

Lecture 2

1. How do you plan and create a Database?
- [A] . First, you need to determine production capacity needed by any organization during any year.
- Design the capacity such that it is equal to the maximum amount of work
 - The maximum amount of work depends on factors such as
 - a) quality problems (issues related to quality of the product)
 - b) delay issues (delays in manufacturing, distributing, transporting)
 - c) material handling (e.g. knitting, weaving, maintenance etc) related to textile systems
2. How do you manage database availability?
- [A] . You can add one or more mailbox servers to the Database availability group (DAG).
- You can select servers from a list, click Add, click OK etc
 - You can remove mailbox servers from the DAG, select the servers and click the minus (-) sign.

3 How do you manage physical & logical database structures?

[A]

Oracle database

Physical Keyed structures

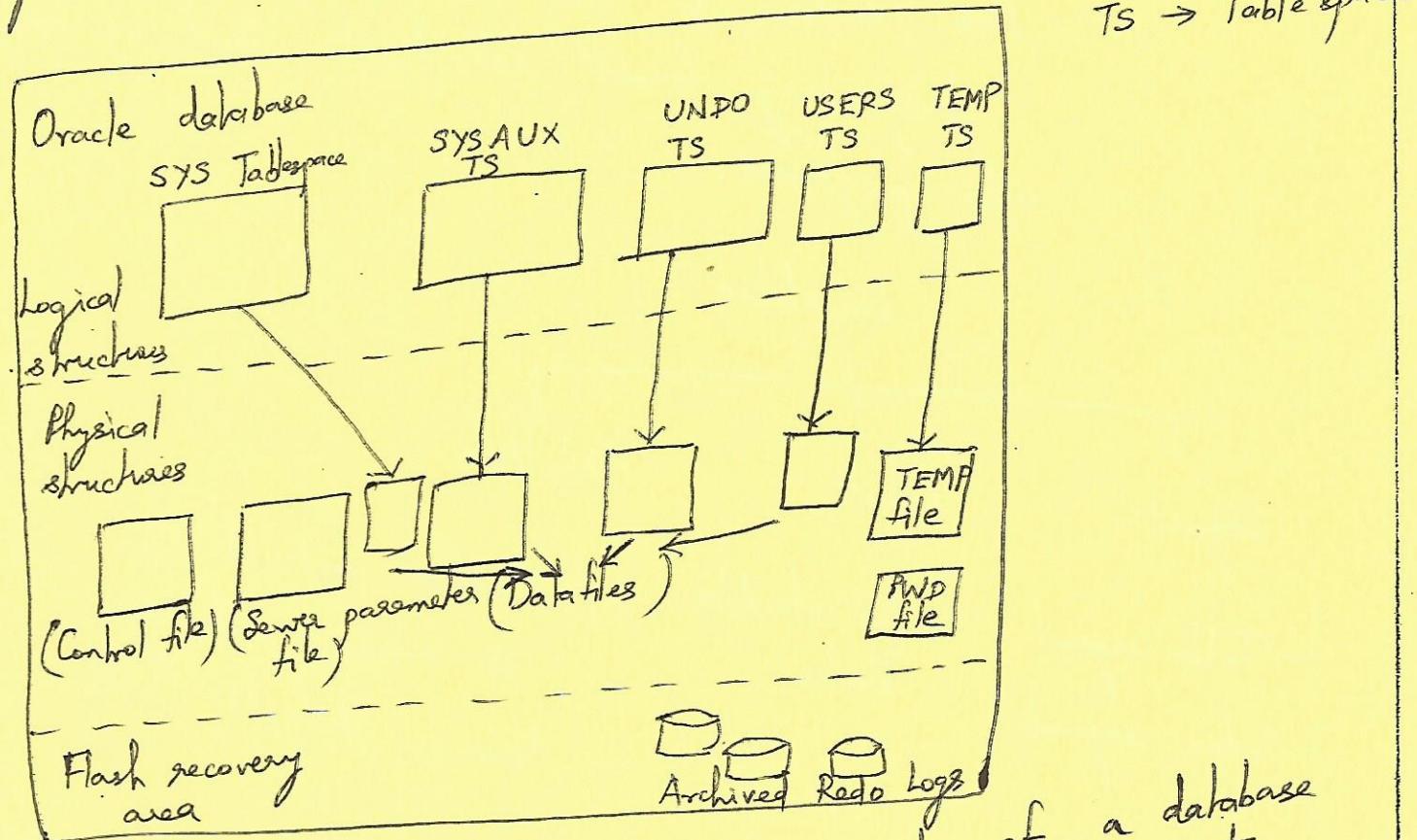
- Can be viewed and operated from the OS, such as physical files that store data on a disk

