# Oracle Database Multitenant Architecture 12.1
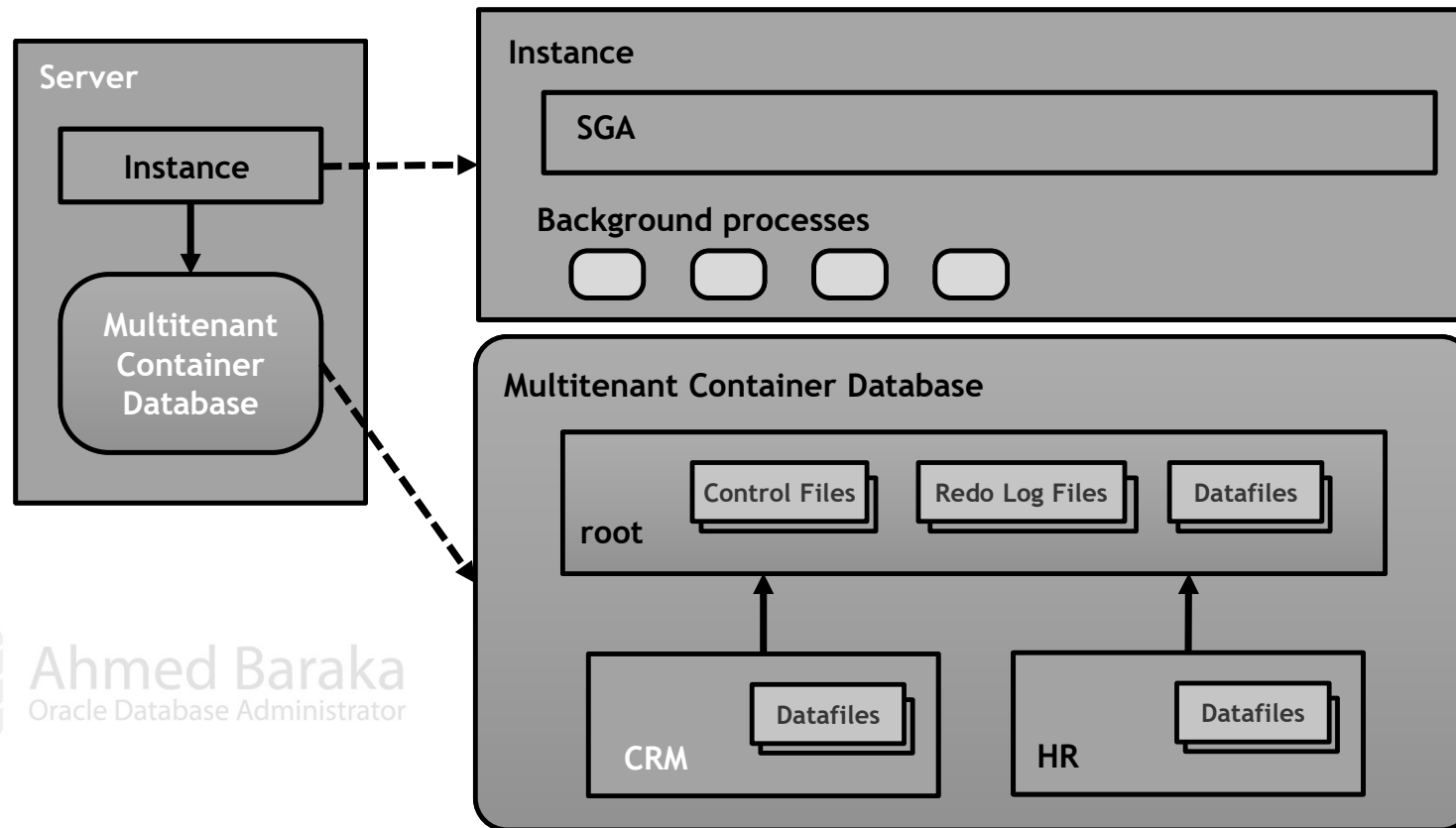
By Ahmed Baraka

# Objectives

By the end of this lecture, you should be able to:

- Describe the difference between the CDB and PDB

- Describe the Multitenant Architecture components

- Describe the difference between the shared undo and the local undo configuration

- Describe the difference between the local users and common users

- Understand the impact of implementing a multitenant configuration

# Multitenant Architecture

# Multitenant Architecture Terms

| Term | Definition |
|------|------------|
| Container Database (CDB) | A multitenant container database that houses zero or more pluggable databases. |
| non-CDB | An Oracle database that is not a multitenant container database. |
| Pluggable Database (PDB) | Portable collection of schemas, schema objects, and nonschema objects that appears to an Oracle Net client as a non-CDB. |

