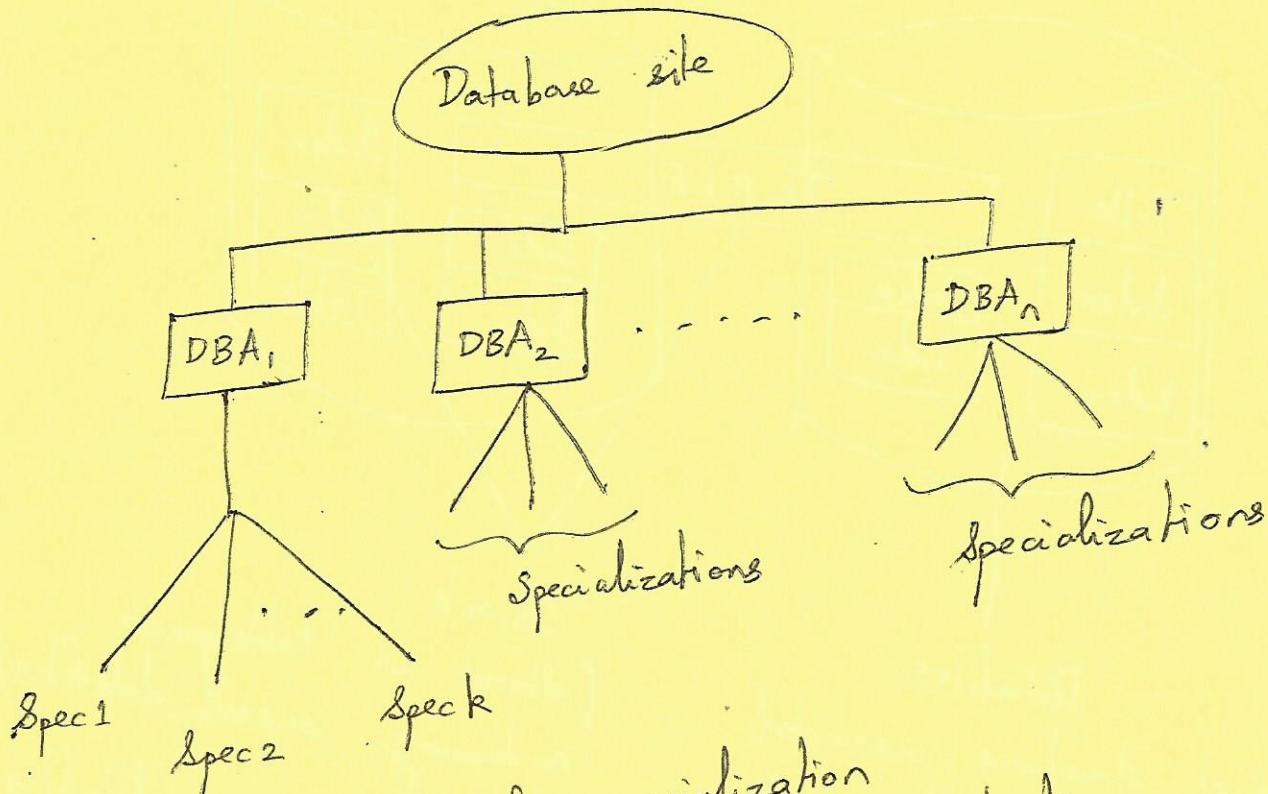


Part IBasic Database Administration

Note: Spec stands for specialization  
DBA stands for Database Administrator.

