Homework 1

Module: Administer Oracle Database

Q1. Describe oracle memory structures and background processes

Oracle memory structures it has 2 main component which called:

1. **System Global Area (SGA):** this is a shared memory region that stores data and control information for one oracle instance. It comprises several components such as:

I. Buffer cashe for data blocks
II. Shared pool for SQL and PL/SQL Statement
III. Redo log buffer for recording changes

2.**Program Global Area (PGA):**it is private to each oracle it holds data and control information for a single session or process such as sorts and session specific variables.

Background processes: oracle employs various background processes to manage tasks such as recovery, locking, and I/O. there are same important includes:

I. DBWn(Database Writer): writes modified blocks from the database buffer cashe to data fles.
II. LGWR(log writer):writes redo log entries to disk, ensuring transaction durability.
III. ARCH(Archiver): copies redo log files to archival storage for backup and recovery.

Q2. Describe oracle logical &physical storage structures

In part of logical storage structures, we have the following:

I. Table: the primary logical storage structure is the table, which represents the stored data. Table can have various column and rows.
II. View: logical view is virtual table based on the result of a SELECT query. It does not store data it self but provides a way to present data from one or more table in a customized manner.
III. Index: are logical structures that provide a quick and efficient way to look up data based on values in one or more column.
IV. Cluster: it combines multiple tables based on their related columns.

In a part of Physical storage structure, we have the following:

I. Datafiles: Datafiles are physical files on the disk that store the actual data for an oracle database.
II. Tablespaces: are container for datafiles, providing an abstraction layer between the logical and physical storage

III. Segments: is set of extent that corresponds to specific logical storage structure (eg: table or index)
IV. Extents: are contiguous blocks of data within a datafiles when segment requires more space it allocated in the form of extents.