Responsibilities of DBA:

1. Database Installation & Configuration
2. User Management
3. Back-Up & Recovery
4. Performance Tuning
5. Security Management

Common Commands Used by DBA

1. Create User, Grant and Revoke
2. Database Control : Shutdown and Startup
3. Backup and Recovery : Backup & Recover

Key Commands for checking Oracle Instance and Storage Management

1. Check Instance Status : select * from v$instance; select instance_name, status from v$instance;
2. Check physical storage : select * from dba_data_files;
3. Check logical storage structure : select * from dba_segments;

Check datafiles

1. Select name from v$datafile; .dbf
2. Select member from v$logfile; .log
3. Select name from v$controlfile; .ctl

USER AND TABLESPACE MANAGEMENT:

1. Check Existing User: select username from dba_users;
2. Create new User : create user ali123 identified by password123;
3. Grant User Privilege :
   grant connect, RESOURCE to ali123;
   grant dba to ali123;
4. Check available tablespace;
   Select tablespace_name from dba_tablespaces;
5. Check datafiles for tablespace:
   Select name from v$datafile;

Check Database performance:

1. Select * from v$database;

Prerequisite:

1. Oracle must be installed and configured properly
2. User should have sysdba and sysoper privileges.
3. Enough Storage spaces should be available for database file

Starting an oracle instance

Startup

Login as SysDba

Checking Existing Database : Select name from v$database;

Create New User:

Login as User:

Create Table :

Drop Table:

Data Dictionary :

Store the internal metadata of database and it contain

1. Table
2. Indexes
3. Views
4. Users
5. Permissions

Select * from user_tables;

Select * from user_views;

Select * from user_indexes;

V$View

Current DB Instances : select * from v$instance

Database Information : select * from v$database

Current Active Session : select * from v$session

Running Sql Quries : select * from v$SQL

Datafile infor : select * from v$datafile;

TABLE SPACE

A Logical Storage Units in an oracle databse that group related logical structures together.

Components of Tablespaces;

1. Datafiles : Physical files that store the database data on disk
2. Extents ; A contiguous set of blocks allocated to a segment
3. Segments : A collection of extnts used by db objects like tables and indexes
4. Blocks : the smallest unit of strorage in an oracle db

Types of Tablespace:

1. **Permanent:** Used to store permanent data such as tables, indexes, sequences, stored procedure and views. BY Default, System and sysaux
2. **Temporary:** Used for sorting operations, hash joins, and temporary tables. Data is temporary stored during execution.
3. **Undo :** Used to provide roll_back , read and Consistency. When a user perform delete or update operation, the undo tablespace temporarily stores old data. It is also used for automatic transaction recovery.
4. **Bigfile tablespace**: store all data in single large file , which can be as large as multiple terabytes , useful for olap and data warehouses.

Create tablespace my_tablespace datafile 'location' size 200M;

Select tablespace_name, file_name from dba_data_files;

Tablespace can be managed in two ways

1. Dictionary managed Tablespace (DMT) : Use the data dictionary to track free and allocated space
2. Locally managed Tablespace (LMT): Use bitmaps to manage free and used space, improving performance

Storage Parameters for Tablespace

1. AutoExtend: automatically increase the size of the datafile when required

   Create tablespace my_tablespace datafile 'location' size 200M autoextend on maxsize 300M;

2. Max size : defines maximum size to which the datafile can grow.
3. Intital : Specifies the size of file extent
4. Next : define the size subsequent extents

Altering Tablespace file : alter tablespace my_tablespace datafile 'location' resize 200M;

Droping a Table space : Drop tablespace user_data including contents and datafiles;

How to move datafile to different location?

alter database datafile 'Location' rename to 'Location';

How To Rename ?

Alter tablespace old_name rename to new_name;

Add a new datafile to existing tablespace?

alter tablespace my_tablespace ADD datafile 'location' size 200M autoextend on maxsize 300M;

Resize:

alter database datafile 'Location' resize 500m;

Move Existing Table to another tablespace;

Alter table my_table move tablespace new_tablespace;

A developer report that the tablespace User_Tablespace is full. Write Sql command to add a new datafile to resolve the issue

Create a Locally Managed Tablespace named HR_Table space with an intial size of 500 MB, auto-extending by 100 MB with maximum size of 2 GB

Create tablespace my_tablespace datafile 'location' size 500M autoextend on next 100M maxsize 3G extent management local;

Explain how to configure automatic Undo Management and Create an undo tablespace

Create UNDO tablespace undo_table datafile 'location' size 500M autoextend maxsize 3G extent;

Alter system set UNDO_TABLESPACE = undo_table;

"A Telnet session can be used to start **SQLPlus** by connecting to a remote server where **SQLPlus** is installed and accessible via the command line."