logical structures

- Created & recognized by Oracle database and are not known to the OS.
- Primary logical structure contains
 - a) database
 - b) table space
 - c) Physical files.
- Application developers are only aware of logical structures & not aware of physical structures.

(3)

Using a diagram show the difference between logical & Physical structures.



Control file →

- Tracks physical component of a database
- If it is the root file which contains metadata (DB name, location of files) find all other files.
- If control file fails, then your database becomes unavailable.

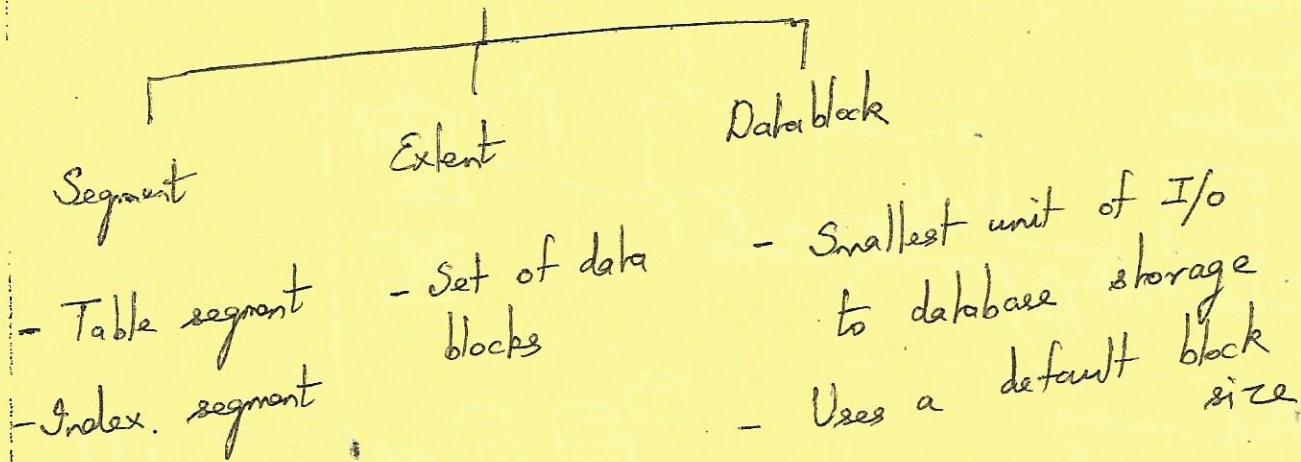
Redo files →

- Redo entries/records.
- Make sure work is never lost
- Recover data after hardware/software/media failure.
- Many identical copies are maintained on different disks. (Archiving Redo log files)

Datafiles: They are os files that store data within a database.

- Data written to these files in an Oracle proprietary format cannot be read by any other programs.