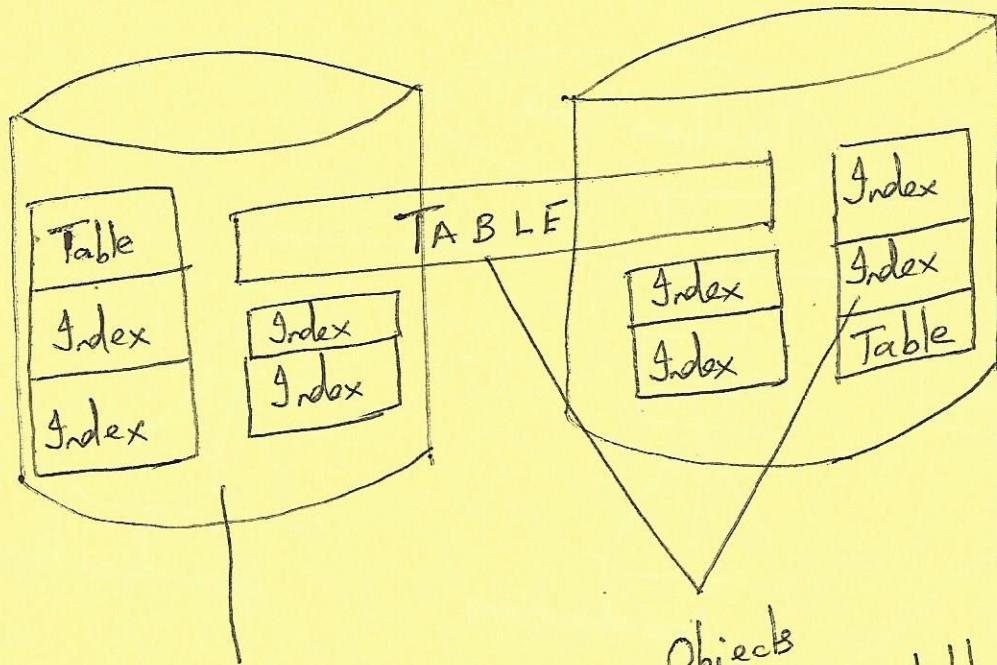
What are the duties of a DBA?

Oracle Database Server and

- [A] a) Installing & upgrading application tools.
- b) Allocating system storage and planning future storage requirements for the database system.
- c) Creating primary database storage structures (tablespaces)

after application developers create an application

Tablespace (logical storage units)



Datafiles

(Physical structures associated  
with only one table space)

Objects

(stored in tablespaces  
containing several datafiles)

Note: Each tablespace may contain one or more datafiles.

- d) Creating primary objects (tables, views, indexes) once application developers have designed an application.
- e) Modifying database structures (writing new data, erasing old data, modifying data) from information given by application developers.

f) Enrolling new users and maintaining system security.

- Each user's information like login, password will be stored
- Files / Directories created by users will be stored
- Files will be distinguished as ASCII files or Binary files
- Applications / Programmes developed by users will have their own system files that will be generated once the application is designed.
- System security aspects will be discussed in specific files if Oracle license agreements + database.

files if Oracle license + agreements database.

Ensuring compliance with monitoring user access to database

Ensuring compliance with user access control of database  
Controlling & Monitoring performance of database  
Monitoring & Optimizing backup and recovery of database

Planning necessary information. If one accidentally used to deleted, recovery path can be used to retain the deleted files.

- In case specific files are used to get an accidental recovery

recovery specific data files for  
Maintain archived data of stored datafiles for

- recovery specific
- Maintain archived data of stored datafiles for
- Setting up a history

recovery and restoring database

recovery and restoring database

Backing up and finally, Oracle for customer support.

2) What are the duties of a security officer?

- [A]
- To enrol users (authentic users only)
  - To control & monitor user access to a database
  - To maintain system security

3) What are the duties of a network administrator?

- [A]
- To administer Oracle networking products (e.g. Oracle net services)

4) What are the responsibilities of an application developer?

[A]

Application developers design and implement database applications. Their responsibilities include:

- a) Designing & developing the database application.
- b) Designing database structure of an application.
- c) Estimating storage requirements of an application.
- d) Specifying modifications of database structure of an application.
- e) Relaying this information to a database administrator.
- f) Tuning application during development (database, frontend, code level, backend services) for an application during
- g) Establishing security measures during development.

5) What are the duties of an application administrator?

[A] An Oracle database site can assign one or more application administrators to govern a particular application.

How do database users interact with the database?

6) How do database users interact with the database?

[A] Through applications or utilities.

Eg. email,

ftp,

telnet,

remote copy,

remote login

database structures?

