Capgemini

Oracle 11g DBA Fundamentals Overview

Lesson 01: Overview of Administering an Oracle Database

Lesson Objectives

Types of Oracle Database Users

Tasks of a Database Administrator

DBA Security and Privileges

Tools for Administering the Database

Review the Oracle Database 11g architecture

Managing Oracle Database Processes

Types of Oracle Database Users

- Database Administrators
- Network Administrators
- Application Developers
- Database Users

Tasks of a Database Administrator

- Task 1: Evaluate the Database Server Hardware
- Task 2: Install the Oracle Database Software
- Task 3: Plan the Database
- Task 4: Create and Open the Database
- Task 5: Back Up the Database
- Task 6: Enroll System Users
- Task 7: Implement the Database Design
- Task 8: Back Up the Fully Functional Database
- Task 9: Tune Database Performance

Note:

- Keep titles concise – for example: Description, Features, Characteristics, Examples
- Ideas should be clean and simple
- No period at the end of bullet points

DBA Security and Privileges

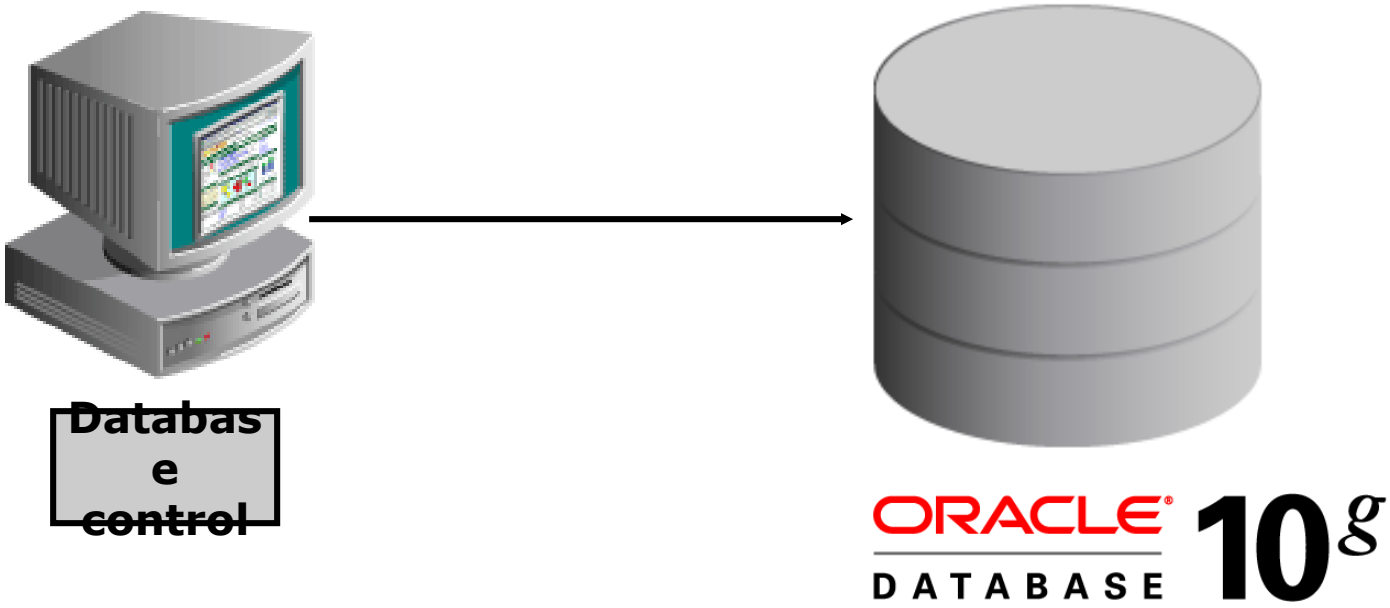
Two user accounts are automatically created when Oracle Database is installed:

- SYS (default password: CHANGE_ON_INSTALL)
- SYSTEM (default password: MANAGER)

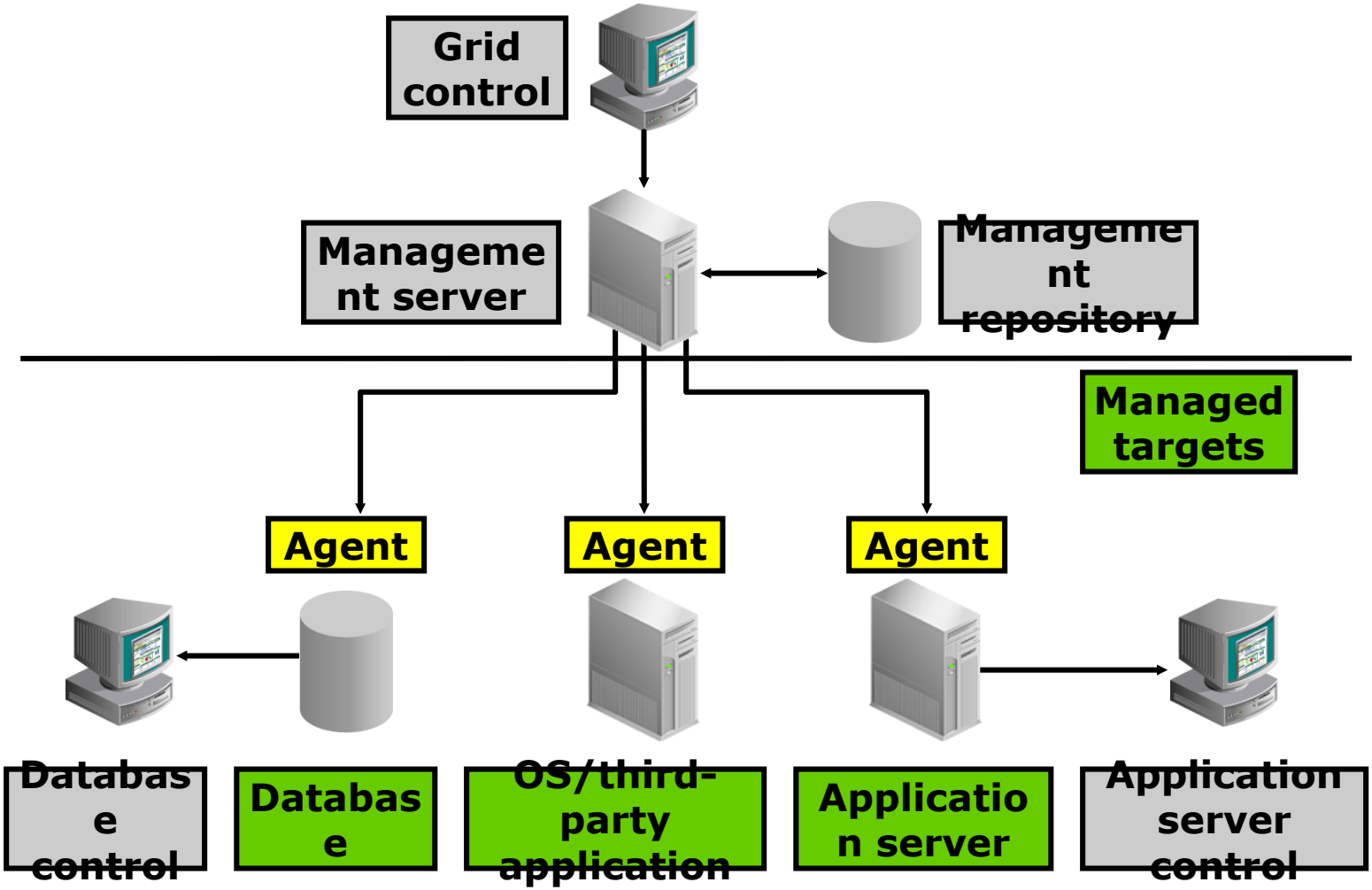
Tools for Administering the Database

- Oracle Universal Installer (OUI)
- Database Configuration Assistant (DBCA)
- Database Upgrade Assistant
- Oracle Net Manager
- Oracle Enterprise Manager

