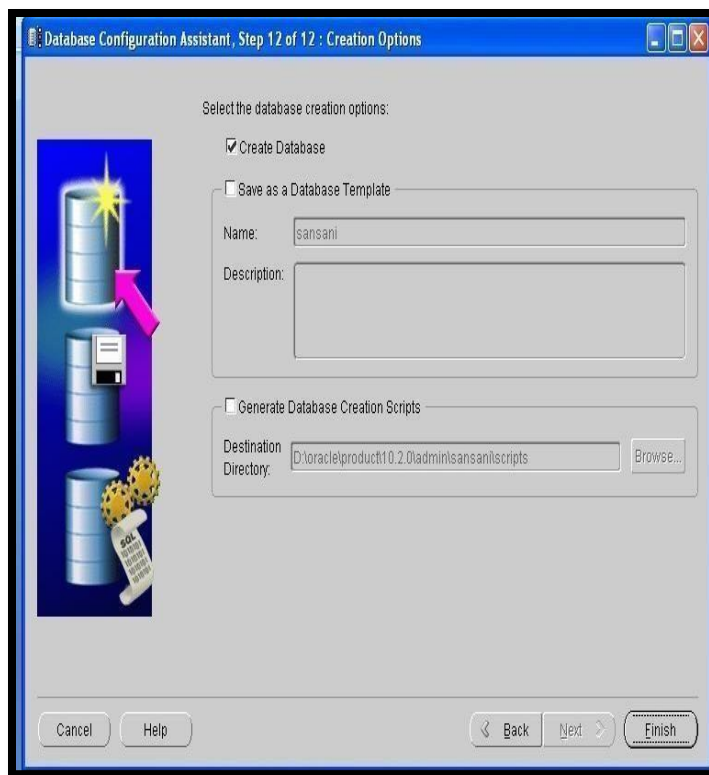
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### ● Step 11: Database creation options:

This is the last step where you have to tell DBC what you want to do? Either you want to create a database or save all these settings as template for future use or you want to generate the database creation script.

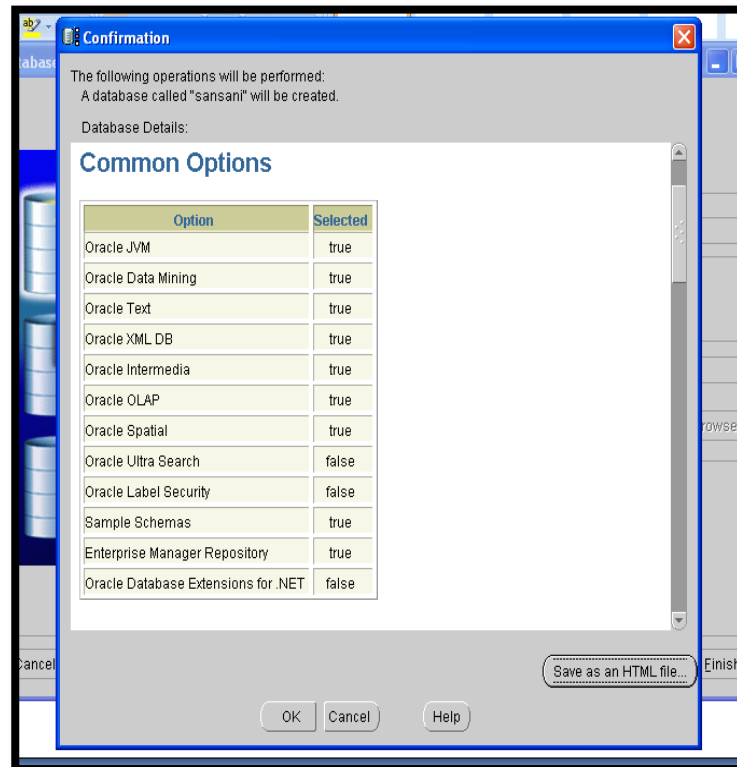
- a) Create database- to create database at this time
- b) Save as database template- to save database definition as template to use at another time
- c) Generates database creation script- to generate a SQL Database creation script that you can run at a later time

Now hit finish.