7) What are the various database structures?

[A] Tablespaces

Redo log files

Control files

We specify operations in terms of database objects rather than filenames.

for a dataspace?

8) How can we allocate more space for a dataspace?

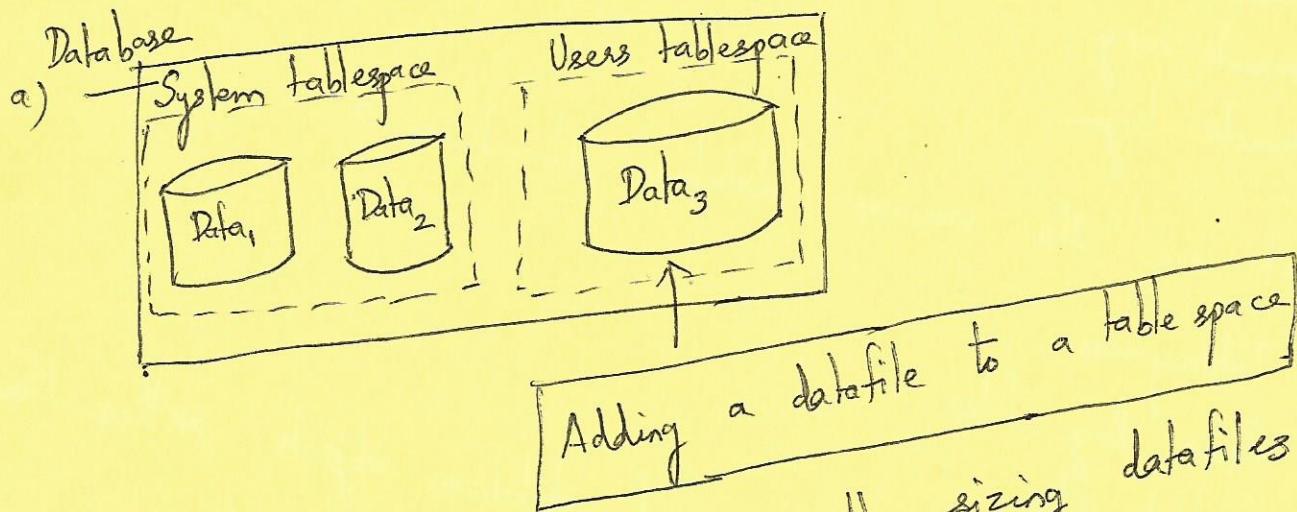
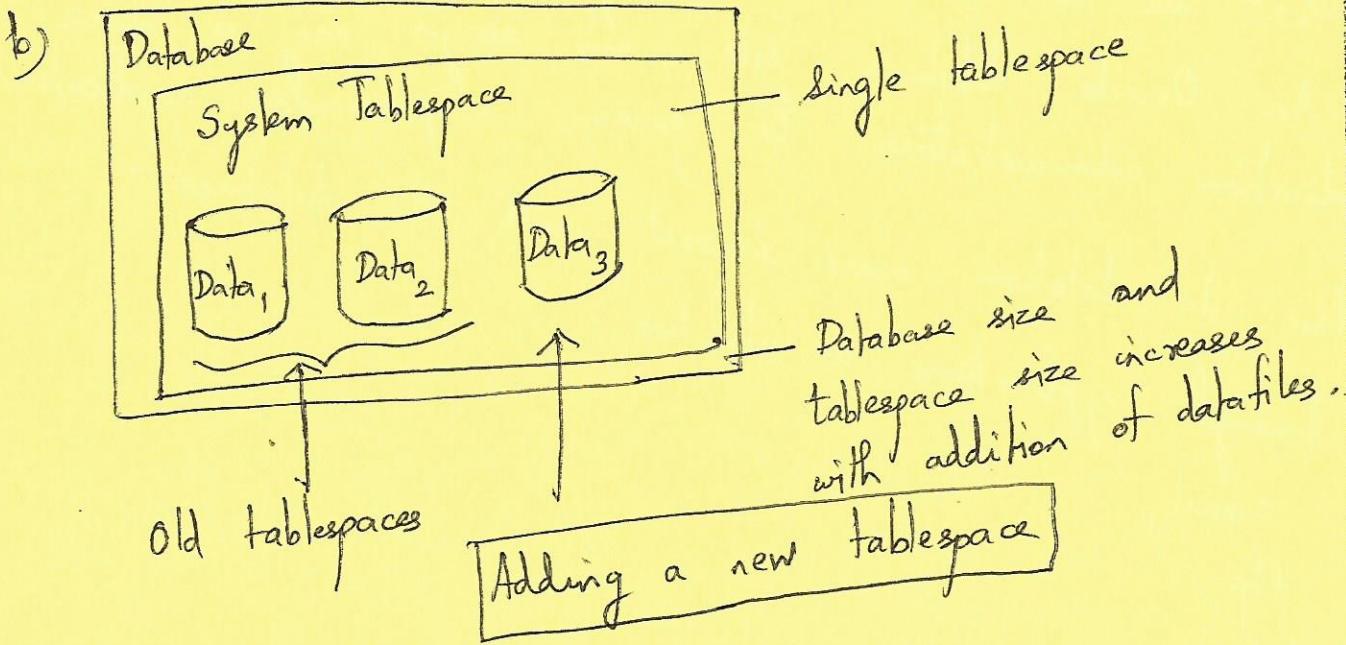
[A] database can be done in three ways:

