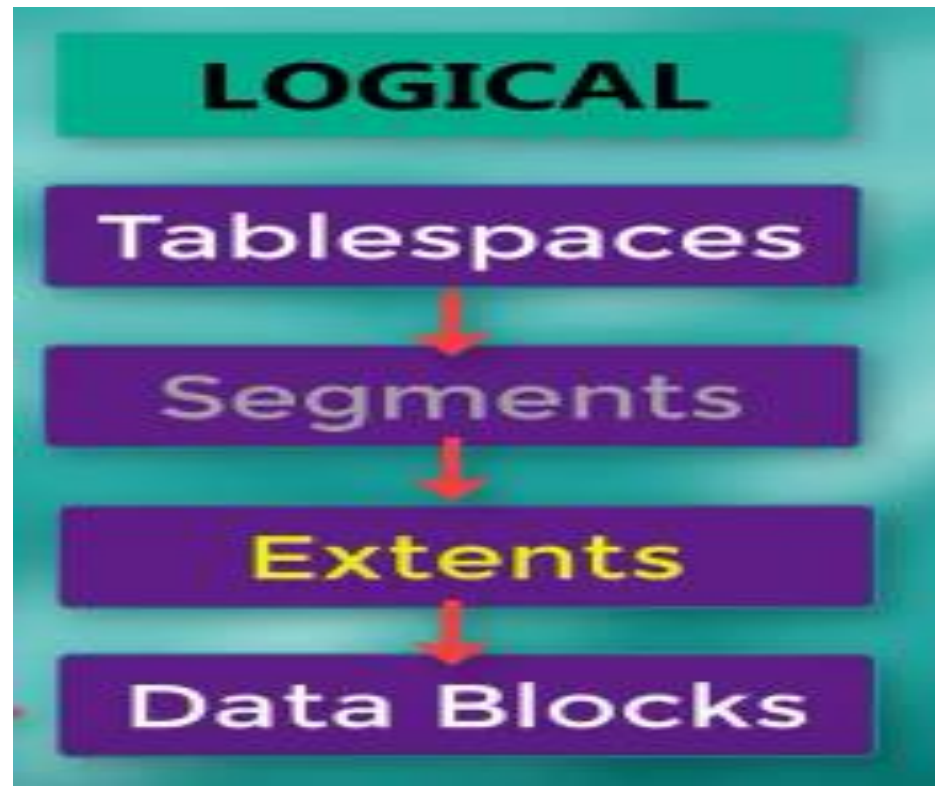


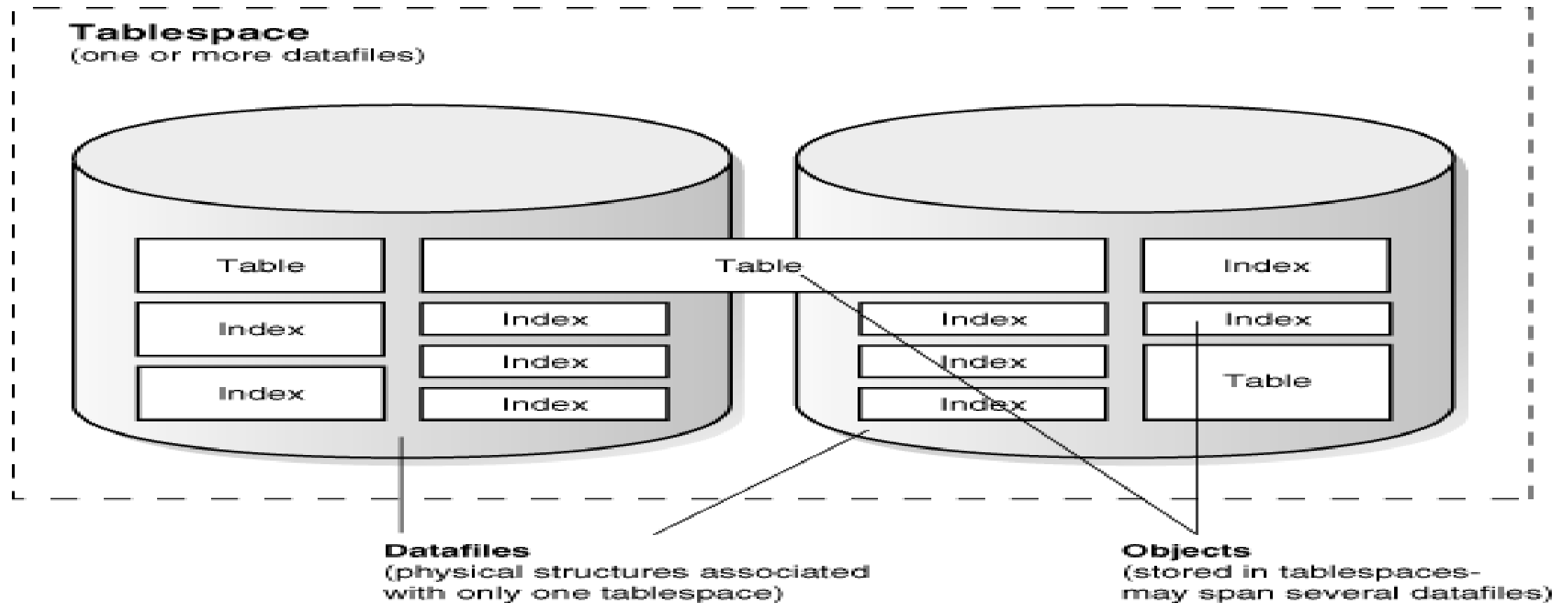
Oracle Tablespace

Introduction

- A database contains multiple table spaces
- Table space contains multiple data files
- Data files contains multiple segments
- Segments contains multiple extents
- Extents are made up of multiple blocks



Tablespace



Tablespace

- In oracle usually extent block size is 8192(8KB)
- Table space is logical division of database and files are physical representation of database
- Segments are used to store all database objects that you create like index, tables, other objects

Tablespaces and Datafiles

The oracle database stores data logically in tablespaces and physically in data files.

Tablespaces:

- > can belong to only one database.
- > consist of one or more data files.
- > Are further divided into logical units of storage.
- > Are a repository for schema object data

Datafiles:

- > can belong to only one tablespace and one database.
- > Are the underlying files that make up a tablespace

- Two types of tablespace
 - Locally managed TableSpaces
 - Dictionary managed table space

Space Management in Tablespaces

-> There are two types of space management in tablespaces.

-> Locally Managed Tablespaces

-> In the locally managed tablespace extents are managed by self tablespaces.

-> Dictionary Managed Tablespaces

-> In the dictionary managed tablespace extent are managed by dictionary.

- To create locally managed table space following command is used
- 1. Login as system dba
- To view the current database