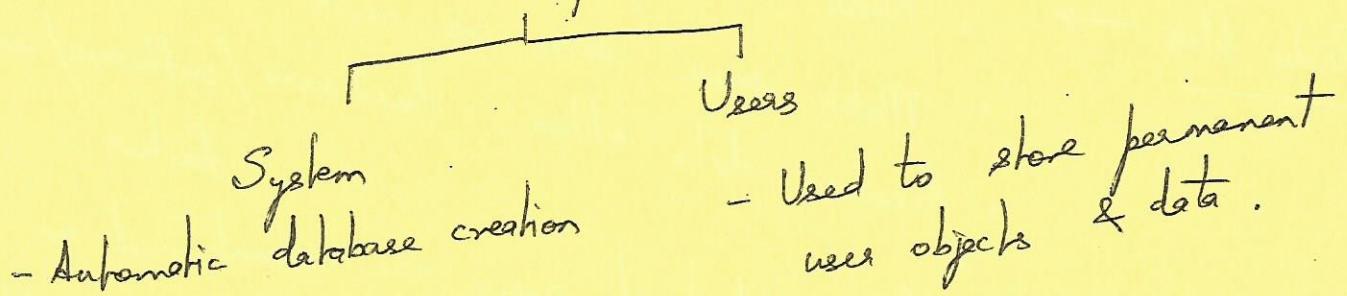
Datafiles



Tablespace

- It is a logical storage unit
- All application objects can be stored in a single tablespace

Table space



5. What is SYSAUX used for?

- [A] - It reduces the load/capacity on the SYSTEM tablespace and reduces maintenance because there are fewer tablespaces to monitor & maintain.

What is TEMP used for?

- This is used when data is generated using SQL statements.

Eg. Query sorting

what are the various status fields for Tablespace?

what are the various status fields for Tablespace?

Read write: Users can read and write to Tablespace

Read only: Tablespace used for Read only status

No users can access it.

Offline:

what are other storage structures?

a) Initializing parameter file: To determine the database.

run-time properties & resource for

b) Password files: To authenticate admin users with SYSDBA or SYSOPER privileges.

- These privileges enable a DBA to start up and shut down the database

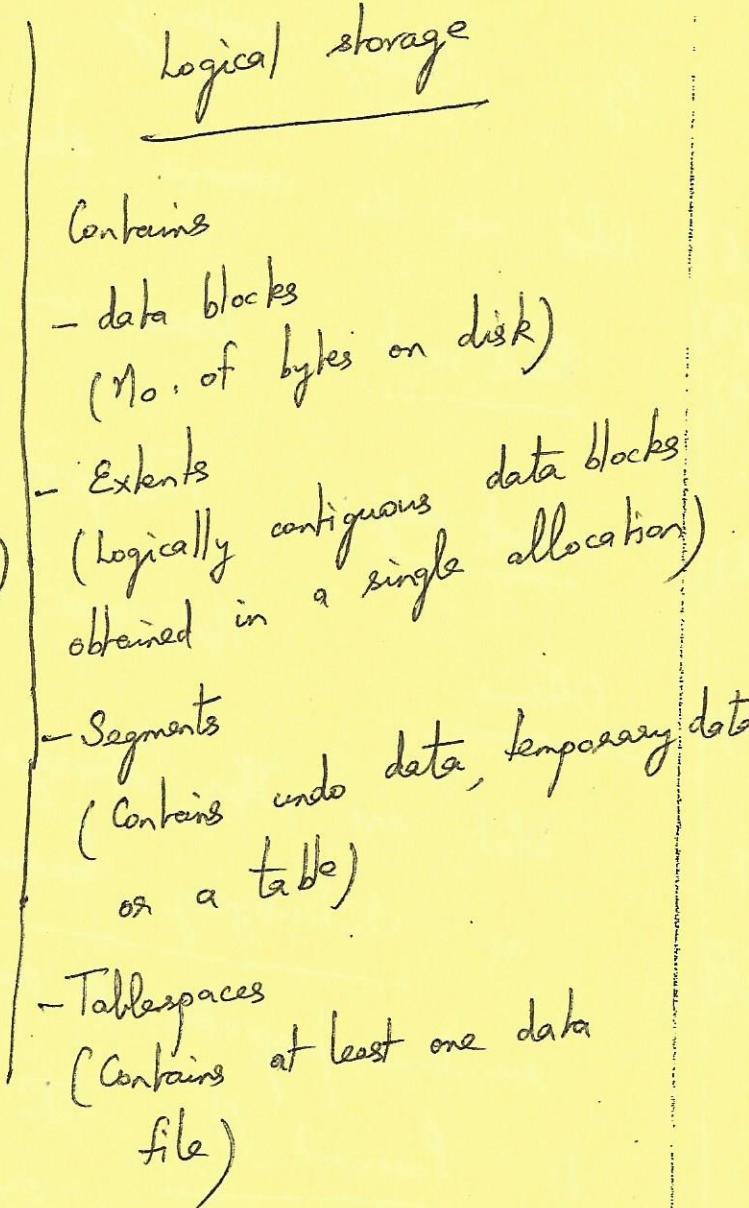
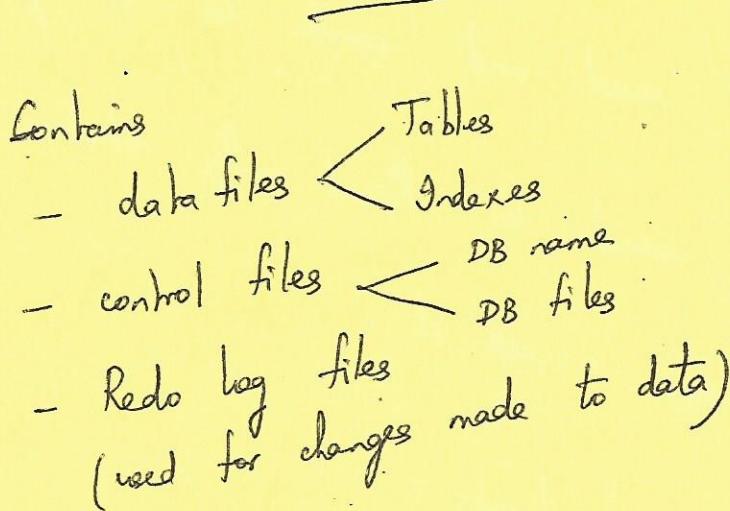
a) Backup files :