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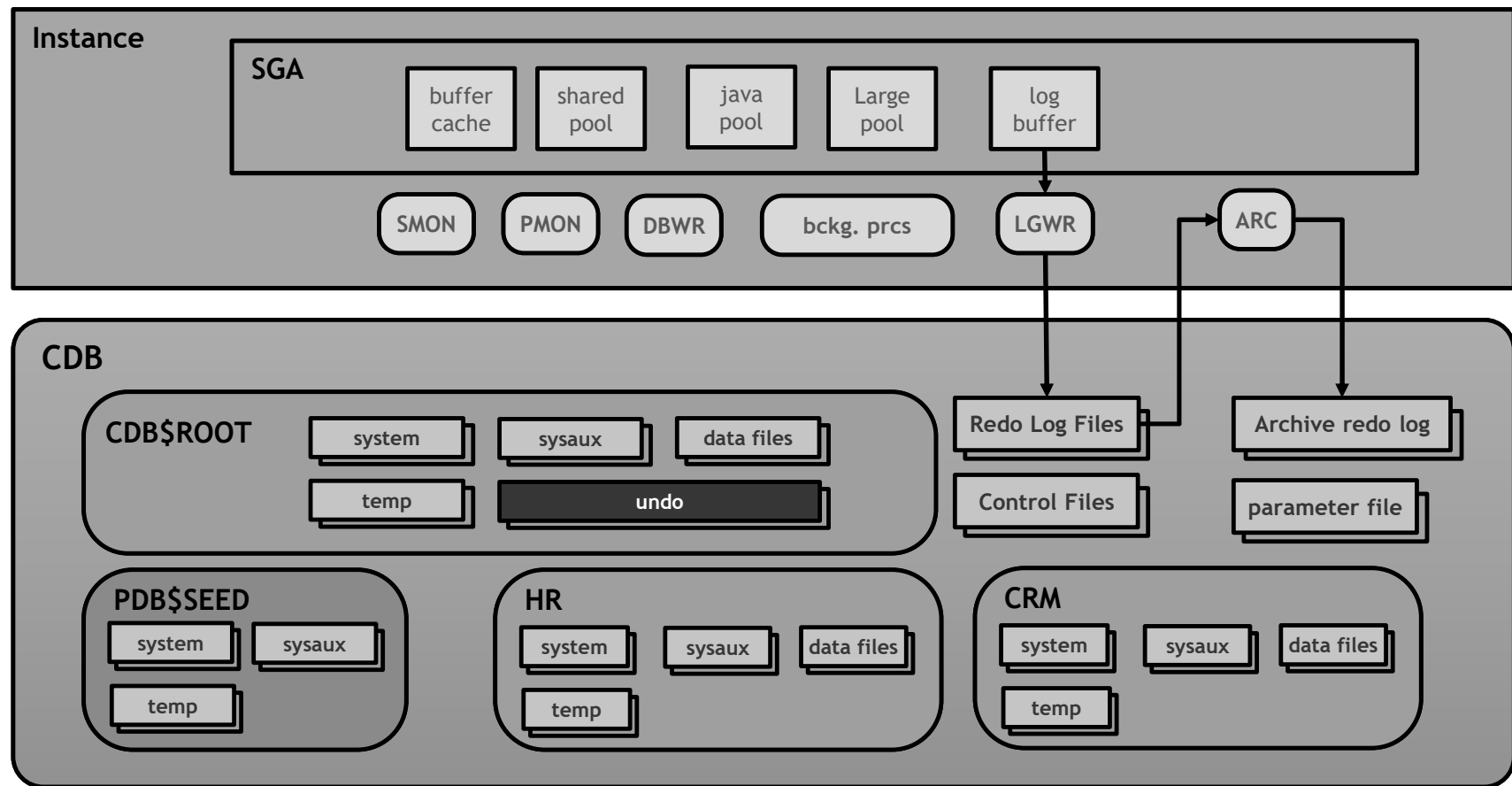