Enlarging a datafile to a tablespace

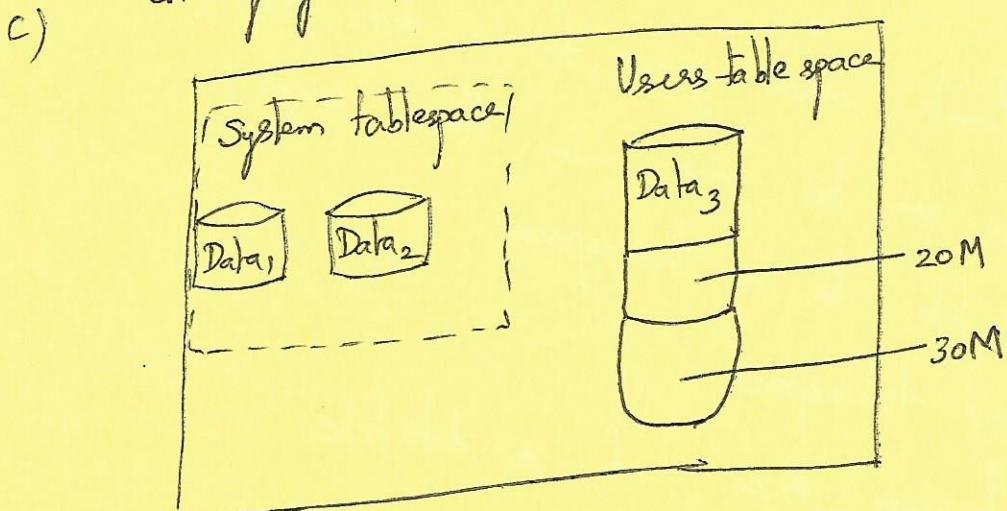
a) Add a new tablespace

b) Add Increase size of a datafile

c) Increase size of a datafile



Enlarging database by dynamically sizing datafiles



9) What can a DBA do to use tablespaces in an effective manner?

[A]

- Create new tablespaces
- Add datafiles to tablespaces
- Set & alter default storage settings
- Make a tablespace read only or read/write
- Rename tablespaces
- Drop tablespaces

10)

When can a DBA bring any table space online or offline?

SYSTEM table space is online when database is OPEN

[A]

- SYSTEM table space is online when database is OPEN because data dictionary must be available to ORACLE
- When a table space goes offline, ORACLE does not permit any SQL statements to reference objects contained in the tablespace.

If a tablespace is offline, then you shut down a database. The tablespace remains offline when database is subsequently mounted & reopened.

- Oracle automatically switches a tablespace from online to offline when certain errors are encountered.