They are not technically database files, but are only copies just in case there is loss of data.

8.

What are the differences between Physical & Logical Storage structures?

[A]



9. What are Oracle Database processes?

[A] A process is a mechanism in an OS that runs a series of steps. Some OS use the terms a) job b) task c) thread.

There are three types of Oracle database processes:

a) Client processes

- These processes are created & maintained to run the Oracle tool.

b) Background processes

- These processes asynchronously perform I/O and monitor other Oracle Database processes to provide increased parallelism for better performance & reliability.

c) Server processes

- These processes communicate with client processes and interact with Oracle database to fulfill requests.

10. [A]

What are the two Instance Memory structures? Explain.

SGA : SGA stands for System Global Area. It contains a group of shared memory structures that contain data and control information for one database instance.

contain data and control eg. SQL areas

Cached data blocks

b) PGA:

PGA stands for Program Global Area. It is a memory region that contains data & control information for a server or background process.

ii. Expand the acronyms given below for background processes.

[A]

a) DB Wn: Database Writer Process

- Responsible for writing modified buffers in the database buffer cache to disk.
- When a buffer in DB buffer cache is modified, it is marked dirty.
- A cold buffer is a buffer that has not been recently used according to Least Recently Used (LRU) algorithm.

b) LG WR: Log Writer Process

- Responsible for Redo log buffer management
- Writing the redo log buffer to a redo log file on disk.
- Writing the redo log file to disk.

c) CKPT: Check point Process

- When a checkpoint occurs, Oracle must update all details of the checkpoint.
- Oracle must update all datafiles to record the checkpoint.

d) System Monitor Process (SMON):

It is responsible for cleaning up temporary segments that are no longer in use. If any terminated transactions were skipped during instance recovery because of offline errors, SMON recovers them when table space is back online.

e) Process Monitor Process (PMON):

- Perform process recovery when a user process fails.
- PMON is also responsible for cleaning up database buffer cache and freeing resources that the user process was using.

f) Recovered Process (RECO):

- It is a background process used with distributed database that automatically resolves failures involving transactions.
- When the RECO process establishes a connection between involved DB servers, it automatically resolves all in doubt transactions.
- When the RECO process fails to connect to a remote server, RECO tries to connect again after a timed interval.