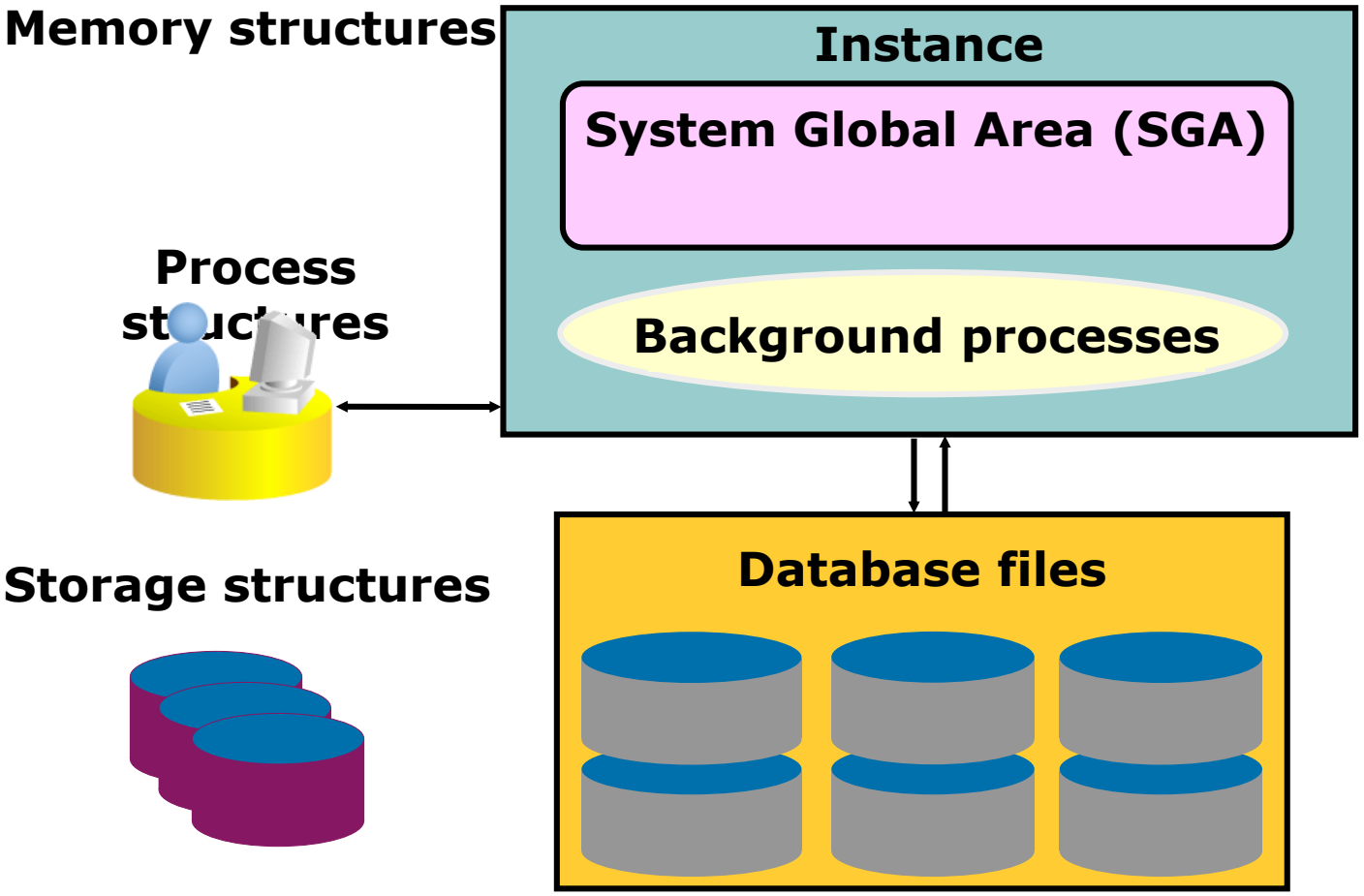
Database Control



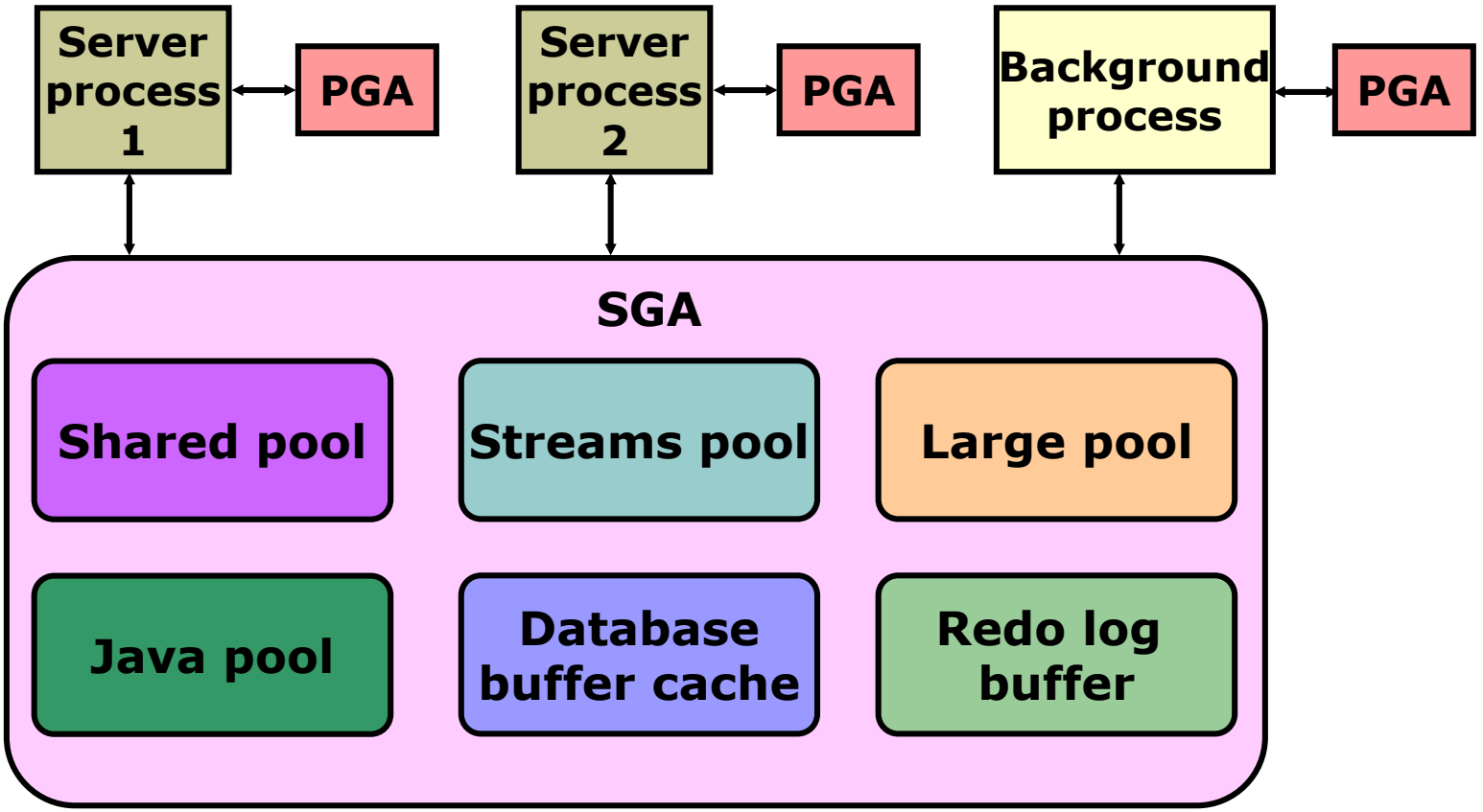
Grid Control



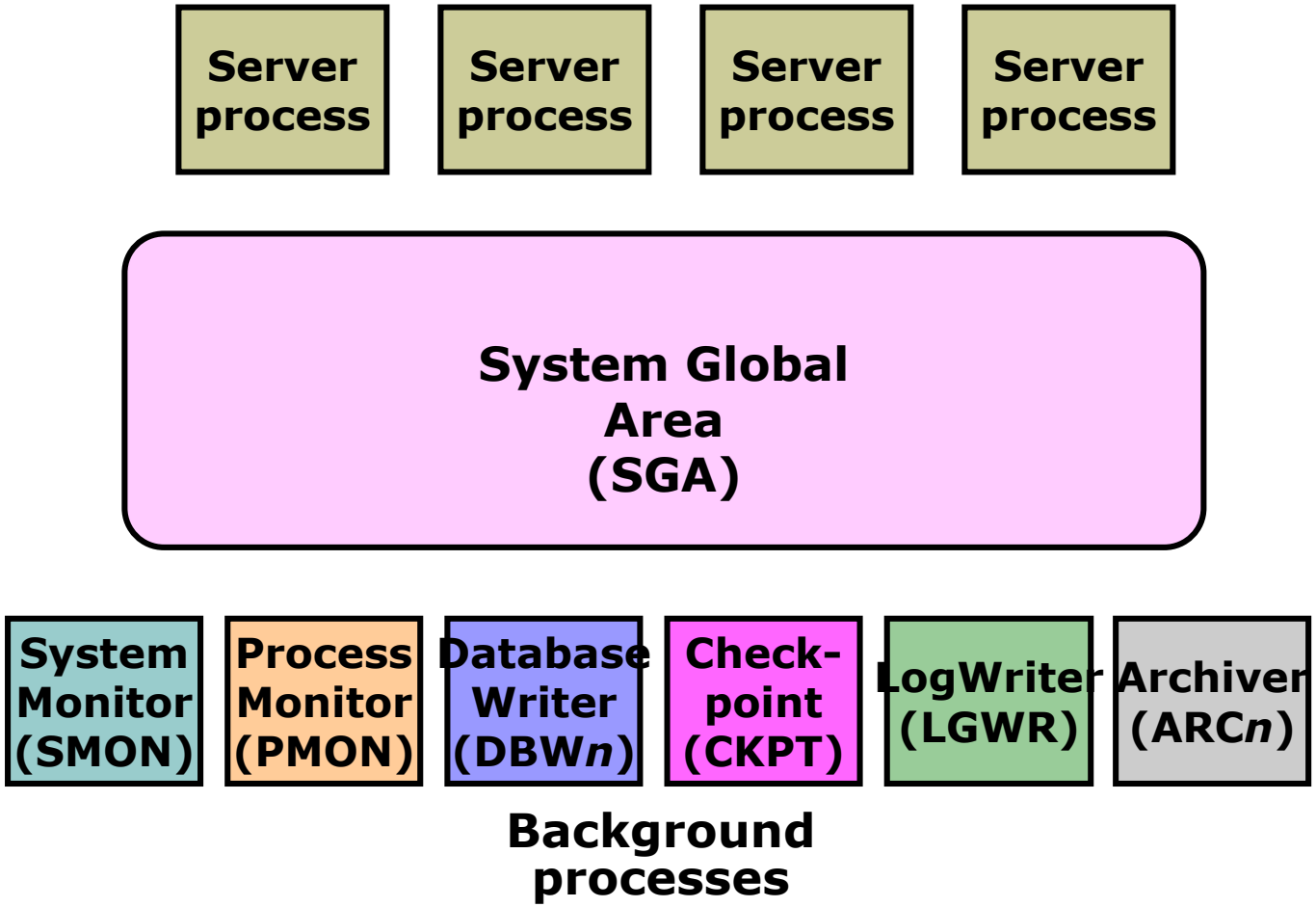
Database Architecture: Review



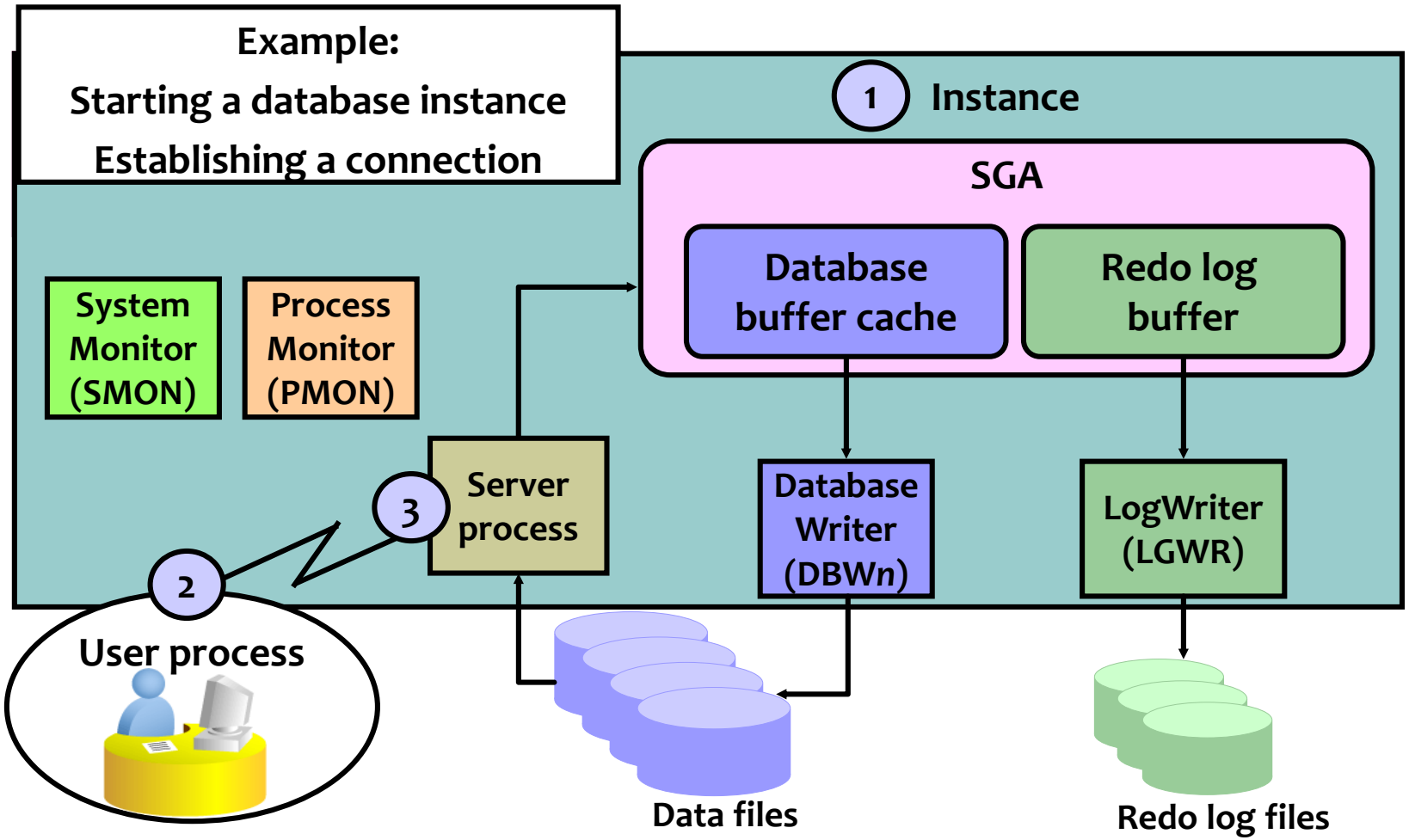
Oracle Memory Structures



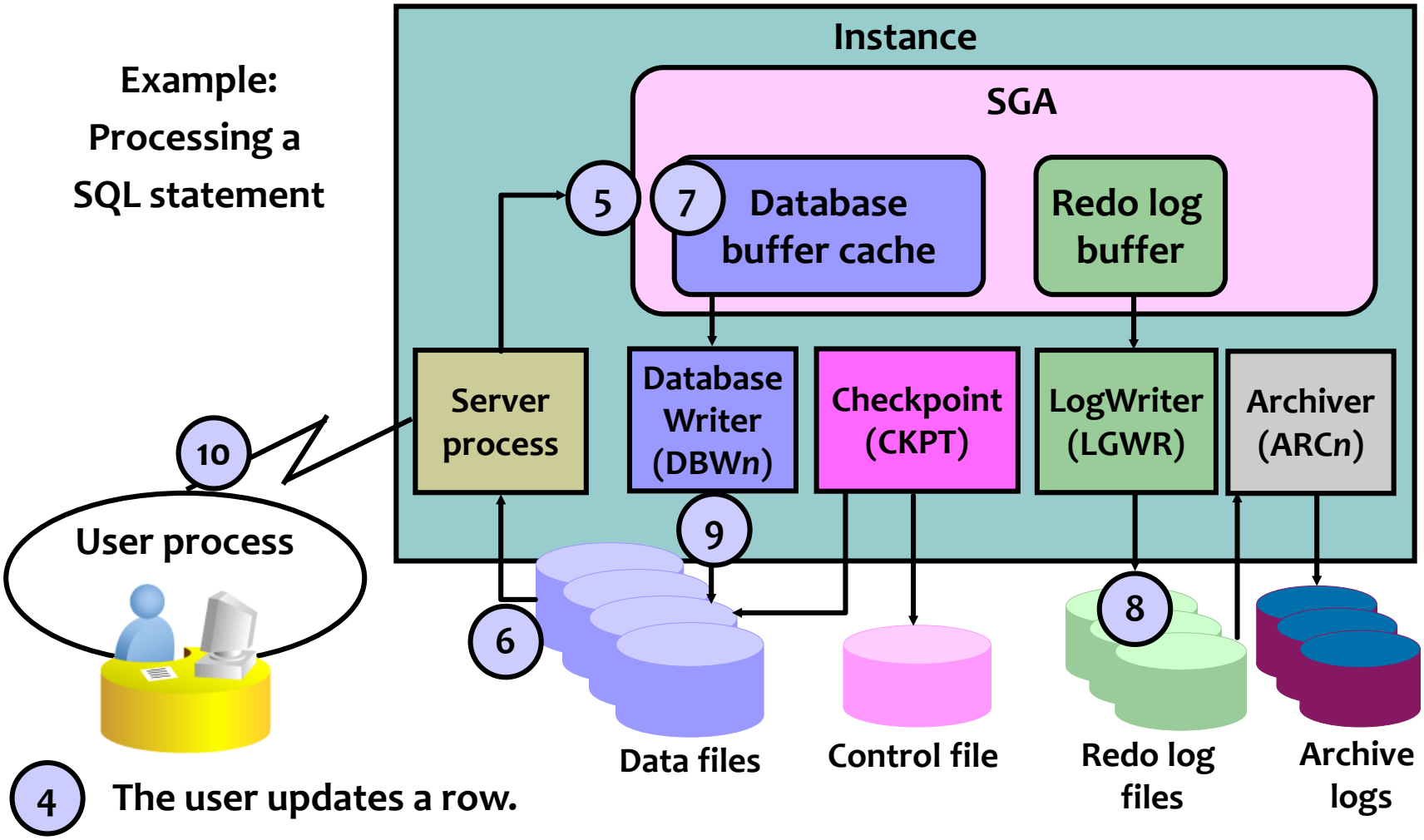
Oracle Processes



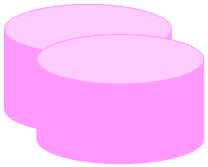