sql> select name from v\$database
Or
Sql> select * from global_name;
- To see the information about database table space use command
Sql>desc dba_tablespaces;

To see the details

```
Sql>select tablespace_name,extent_management,contents  
from dba_tablespaces;
```



```
SQL> select tablespace_name,contents,extent_management  
2  from dba_tablespaces;
```

TABLESPACE_NAME	CONTENTS	EXTENT_MAN
-----	-----	-----
SYSTEM	PERMANENT	LOCAL
SYSAUX	PERMANENT	LOCAL
UNDOTBS1	UNDO	LOCAL
TEMP	TEMPORARY	LOCAL
USERS	PERMANENT	LOCAL

- SYSTEM is mandatory table space for starting the database
- SYSAUX is also a permanent table space
- Undo table space holds old data and can be used in case of rollback
- Temporary tablespace holds temporary data
- And may be some more table space
- User can create table space as per requirements

Create tablespace

- create tablespace tbs

datafile 'C:\oraclexe\app\oracle\oradata\XE\mytab.dbf'

size 10m

extent management local

uniform size 50k

----- size of extent if you do not specify oracle will

----- set it for you

d-----by default it is auto

- To create undo tablespaces

Create undo <tablespace name>

Data file <path of file>

Size 10m;

- All other settings will be considered as default setting
- To check which is undo tablespace oracle uses by default

Sql>show parameter undo_tablespace

To change it in future

Sql> alter system set undo_tablespace = undo2

- To create temporary tablespace use command
create temporary tablespace tmp2

Tempfile <path to dbf file>

Size 50m;

