# UNIT-5

Study of RDBMS through Oracle –

① Architecture –

A database server is the key to information management

Database instances → set of memory structures that manage database files

② Instance memory structures –

- System Global Area (SGA) → data & control information for one instance
- Program Global Area (PGA) → data & control information for server or background process

③ Physical files –

- Data files
- Control files.
- Online redo log files.

④ Background process – Asynchronously perform I/O & monitor other oracle database process to provide increased parallelism for better performance and reliability.

⑤ Logical storage structures –

Data blocks – At finest level of granularity, oracle database data is stored in data blocks. One data block corresponds to a specific number of bytes on disk.

Extents – An extent is a specific number of logically contiguous data blocks.

Segments – It is a set of extents allocated for a user project.

Tablespaces – It is the logical container for a segment. Each tablespaces contains atleast one data file.

⑥ Network architecture –

Dedicated server architecture – Each client process connects to a dedicated server process. The server process is not shared by any other client for the duration of the client's session.

Multithreaded server (shared server) architecture - The database uses a pool of shared processes for multiple sessions. A client process communicates with a dispatcher, which is a process that enables many clients to connect to the same database instance without the need for a dedicated server process for each client.

(7) Database links - It is a connection between two physical database servers that allow a client to access them as one logical database.
Types of database links → private, public & global.
Snapshot - It is a replica of a target master table from a single point in time.

(8) Data dictionary - Read-only set of tables that provides information about the database.
Dynamic performance views - Views which are continuously updated while a database is open and in use and their contents relate primarily to performance.

(9) Role management - add users, remove users, assign roles & notification profiles to users.
Privilege Management - Granting & revoking individual privileges, creating a role and assigning privileges to it, creating a secure application role.

(10) Hierarchical queries → table contains hierarchical data. Used as - START WITH, CONNECT BY
Inline queries - act as a data source.
Flashback queries - view past states of database objects or to return database objects to a previous state.

(11) ANSI SQL (American National Standards Institute SQL) -
It is a standard

Anonymous block - It is a pl/sql block that appears within your application and it is not named or stored in the database.

Cursor Management -

(1) A cursor is a variable that runs through the tuples of some relation. Two types of cursors -
Nested cursor and Parameterized cursor.
Eg:- DECLARE cursor c1 is select ename, hiredate from emp;

(2) Procedure - Accept arguments and no return any values.
Eg:- create or replace procedure add1(i varchar) is sal number(10);
begin .... end;
→ exec add1('SMITH');

User defined functions in oracle

Functions - Accept arguments and return values
Eg:- create or replace function sum(inumber, j number) return number is
s_num number(10);
begin ... end;
→ n := sum(2, 3);

Triggers - Similar to procedure or function, never accept any argument neither return any value, automatically called.
Eg:- create or replace trigger empno_check before delete on emp;
begin ... end;

Control structures in pl/sql - if elsthen, if then else, if then elsif, case, loop, exit, exit when, while $, for, goto, null,