Reviewing Oracle Instance Management



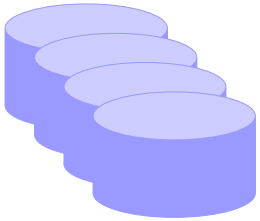
Reviewing Oracle Instance Management



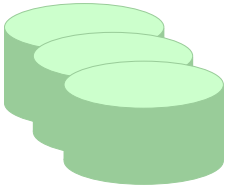
Physical Database Structure



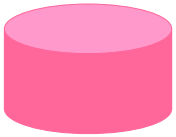
Control files



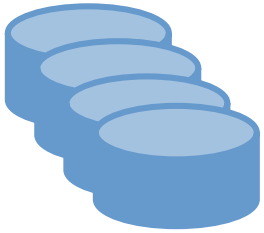
Data files



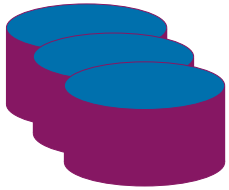
Online redo log files



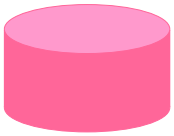
Parameter file



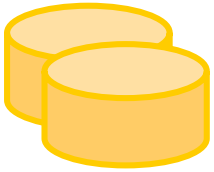
Backup files



Archive log files



Password file



Alert and trace log files

Oracle Managed Files (OMF)

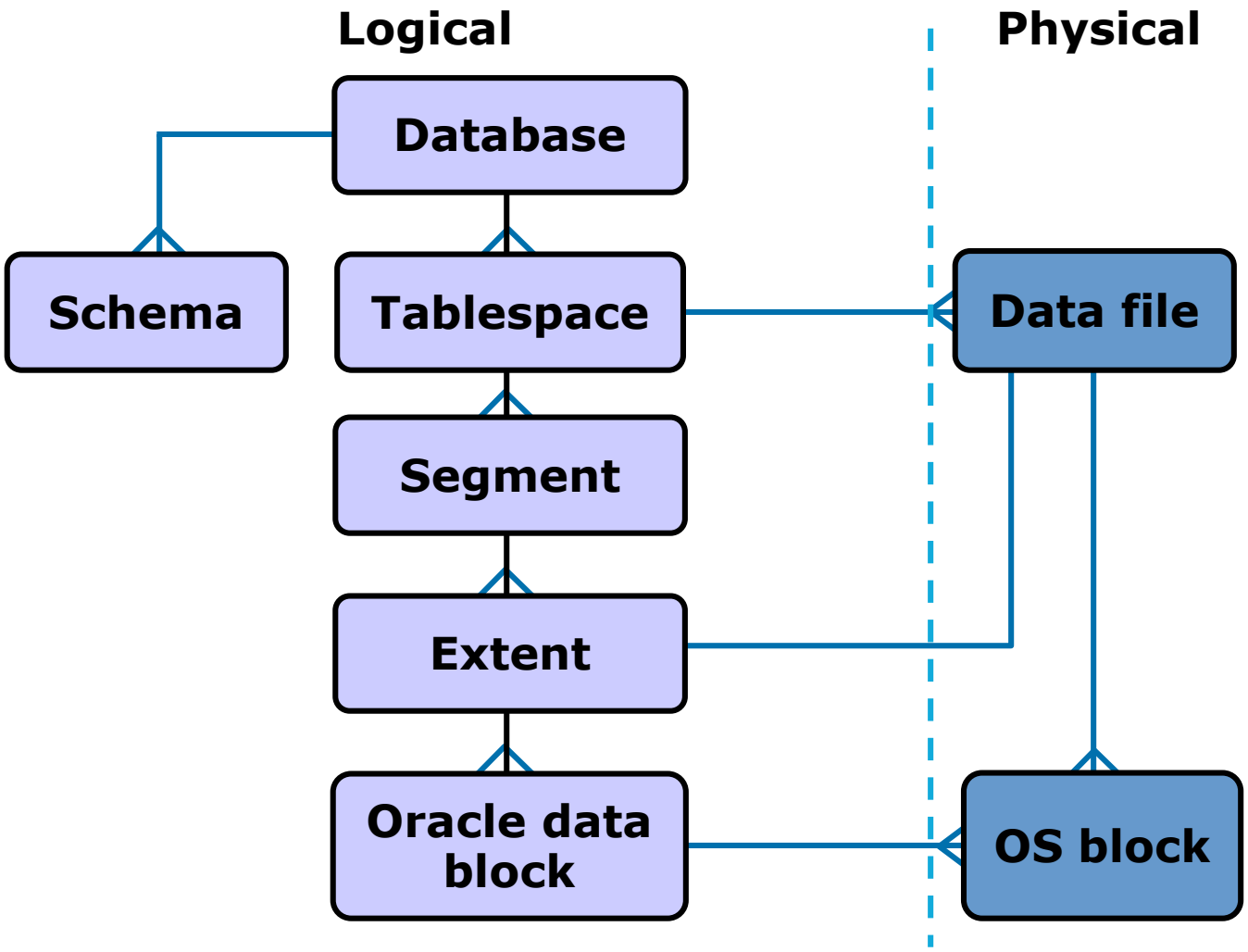
Specify file operations in terms of database objects rather than file names.