# Multitenant Architecture
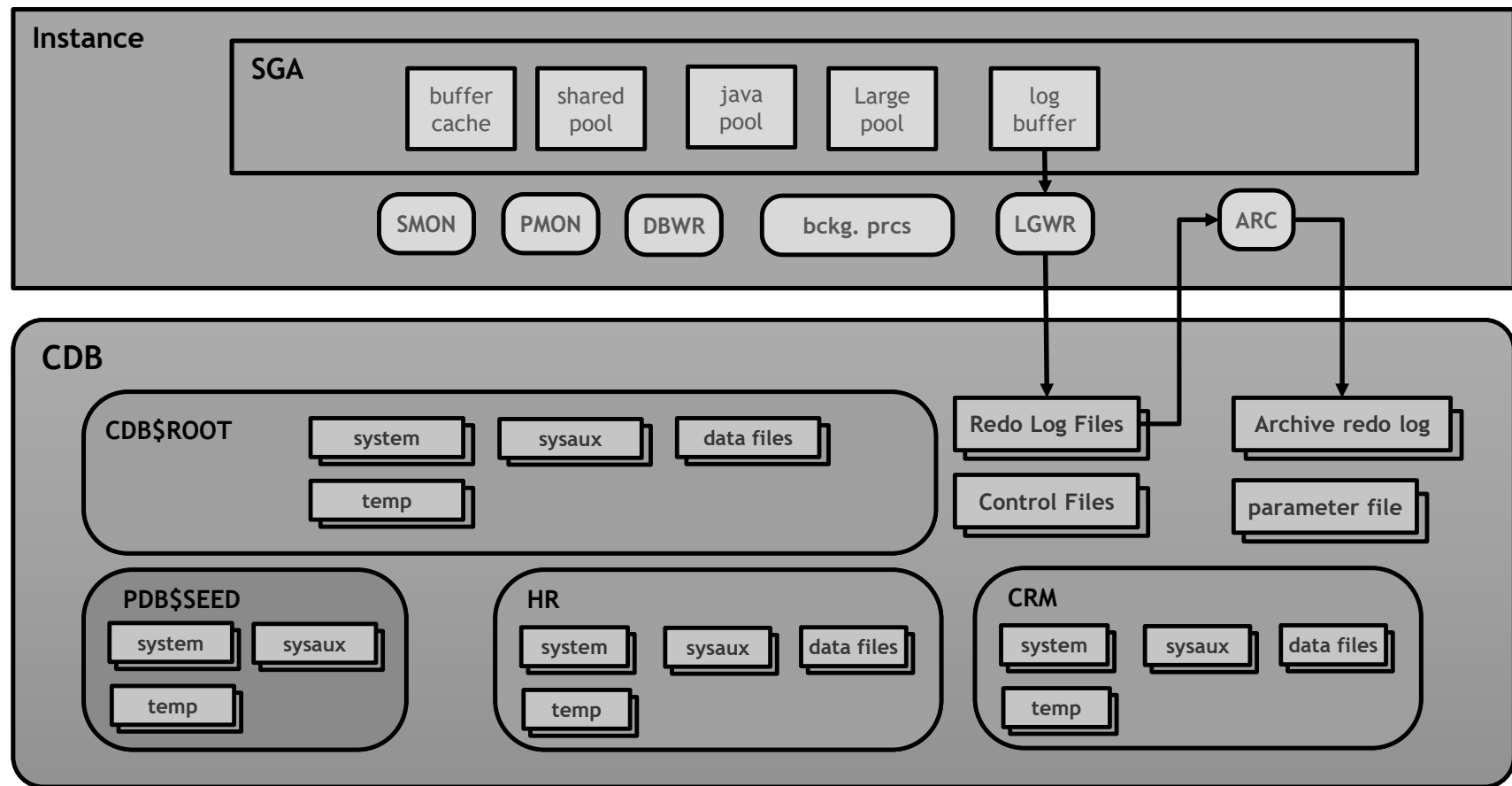
# Multitenant Architecture Terms