12. What are Job Queue processes used for ?
 [A] Job queue processes are used for batch processing.

- Job queue processes are used for batch processing. They run user jobs.
- They can be viewed as a scheduler service to schedule jobs as Procedural Language (PL) / Structured Query statements Language (SQL)

13. What are Archive Processes ?
 [A] ARC copies redo log files to a designated storage device after a log switch has occurred.

- ARC processes are present only when database is in ARCHIVE LOG mode.

14. What are PL/SQL control statements ?
 [A] PL/SQL has three categories of control statements :

- a) Conditional selection statements :

They are IF & CASE

- b) Loop statements :

They are basic LOOP, FOR loop, WHILE loop.

- c) - Exit statement transfers control to the end of the loop.

c) Sequential control statement:

Goto and NULL

15. what is an ORACLE instance?

[A] Oracle Database allocates a memory area called system global area (SGA) and starts one or more background processes. The SGA serves the following purposes:

- a) Maintain internal data structure that are accessed by many processes & threads.

16. What are the two kinds of Application architectures referring to a computing environment?

[A] The two common database architectures are client/server and multi-tier.

Client - server architecture

- Initiates a request for an operation to be performed on database server.
- Server runs Oracle database s/w and handles the functions for concurrent, shared data access.
- Server receives & processes all requests that originate from clients.

Multi-tier architecture

- Application server provides access to data for client, performs query processing, serves as interface between clients & multiple databases.
- Application server also provides additional level of security.
- It reduces the load on database.

17. Describe the functions of Networking Architecture.

- [A] Oracle Net Services is the interface between database and network communication protocols that facilitate distributed processing and distributed databases.
- Communication protocols define the way data is transmitted & received on a network.
- e.g. TCP/IP, HTTP, FTP, Web DAV.

18. Describe the functions of

a) Oracle Net Services

c) Oracle Net Listener.

b) Oracle Net

[AT] a) Oracle Net Services: It serves as the interface between database & communication protocols that facilitate distributed processing, and distributed databases.

b) Oracle Net: It is a component of Oracle Net Services, establishes and maintains a network session from a client application to a DB server. Oracle Net acts as a data courier for both client application & database server, establishing exchange of messages between them.

c) Oracle Net Listener: It is a separate process that runs on a DB server. Client applications can send connection requests to the listener, which manages the traffic of these requests to DB server.

19. What are the two common ways to configure an Oracle database to service client requests?

[A] a) 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 client's session.

b) Shared server architecture:
The database uses a pool of shared processes for multiple sessions. A dispatcher is a process to which client process communicates, that enables many clients to connect to the same database without the need for a dedicated server process.

20. What is a library cache?
[A] The library cache is a piece of memory within the SGA that Oracle uses in order to store SQL

statement.

What are the common SQL statements?

21.

[A]
a

- a) DELETE
- b) INSERT
- c) MERGE
- d) SELECT
- e) UPDATE
- f) INSERT...SELECT
- g) CREATE TABLE... AS SELECT

Tablespaces						
Search						
Select an object type and optionally enter an object name to filter the data that is displayed in your results set.						
Object Name <input type="text"/>						<input type="button" value="Go"/>
By default, the search returns all uppercase matches beginning with the string you entered. To run an exact or case-sensitive match, double quote the search string. You can also use wildcards.						
Selection Mode <input checked="" type="radio"/> Single <input type="radio"/> Multiple						
<input type="button" value="Edit"/> <input type="button" value="View"/> <input type="button" value="Delete"/> <input type="button" value="Actions"/> <input type="button" value="Add Datafile"/> <input type="button" value="Go"/>						
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<input type="radio"/>	SYSTEM	570.0	559.9	98.2	10.1	<input checked="" type="checkbox"/>
<input type="radio"/>	TEMP	64.0	1.0	1.6	63.0	<input checked="" type="checkbox"/>
<input type="radio"/>	UNDOTBS1	50.0	10.3	20.6	39.7	<input checked="" type="checkbox"/>
<input type="radio"/>	USERS	20.0	3.1	15.3	16.9	<input checked="" type="checkbox"/>
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Total Used (MB)		1,213.8				
Total Allocated Free Space (MB)		192.1				

Database Instance: orcl > Tablespaces > Logged in As SYSTEM

Create Tablespace

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