Parameter	Description
DB_CREATE_FILE_DEST	Defines the location of the default file system directory for data files and temporary files
DB_CREATE_ONLINE_LOG_DEST_n	Defines the location for redo log files and control file creation
DB_RECOVERY_FILE_DEST	Defines the location for RMAN backups

Exam:

```
SQL> ALTER SYSTEM SET DB_CREATE_FILE_DEST =
'/u01/oradata';
SQL> CREATE TABLESPACE tbs_1;
```

Logical and Physical Database Structures

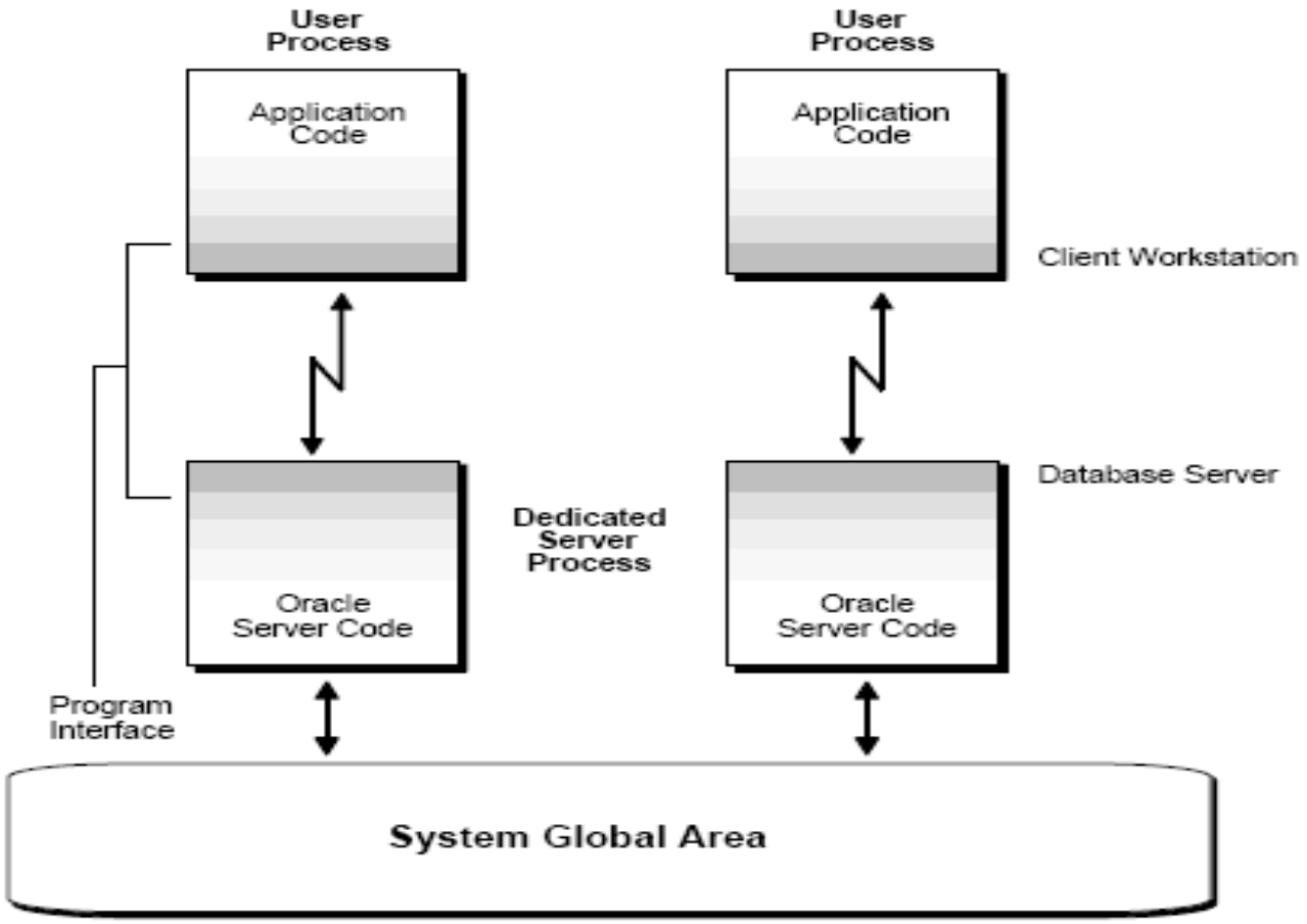


About Dedicated and Shared Server Processes

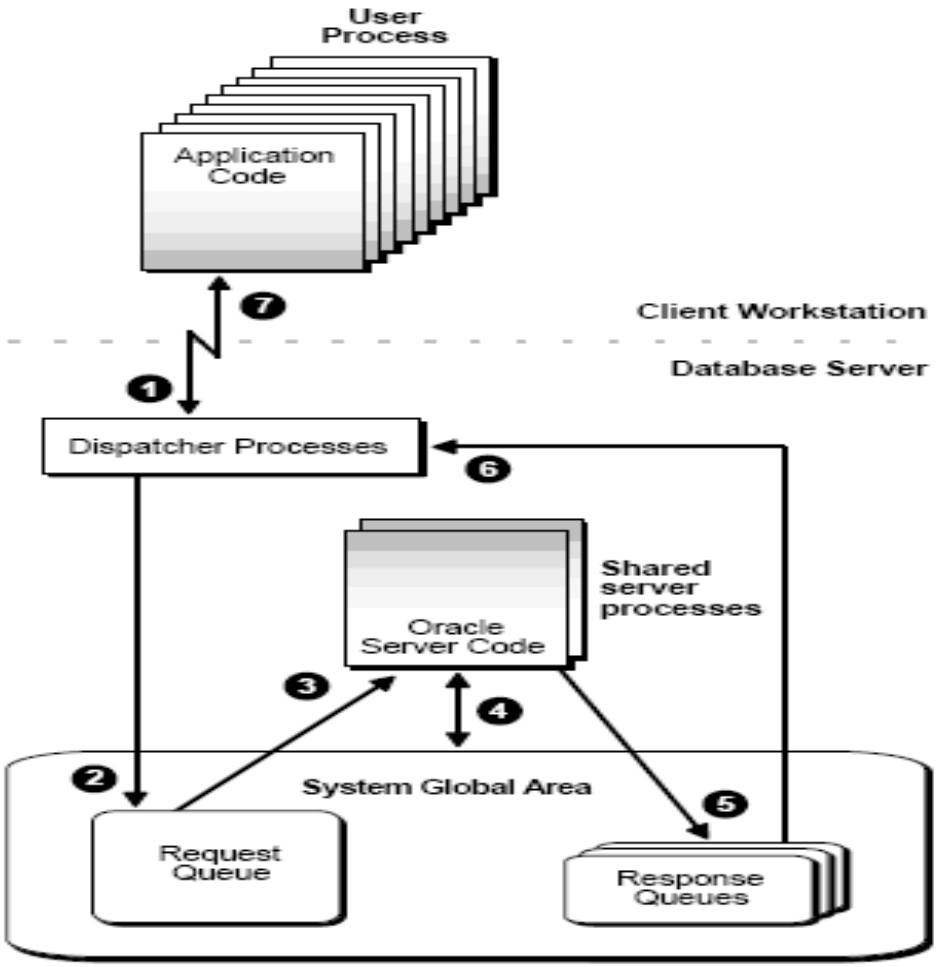
A server process can be either of the following:

- A dedicated server process, which services only one user process
- A shared server process, which can service multiple user processes

Dedicated Server Processes



Shared Server Processes



Configuring Oracle Database for Shared Server

- Initialization Parameters for Shared Server
- Enabling Shared Server
- Configuring Dispatchers
- Monitoring Shared Server