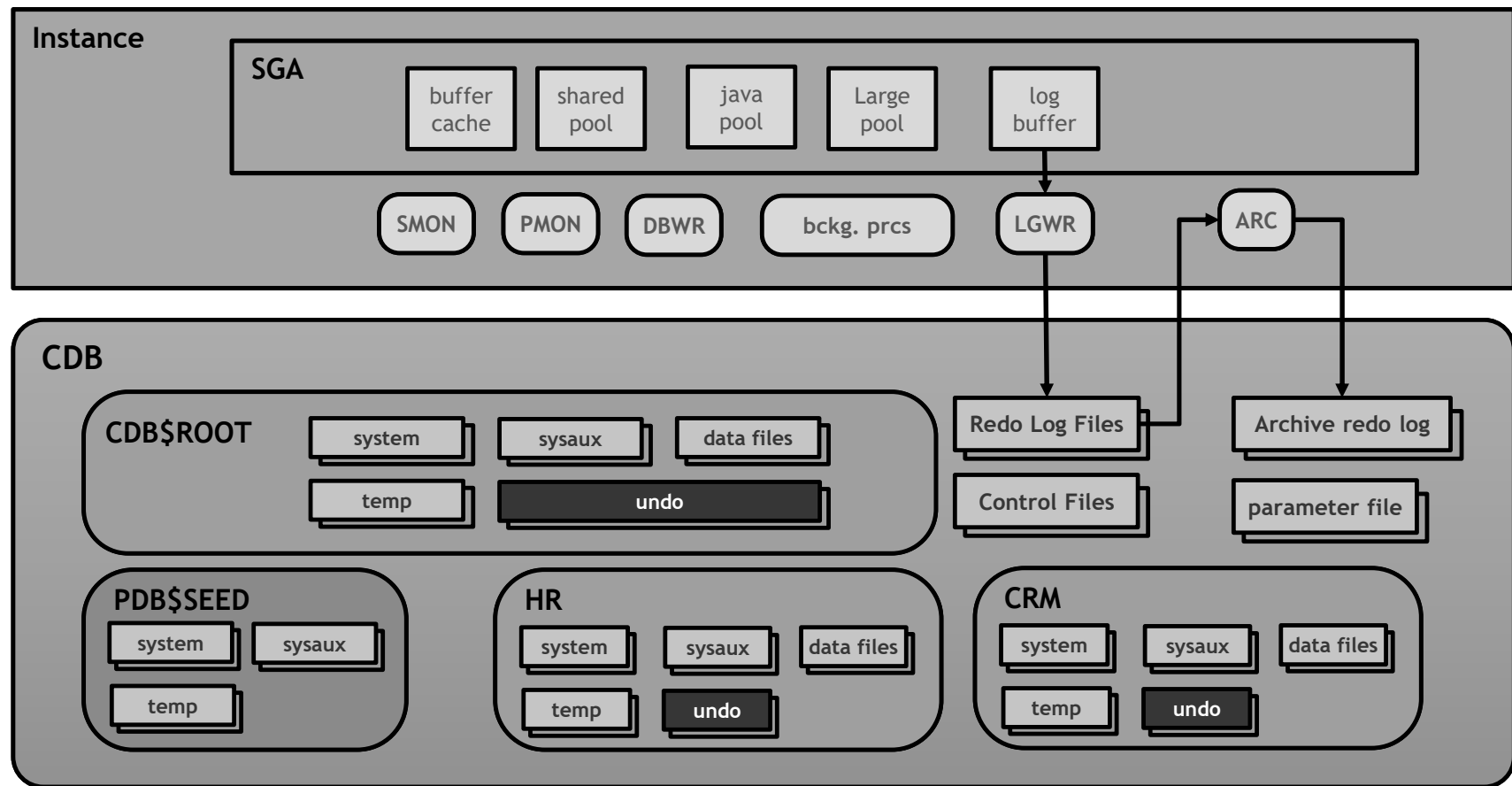| Term | Definition |
|---|---|
| Root container (CDB$ROOT) | A master set of data files and metadata (data dictionary tables, Oracle-supplied packages, system users) and containing information regarding all containers within a CDB. |
| Seed pluggable database (PDB$SEED) | A template of data files and metadata used to create new pluggable databases. |

