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HOME WORK

1) Describe oracle memory structures and background Processes

Oracle Memory Structures: It includes

SGA (System Global Area):

Δ Shared Pool: Contains shared memory structures such as SQL and PL/SQL code areas, and the library cache for storing parsed SQL statements.

Δ Buffer Cache: Caches data blocks to minimize disk I/O by storing frequently accessed data in memory.

Δ Redo Log Buffer: Temporarily holds redo log entries before they are written to the redo log files.

PGA (Program Global Area): It includes

Δ Private SQL Area: Holds information specific to a session or a cursor, such as bind variables and query execution state.

Δ Sort Area: Used for sorting data during query execution.

Δ Session Memory: Stores information about the current session's state.

Background Processes:

Δ DBWn (Database Writer): It writes modified data blocks from the buffer cache to data files.

Helps maintain consistency between in-memory and on-disk data.

Δ LGWR (Log Writer): Writes redo log entries to redo log files on disk.

Ensures durability and recoverability of transactions.

Δ CKPT (Checkpoint): Initiates checkpoints to signal DBWn to write dirty buffers to disk.

Δ SMON (System Monitor): Performs instance recovery after an instance failure.

Cleans up temporary segments and releases resources.

Δ PMON (Process Monitor): Monitors and manages user processes.

Performs process recovery in case of a failure.

Δ MMON (Manageability Monitor): Collects statistics and metric data for self-tuning purposes.

Used by Oracle Enterprise Manager for performance monitoring.

Δ MMAN (Memory Manager): Automatically manages the SGA components based on the workload. It adjusts memory allocations dynamically

2) Describe Oracle logical and Physical storage structure.

The logical storage structure refers to the way data is organized and viewed by users, applications, and the database itself.

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The physical storage structure in a database refers to how data is stored on the underlying hardware.

Key components of the physical storage structure in an Oracle database include:

Data Files: These are physical files on the disk where the actual data is stored. Oracle databases consist of one or more data files.

Tablespaces: Data files are organized into tablespaces, which are logical storage units within the database. Each tablespace contains one or more data files.

Segments: A segment is a logical storage unit within a tablespace that corresponds to a specific database object, such as a table or an index.

Extents: Extents are contiguous groups of data blocks.

Blocks: The smallest unit of data storage in Oracle is a block. Data is stored in these blocks within data files.

Key components of the logical structure in an Oracle database include:

Tables: Tables are the fundamental storage units for data. They organize data into rows and columns, representing entities and their attributes.

Views: Views are virtual tables that present data based on a query. They can be used to simplify complex queries or restrict access to certain columns or rows of a table.

Indexes: Indexes are structures that enhance the speed of data retrieval operations on a table. They provide a quick lookup mechanism for locating rows in a table based on specific columns.

Constraints: Constraints define rules that the data in a table must follow.

Relationships: Relationships establish connections between tables, defining how data in one table relates to data in another. Primary keys and foreign keys are often used to establish these relationships.

Triggers: Triggers are procedural code that automatically execute in response to specific events, such as inserting, updating, or deleting data.