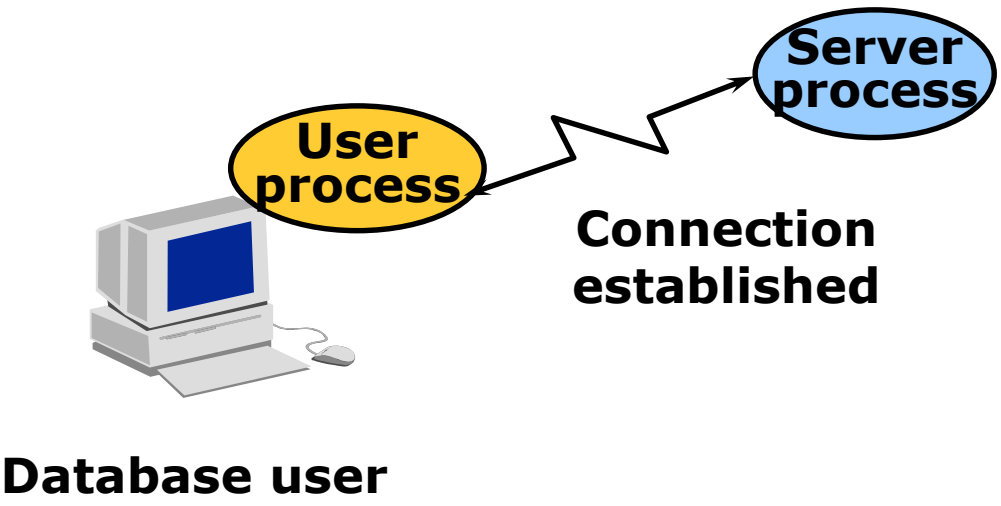
Process Structure

Oracle takes advantage of various types of processes:

- User process: Started at the time a database user requests connection to the Oracle server
- Server process: Connects to the Oracle Instance and is started when a user establishes a session
- Background processes: Started when an Oracle Instance is started

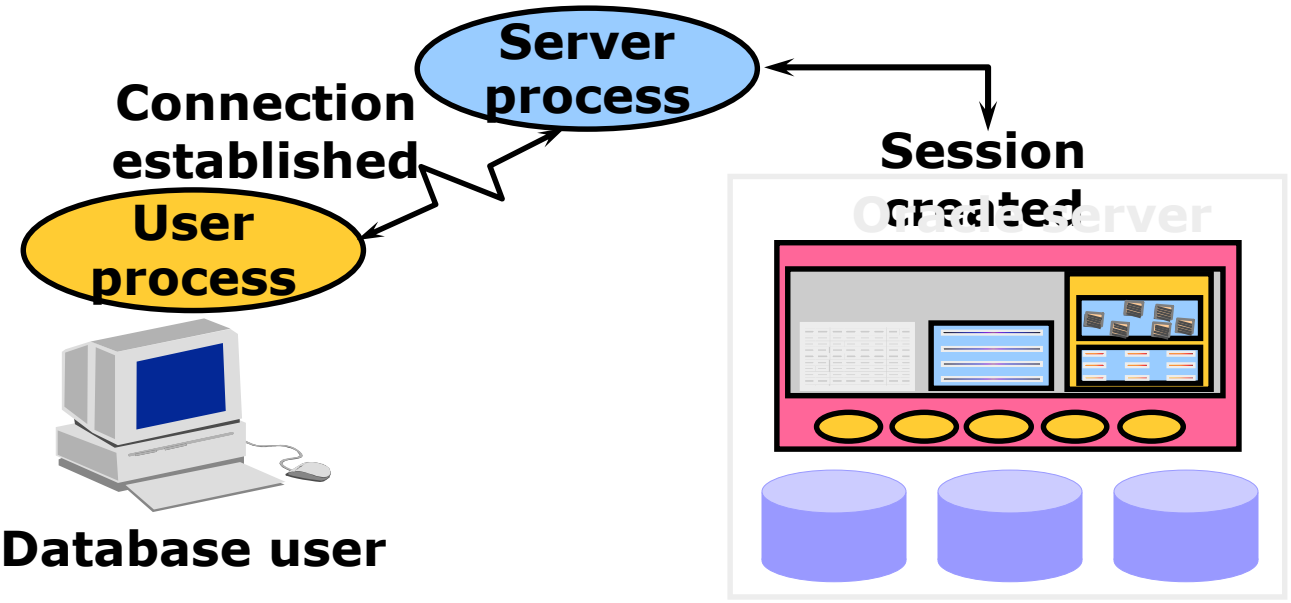
User Process

- A program that requests interaction with the Oracle server
- Must first establish a connection
- Does not interact directly with the Oracle server



Server Process

- A program that directly interacts with the Oracle server
- Fulfills calls generated and returns results
- Can be Dedicated or Shared Server

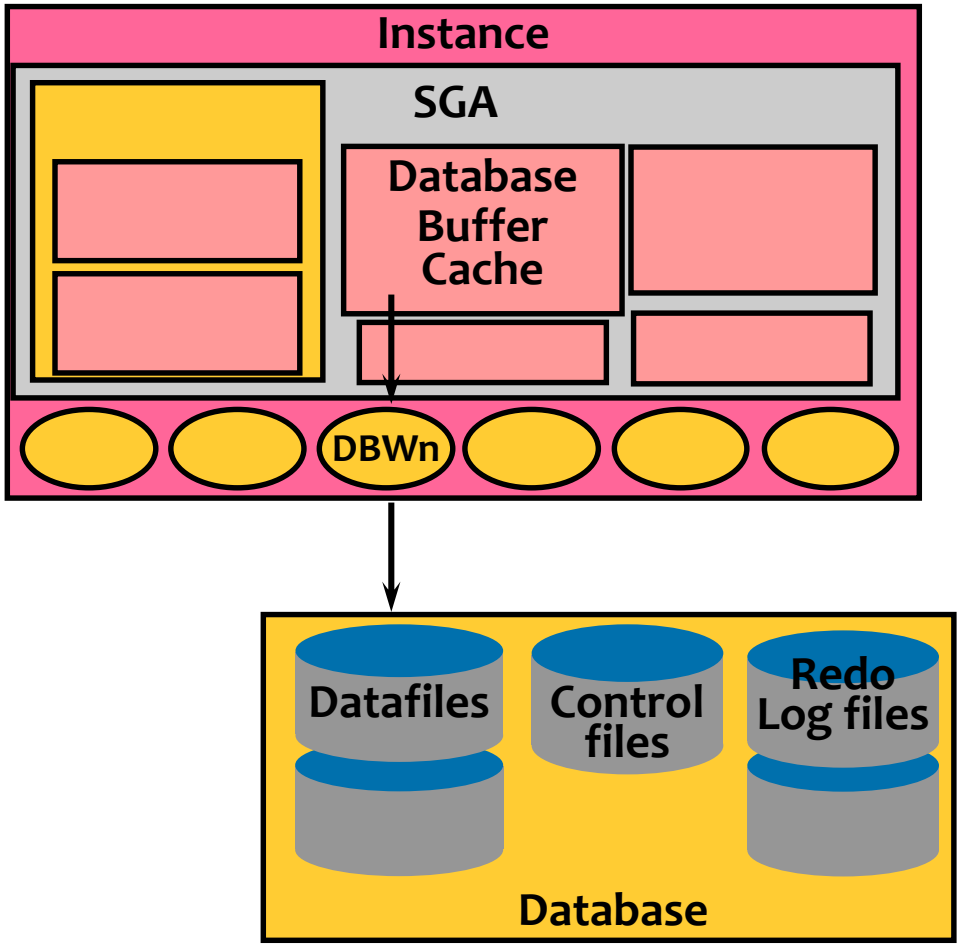


About Oracle Database Background Processes

Maintains and enforces relationships between physical and memory structures

- Mandatory background processes:
  - DBWn
  - LGWR
  - PMON
  - SMON
  - CKPT
- Optional background processes:
  - ARCn
  - CJQ0
  - Dnnn
  - LCKn
  - LMDn
  - LMON
  - Pnnn
  - QMNn
  - RECO
  - Snnn

