**RAID levels 0, 1, 2, 3, 4, 5, and 6:**

1. RAID 0 (Striping): Data is split across multiple drives, which improves performance by allowing data to be read from and written to multiple drives simultaneously. However, there is no redundancy, so if one drive fails, data may be lost.
2. RAID 1 (Mirroring): Data is duplicated on two drives, creating an identical copy. This provides redundancy, so if one drive fails, the other drive still has all the data. RAID 1 is good for data protection but doesn't offer increased performance.
3. RAID 2: This RAID level uses error-correcting codes and data striping at the bit level across multiple drives. However, RAID 2 is not commonly used in practice, so you're unlikely to come across it.
4. RAID 3: Data is striped at the byte level across multiple drives, and parity information is stored on a separate dedicated drive. Parity information helps in recovering data if one drive fails. RAID 3 requires a minimum of three drives.
5. RAID 4: Similar to RAID 3, data is striped at the block level across multiple drives, but with parity information stored on a dedicated drive. RAID 4 also requires a minimum of three drives.
6. RAID 5: Data is striped at the block level across multiple drives, and parity information is distributed across the drives. Parity allows for data recovery if one drive fails. RAID 5 requires a minimum of three drives.
7. RAID 6: Similar to RAID 5, but with an extra layer of redundancy. It uses double parity, meaning it can tolerate the simultaneous failure of two drives. RAID 6 requires a minimum of four drives.

These RAID levels offer different trade-offs between performance and data protection. RAID 0 provides high performance but no redundancy, while RAID 1, 3, 4, 5, and 6 offer various levels of redundancy at the expense of some performance.

Oracle : <https://slideplayer.com/slide/13478486/>

instance is an open access to database consisting of memory and background process structures.

It’s database is a collection of data that is treated as a unit. It consists of three types of files namely Data files, Control files, Redo Log files.

Data files- Oracle are used to store the actual data of the database

Control Files: Control files are critical for the proper functioning of an Oracle database. They contain vital information about the database, such as the database name, the names and locations of data files and redo log files, timestamps, and checkpoints.

Redo Log Files: Redo log files in Oracle are used to record all changes made to the database.

Oracle’s memory structure consists of two areas known as System Global Area(SGA) and Program Global Area(PGA). SGA is allocated at start up and PGA is allocated when server process starts.

The SGA consists of several memory structures : Shared Pool, Database Buffer Cache, Redo Log Buffer, Java Pool and Large Pool.

The Shared Pool is used to store more recently used SQL statements and most recent data definitions. It consists of two performance related structures namely Library Cache and Data Dictionary Cache

Library Cache: The library cache is a section within the shared pool that stores shared SQL and PL/SQL code. It acts as a repository for compiled SQL statements, execution plans, and PL/SQL procedures and functions

Data Dictionary Cache- It stores frequently accessed data dictionary information. The data dictionary contains metadata about the database objects, such as tables, indexes, columns, and privileges.

The Database Buffer Cache consists of independent sub cases and can be dynamically resized.

The Redo log buffer is meant for recovery and records all changes made to the database blocks as redo entries. These are used to reconstruct the changes when required.

Program Global Area is reserved for each user process connecting to the Oracle database. It is allocated when process is created and de-allocated after the termination of the process.

Oracle takes advantage of various types of processes namely User Process, which starts 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 connection, **Background Process which starts when an Oracle instance is started. It maintains and enforces relationships between physical and memory structures**. The mandatory **background process** include DBWn, PMON, SMON, CKPT, LGWR.

DBWn stands for Database Writer  and it writes when checkpoint occurs checkpoint occurs, dirty buffer reach threshold and when timeout occurs.

Log writer writes at commit, before DBWn writes. System Monitor responsibilities include instance recovery, Coalesces free space, de allocates temporary  segments.

Process Monitor(pmon) takes care of all the process interaction, management like cleaning failed processes like rolling back the transaction, releasing locks and restarting dead dispatchers. (process recovery)

Smon-system monitor – instance recovery

Checkpoint(ckpt) is responsible for signaling DBWn’s at checkpoint, updating data file headers, updating control files.

Archiver preserves online redo logs when Archive log mode is set and preserves the record of all changes made to the database. The Oracle server components that are used depend on the type of  SQL statement.