- To check the default temporary table space

Select *

From database_properties

Where property_name like '%TEMP%';

- To modify default temporary table space

```
Sql>alter database default temporary tablespace temp2
```

To see the status of tablespace command :

```
sql>select tablespace_name,status
```

```
From dba_tablespaces;
```

Status is showing online means you can see the changes online

To check default tablespace for use we use

```
Sql>select username.default_tablespace
```

```
from dba_users;
```

- We can change the status from online to read only
- `Sql>alter table space users read only;`
- Once u change the status then user can use only select statement
- Not DML operation
- `Sql> alter table space users read write`
- Will allow you to perform DML operations
- If you change the status to off line then then select and DML statements will not work

- You can enlarge a database in three ways:
 - Add a datafile to a tablespace
 - Add a new tablespace
 - Increase the size of a datafile

Database

System Tablespace



Single Tablespace

Database size and
tablespace size increase
with the addition of
datafiles

```
ALTER TABLESPACE system  
ADD DATAFILE 'DATA2.ORA'
```

```
ALTER TABLESPACE system  
ADD DATAFILE 'DATA3.ORA'
```

Two Tablespaces

Database

System Tablespace



USERS Tablespace



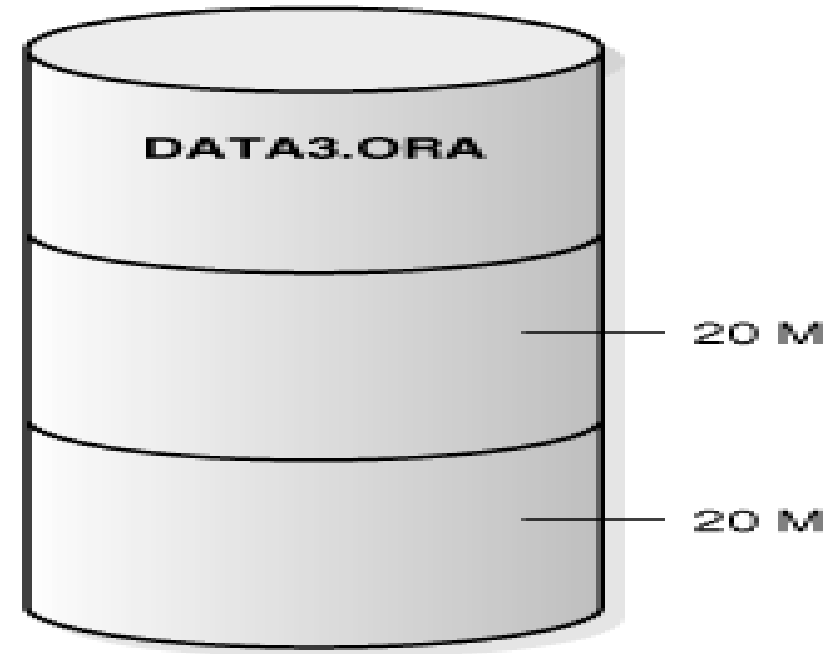
```
CREATE TABLESPACE users  
DATAFILE 'DATA3.ORA'
```

Database

System Tablespace



USERS Tablespace



```
ALTER DATABASE  
DATAFILE 'DATA3.ORA'  
  AUTOEXTEND ON NEXT 20M  
  MAXSIZE 1000M;
```

- To add datafile in existing tablespace use command
- `Sql>alter tablespace mytab`
- Add datafile 'C:\oraclexe\app\oracle\oradata\XE\d.dbf'
- Size 50mb;
- To see how many datafiles are there
- `Sql>select file_name from dba_data_files`
- In each table space min one file has to be there. If more are there then only one can drop the file
- `Sql>alter tablespace tabs drop datafile 'C:\oraclexe\app\oracle\oradata\XE\b.dbf'`
- `Sql>drop tablespace tbs including contents and datafile`

Architecture

- Database contains physical files
 - Control files
 - Redolog files
 - Data files
- Control file contains
 - Metadata about the database
 - Structure of database
 - Database name
 - Redo log and data file name
 - These files gets created at the time of mount of an oracle instance

- Redo log files
 - RedoLog files contains redo data which is used in roll back
- Data file
 - Useful for storing data