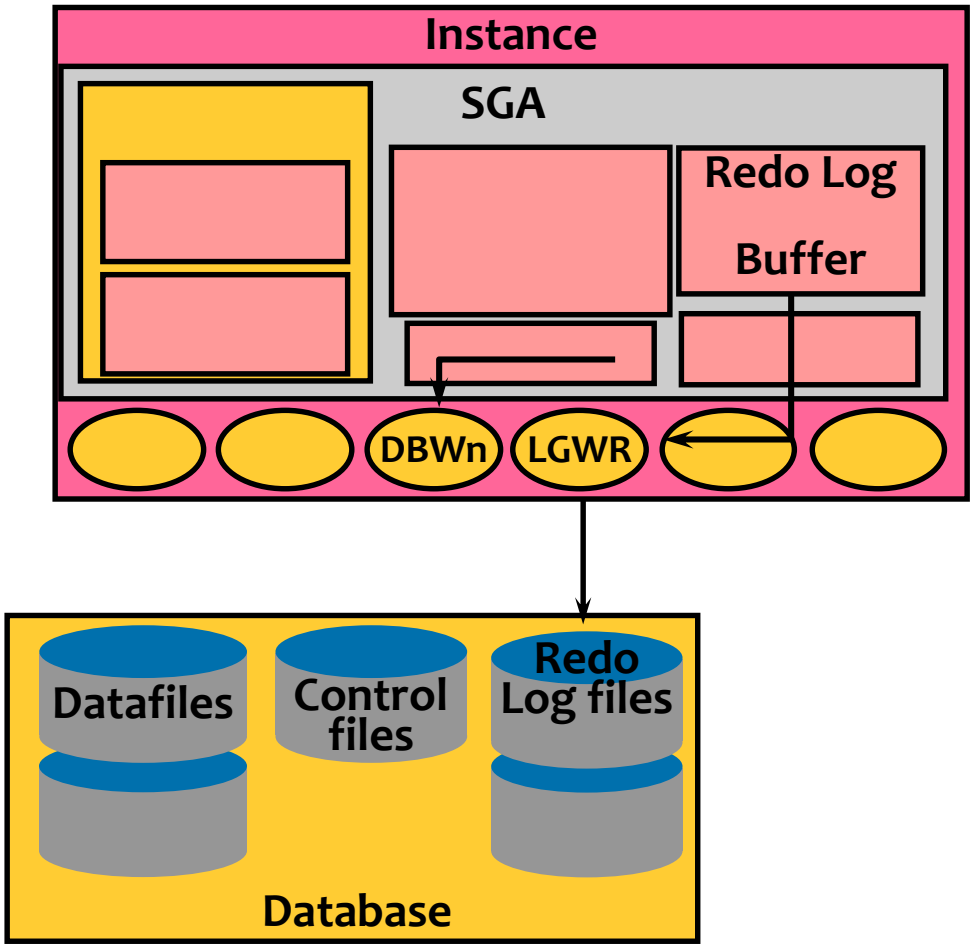
Database Writer (DBWn)



DBWn writes when:

- Checkpoint occurs
- Dirty buffers reach threshold
- There are no free buffers
- Timeout occurs
- RAC ping request is made
- Tablespace OFFLINE
- Tablespace READ ONLY
- Table DROP or TRUNCATE
- Tablespace BEGIN BACKUP

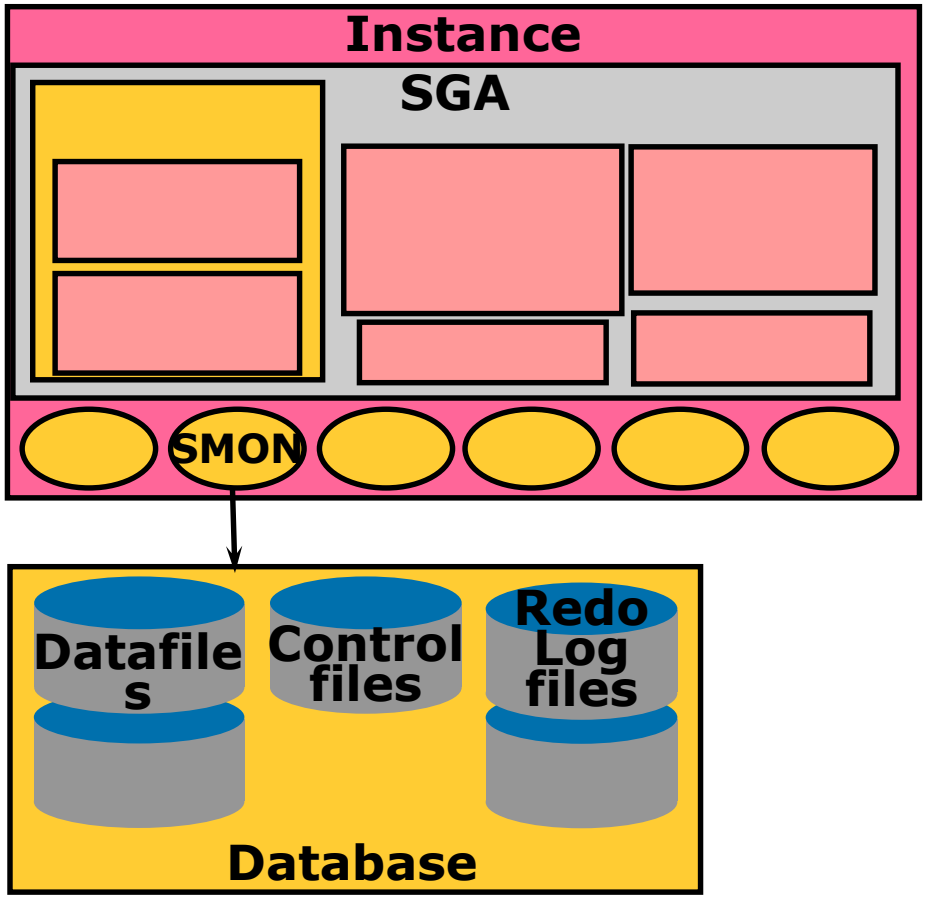
Log Writer (LGWR)



LGWR writes:

- At commit
- When one-third full
- When there is 1 MB of redo
- Every three seconds
- Before DBWn writes

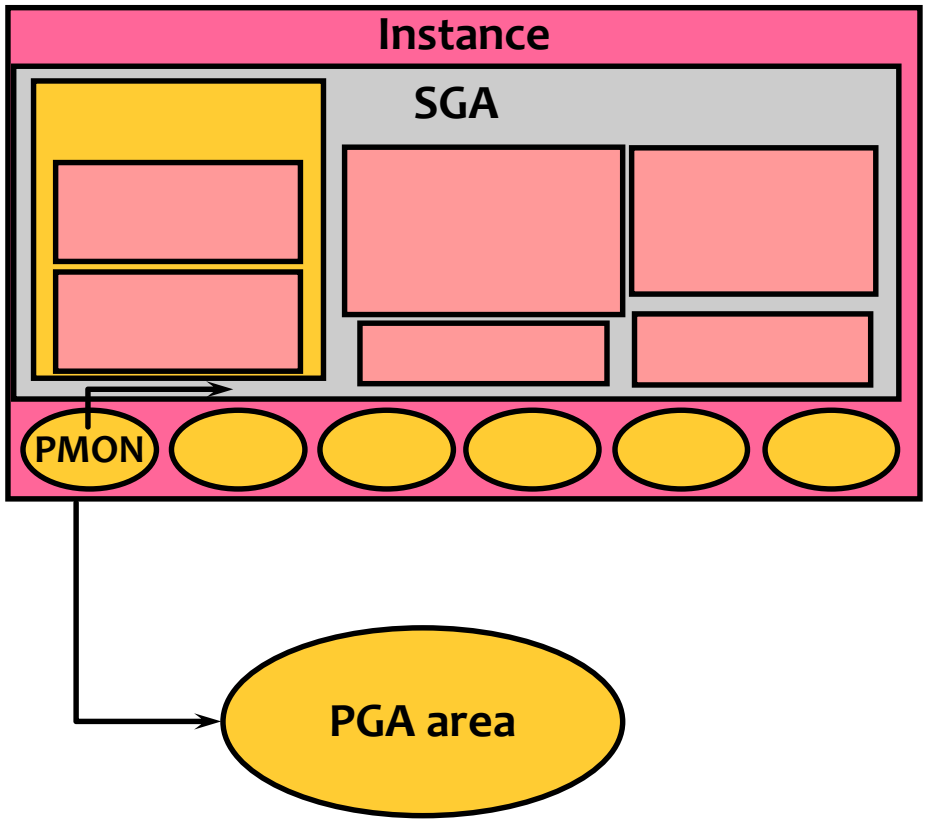
System Monitor (SMON)