# Multitenant Architecture: shared Undo

# Multitenant Architecture: local Undo mode

**Instance**

**SGA**

| buffer cache | shared pool | java pool | Large pool | log buffer |
|---|---|---|---|---|

SMON    PMON    DBWR    bckg. prcs    LGWR    ARC

**CDB**

**CDB$ROOT**

| system | sysaux | data files |
|---|---|---|

| temp | undo |
|---|---|

Redo Log Files

Archive redo log

Control Files

parameter file

**PDB$SEED**

| system | sysaux |
|---|---|

| temp |
|---|

**HR**

| system | sysaux | data files |
|---|---|---|

| temp | undo |
|---|---|

**CRM**

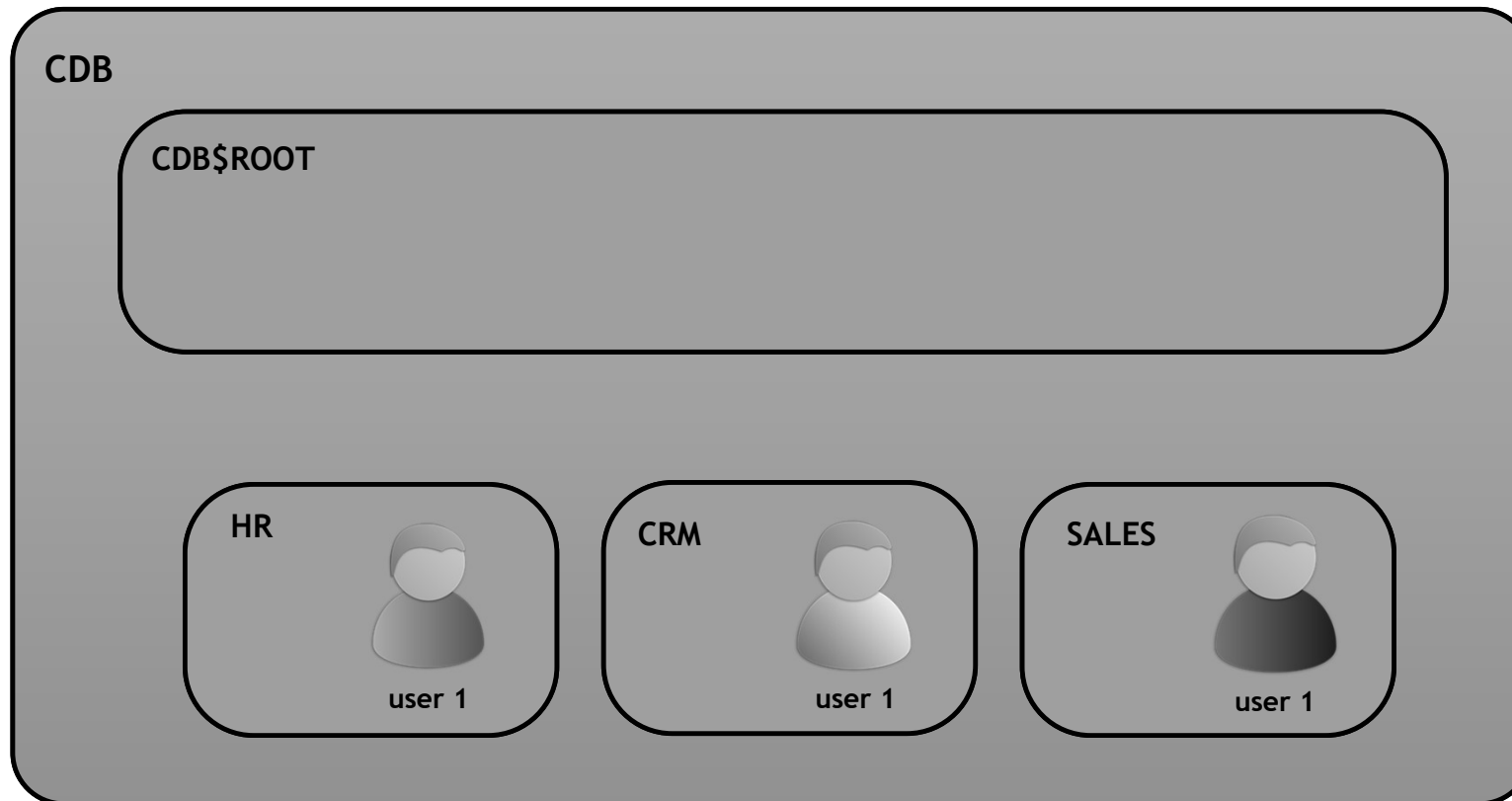| system | sysaux | data files |
|---|---|---|