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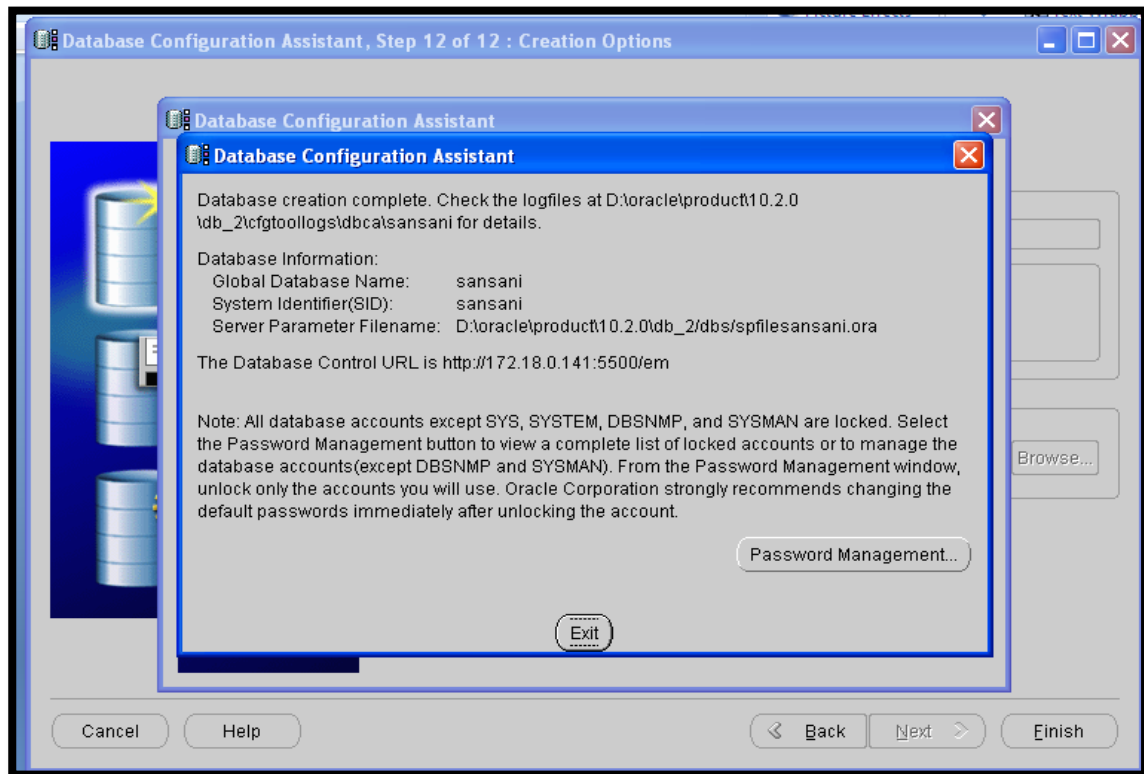


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**Thus, database is created successfully.**



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### **Questions:**

#### **1. How to create database manually? [CO1]**

**Answer:** Following are the steps to create database manually:

##### **Step 1: Decide Instance Identifier (SID):**

- There can be more than one oracle instance on a single machine. In order to distinguish between these instances oracle uses a SID (System Identifier).
- The SID can be set through the ORACLE\_SID environment variable
- The command used to set the SID for windows operating system.

`set ORACLE_SID = String`

##### **Step 2: Establish the database administrator authentication method:**

- We must be authenticated and granted privileges in order to create a database.
- We can use the- password file or operating system authentication method.

##### **Step 3: Create the initialization parameter file:**

- When an Oracle instance starts it reads an initialization parameter file
- It can be read-only text file, which must be modified with a text editor or a read/write binary file which can be modified dynamically by database.
- The binary file, which is preferred, is called a server parameter file (SPFILE). we can create text initialization parameter file by editing a copy of the sample initialization parameter file provided by oracle.
- We can store this file in oracle database default location using default name.(ORACLE\_HOME/dbs/init.ora)

##### **Step 4: Connect to instance:**

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- Before we connect to instance we have to manually create it.  
The ORADIMcommand is used to create an oracle instance
- Oradim\_NEW\_SID sid-STARTMODE MANUAL-PFILE.pfile
- Where SID is the desired SID and pfile is full path to Text initialization parameter file.To connect to the instance, start SQL \* plus and connect to our database instance.

**Step 5:** Create server parameter file:

- The server parameter file enables to change initialization parameter with database commands and persists the changes across the shutdown and startup.
- It can be created from text initialization file.

**Step 6:**

Create SPFILE="/uo/oracle/dbs/filename.ora"

From PFILE="/uo/oracle/admin/initnewdba/scripts/init.ora"

Start the instance:

- Start an instance without mounting a database.