Responsibilities:

- Instance recovery
  - Rolls forward changes in redo logs
  - Opens database for user access
  - Rolls back uncommitted transactions
- Coalesces free space
- Deallocates temporary segments

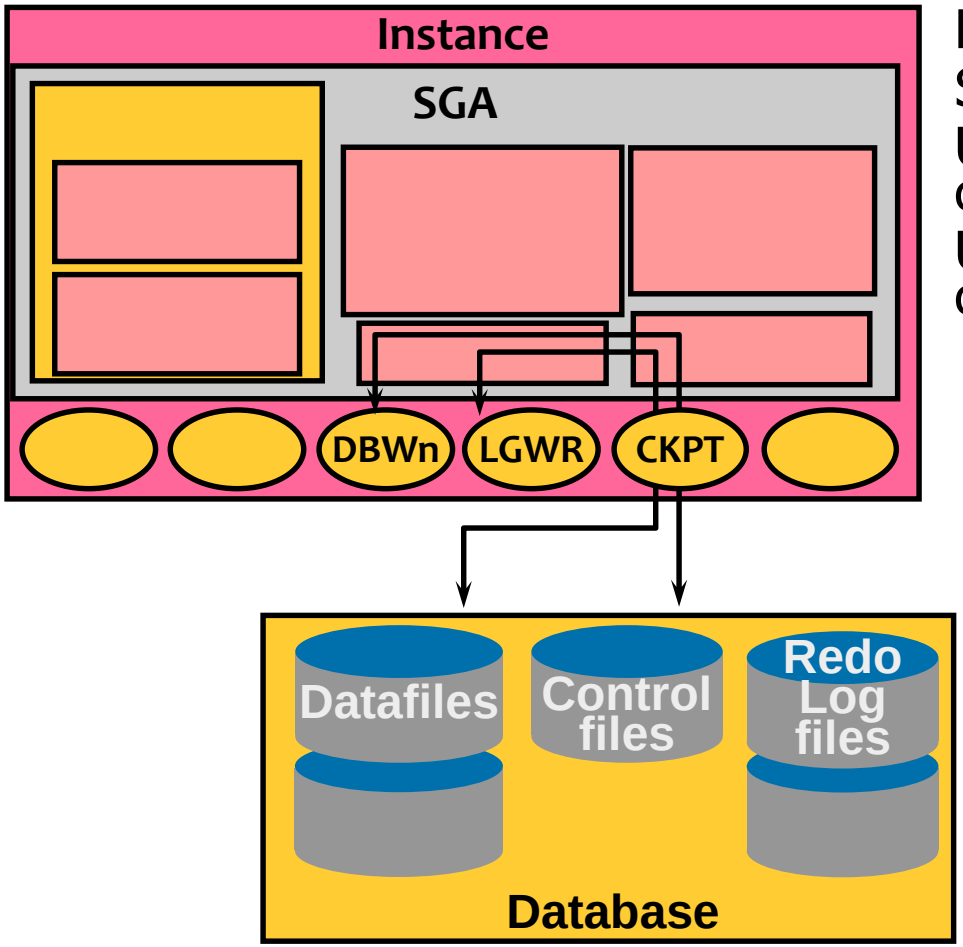
Process Monitor (PMON)



Cleans up after failed processes by:

- Rolling back the transaction
- Releasing locks
- Releasing other resources
- Restarting dead dispatchers

Checkpoint (CKPT)



Responsible for:

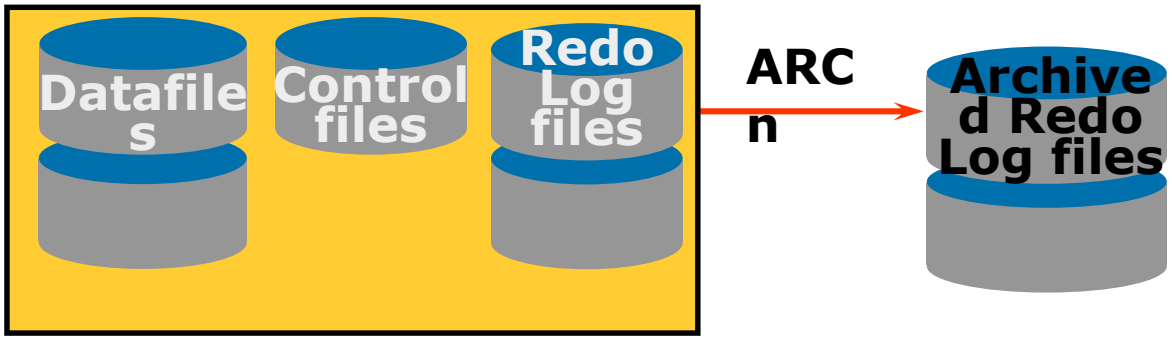
Signaling DBWn at checkpoints

Updating datafile headers with checkpoint information

Updating control files with checkpoint information

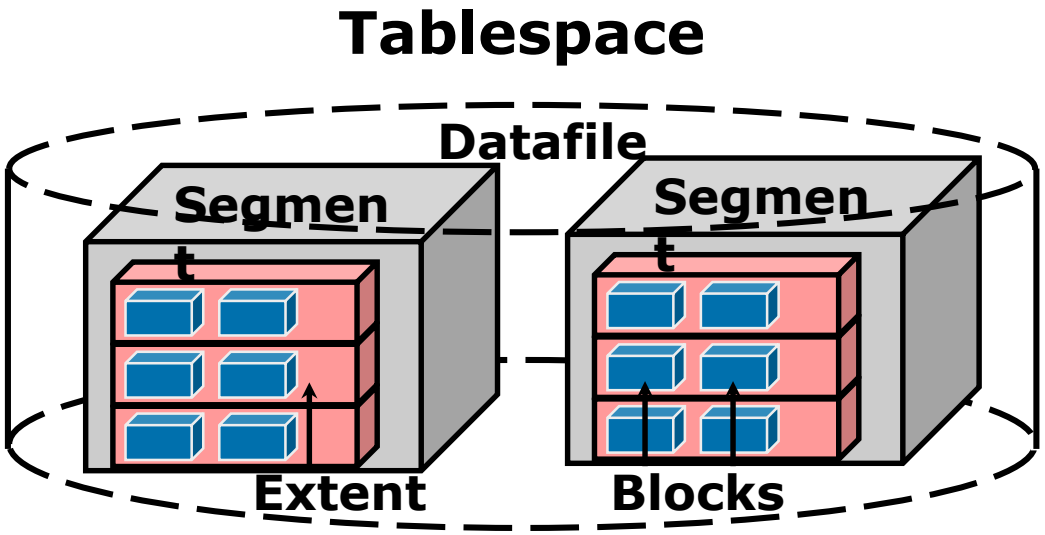
Archiver (ARCn)

- Optional background process
- Automatically archives online redo logs when ARCHIVELOG mode is set
- Preserves the record of all changes made to the database



Logical Structure

- Dictates how the physical space of a database is used
- Hierarchy consisting of tablespaces, segments, extents, and blocks



Processing SQL Statements

Connect to an instance using:

- User process
- Server process

The Oracle server components that are used depend on the type of SQL statement:

- Queries return rows
- DML statements log changes
- Commit ensures transaction recovery

Some Oracle server components do not participate in SQL statement processing

SUMMARY

- Types of Oracle Database Users
- Tasks of a Database Administrator
- DBA Security and Privileges
- Tools for Administering the Database
- Review the Oracle Database 11g architecture
- Managing Oracle Database Processes