| temp | undo |
|---|---|

# Multitenant Architecture Summary

- Multitenant is implemented by creating a CDB
- The redo log files, control files, and archive files are owned by the CDB, but not by specific PDB
- The root contains the Oracle-supplied objects and users
- The root is the parent of all the PDBs
- PDBs are created from the PDB$SEED
- Application users connect to PDBs
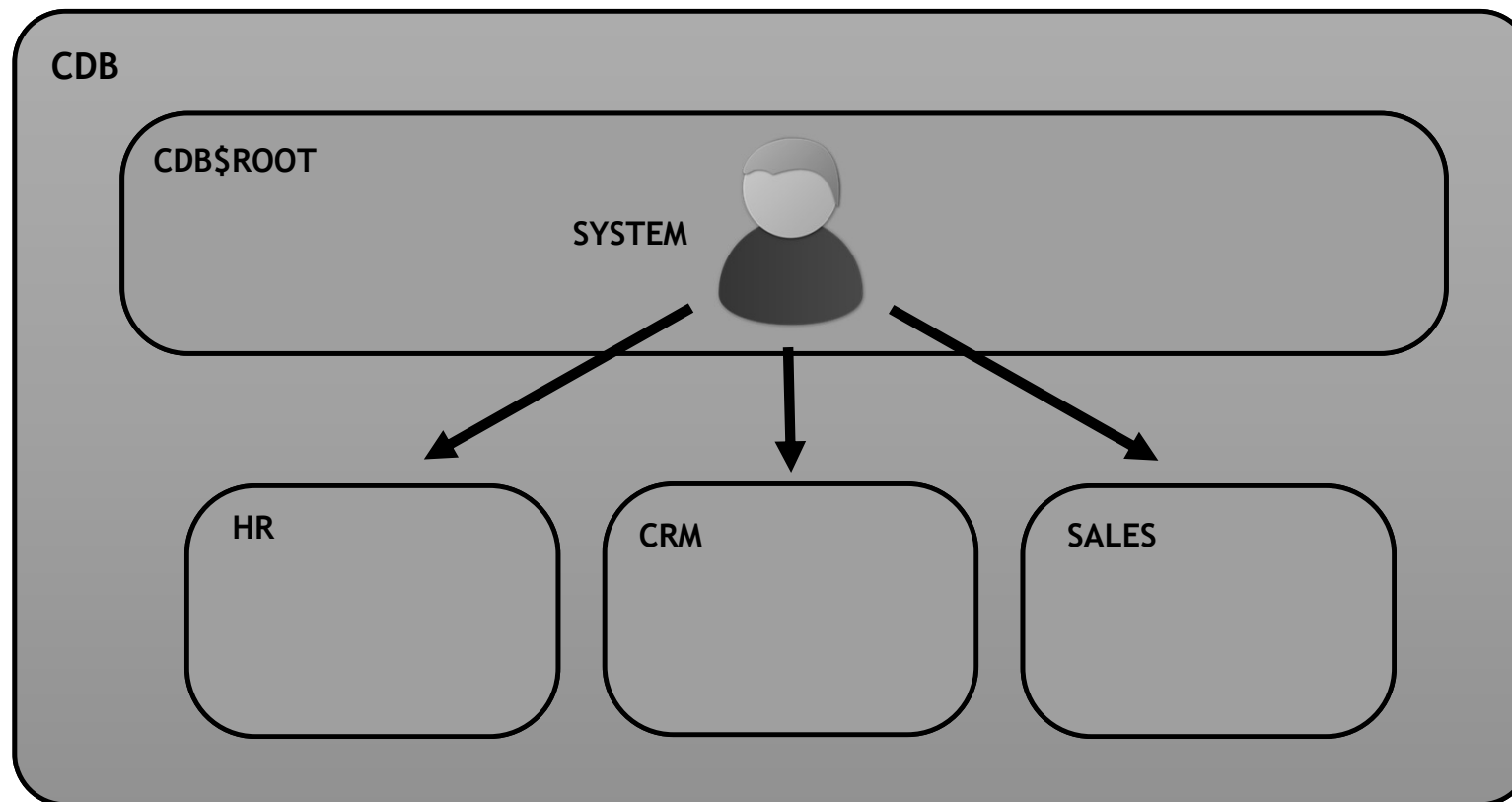- Undo tablespaces can be shared or be created per PDB

# Local Users

# Common Users

# Local and Common Users

- **A local user:**
  - Defined in the PDB and is not known outside of that PDB
  - Can connect only to the PDB where it is defined
  - If it has the privileges granted, a user can work on the application data within the PDB
  - Cannot be defined in the root

- **Common User:**
  - A common user is defined in the root
  - Only common users can be defined in the root
  - A common user is known in every existing and future PDB
  - Some administrative tasks should be done by common users

# Multitenant Impacts

- Oracle Data Guard at CDB Level
- Oracle Database Vault per PDB only
- Oracle Streams not supported in CDB

# Summary

In this lecture, you should have learnt the following:

- Describe the difference between:
  - The CDB and PDB
  - The shared undo and the local undo configuration
  - The local users and common users
- Describe the Multitenant Architecture components
- Understand the impact of implementing a multitenant configuration