STARTUP\_NOMOUNT

**Step 7:** Issue

the CREATE DATABASE statement:

- To create the new database ,use the CREATE DATABASE statement.
- Ex: CREATE DATABASE statement

**Step 8:** Create tablespaces:

To make database

```
CREATE DATABASE mydb
LOGFILE GROUP1('/uo1/oracle/oradata/mydb/redo1.log')size 100M,
          GROUP2('/uo1/oracle/oradata/mydb/redo2.log')size 100M,
DATAFILE ('/uo1/oracle/oradata/mydb/syso1.dbf')size 302M,
Default tablespace temp;
```

additional





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functional, we need to create additional files and tablespaces for users.

### **Step 9:** Run scripts to build data dictionary views:

Run the script necessary to build views, synonyms, PL/SQL package.

### **Step 10:** Backup the database:

Take full backup of database to ensure that we have a complete set of files, from which to recover if a media failure occurs.

**Conclusion: Thus, we have studied to create database using DBCA tool.**

### **Questions and Answers:**

1. Write down query to create database manually.

### **Create a Database Manually**

Even if your company standardizes on using the GUI tools, such as DBCA, it would be a good idea to create a database manually at least once, not only to help you with this test (although it will help you to pass this portion of the exam), but so that you have an idea of what the DBCA is doing behind the scenes. This knowledge will help you to make more informed decisions in creating your databases, going forward, regardless of how you create them.

**Step 1:** Decide on Your Instance's System Identifier (SID)

**Step 2:** Create the Initialization Parameter File.

Let's address the parameters in the initialization file in greater depth:

- **DB\_NAME** Must be set to a text string of eight characters or less. During database creation, the value assigned to **DB\_NAME** is recorded in the database's datafiles, redo log files, and control files. If, when you attempt to start the database instance, the value

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of DB\_NAME as recorded in the initialization parameter file and the database name in the control files are not the same, the database will not start.

- **DB\_DOMAIN** A text string that specifies the network domain where the database is created. This is often the name of the organization that owns the database. If the new database will be a part of a distributed database system, special attention needs to be paid to this parameter before database creation.
- **CONTROL\_FILES** Is assigned the comma-separated list of control file names to use for the new database. When you execute the CREATE DATABASE statement, the control files listed as values assigned to this parameter are created. If you fail to specify a filename for the CONTROL\_FILES parameter, Oracle creates a file with a default operating system dependant filename.
- **DB\_BLOCK\_SIZE** Specifies the standard block size of the database. This size is used in the creation of the system tablespace and by default in any other tablespaces created. Take care when determining what this value should be because after the database is created, the value cannot be changed.
- **UNDO\_MANAGEMENT** Determines whether the database starts in automatic undo management mode. A value of AUTO enables automatic undo management; MANUAL enables manual undo management mode. In 9i, AUTO is suggested, but MANUAL is default.
- **UNDO\_TABLESPACE** When the instance starts in automatic undo management mode, it needs to have a tablespace in which to store its undo information. The default is SYS\_UNDOTBS and is automatically created if you execute a CREATE DATABASE statement with the UNDO\_MANAGEMENT initialization parameter set to AUTO and no UNDO TABLESPACE statement in the CREATE DATABASE statement.

#### **Step 3: Connect to and Start the Instance**

Connect to the instance as SYSDBA either using operating system authentication or the password file method of authentication and start up the instance using the STARTUP command.

If your parameter file is not in the default location or is not named **init<SID>.ora**, you may need to specify the **PFILE** clause in the **STARTUP** command for the instance to start.

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Step 4: Issue the CREATE DATABASE Statement.

Step 5: Run Scripts to Build Data Dictionary Views

Step 6: Run Scripts to Install Additional Options

Step 7: Create a Server Parameter File

Step 8: Back Up the Database

Now that your database is created, take this chance to shut down the database and take a cold backup of the new database.

Step 9: Create Additional Tablespaces

After the backups are finished, you can restart the database and create new tablespaces, tables, and users; add data; and in general, open the new database for business

### **2. What is DBCA ?**

Database Configuration Assistant (**DBCA**) is the preferred way to create a database, because it is a more automated approach, and your database is ready to use when **DBCA** completes. **DBCA** can be launched by the Oracle Universal Installer (OUI), depending upon the type of install that you select.



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