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ORACLE DATABASE

Q1. DISCRIBE ORACLE MEMORY STRUCTURE AND BACKGROUND PROCESSES.

Oracle uses memory to store various information:

- Program code being executed.
- Information about a connected session, even if it is not currently active
- Information that is shared and communicated among oracle processes

The basic memory structures associated with oracle include:

- SYSTEM GLOBAL AREA(SGA)
- PROGRAM GLOBAL AREA(PGA)

SYSTEM GLOBAL AREA(SGA)

Is the group of shared memory structures that contain data and control information for one oracle database instance.

SGA contain the following data structures:

- Database buffer cache
- Shared pool
- Redo log buffer
- Data dictionary cache
- Other miscellaneous information
- Optional components of the SGA
    - **Large pool:** is optional area used to buffer large I/O request for various server processes.
    - **Java pool:** is an area of memory that is used for all session specific java code and data within the java virtual machine (JVM).

PROGRAM GLOBAL AREA

Is the memory region containing data and control information for a single process (server or background) sometime called “a process global area”.

PGA is nonshared memory area to which a process can write.

BACKGROUND PROCESS

- DATABASE WRITER(DBWR):writes modified blocks from the database buffer cache to the data file
- LOG WRITER(LGWR): write redo log entries to disk
- CHECKPOINT(CKPT):responsible for signaling database writer at checkpoint and updating all the data file and control files of the database to indicate the most recent checkpoint
- SYSTEM MONITOR(SMMON):perform instance recovery when failed instance is restarted
- PROCESS MONITOR(PMON): perform recovery when user failure
- ARCHIVER(ARCn): copy the online files
- RECOVERER(RECO): recovering the transaction that are pending

Q2. DESCRIBE ORACLE LOGICAL AND PHYSICAL STORAGE STUCTURES

LOGICAL STORAGE STRUCTURE

Tablespace: is a storage location where the actual data underlying database object can be kept.

TYPES OF TABLESPACE

- ✓ **PERMANENT:** you use permanent tablespace to store your user and application data
- ✓ **UNDO:** oracle database uses undo data to roll back transactions, to provide read consistency, to help with database recovery and enable features such as oracle flashback query.
- ✓ **TEMPORARY:** are used for storing temporary data.

PHYSICAL STORAGE STRUCTURE

- ✓ **Control files:** contains data about the oracle database itself.
- ✓ **Data files:** store the actual data. Each data file is associated with only one database and tablespace.
- ✓ **Redo log files:** these file are most useful to minimize loss of important data in event of system restart or shutdown.