For example,  
Oracle switches a tablespace from online to offline when  
the database writer process, DBW<sub>n</sub>, fails in several  
attempts to write datafile to a tablespace.

11) What is the command line interface to your Oracle database?

[A] SQL Plus is the command line interface.  
Use SQL Plus to start up and shut down the database,  
set Oracle database initialization parameters, create & manage  
users, create & alter database objects (tables, indices),  
insert & update data, run SQL queries.

12) How can you connect SQL Plus to Oracle database?

[A] a) Connect locally

Oracle database runs on the same computer as you are  
running SQL Plus.

b) Connect remotely

Connecting over a network to an Oracle database  
is running on a remote computer. Such a database is  
referred to as a remote database.

13) What does an ORACLE database contain?

[A] Oracle database contains

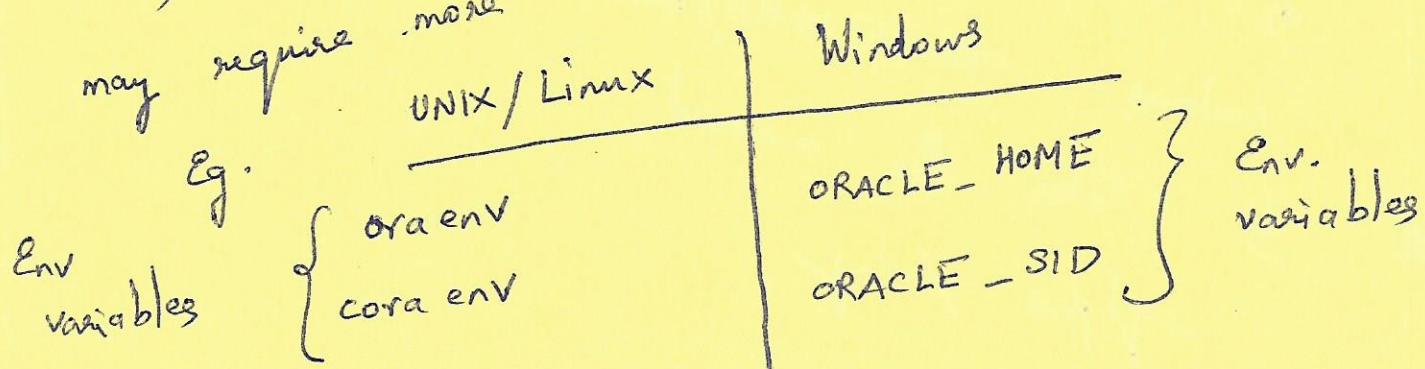
- a) Collection of processes and memory files that contain user data and
- b) Set of disk files that contain system data.

14) What are the steps taken to connect to an ORACLE instance with SQL Plus?

- a) Open a command window
- b) Set OS environmental variable
- c) Start SQL Plus
- d) Submit SQL Plus connect statement

15) How to set OS environmental variables?

- a) Set ORACLE\_HOME
- b) Set ORACLE\_SID and PATH variable to include ORACLE\_HOME/bin dir
- c) Some platforms like UNIX, Linux or Windows may require more OS commands.



16)

How to set Environment variables in UNIX (C shell)?

[A]

setenv ORACLE\_SID orcl

setenv ORACLE\_HOME /u01/app/oracle/product/11.2.0/db\_1

setenv LD\_LIBRARY\_PATH \$ORACLE\_HOME/lib:/usr/dt/lib

lib:/usr/openwin/lib:/usr/ccs/lib

How to set Environment variables in Windows?

17)

How to set Environment variables in windows?

[A]

SET ORACLE\_SID=orcl

How to start SQL plus?

18)

[A]

a) Ensure that PATH environment variable contains  
ORACLE\_HOME/bin

b) Change directory to ORACLE\_HOME/bin

19)

[A]

How to start SQL Plus?

a) Ensure that PATH environment variable

contains ORACLE\_HOME/bin

b) Enter the command

sqlplus /nolog

19) How to submit SQL Plus connect?

[A] CONN [ECT] [logon] [AS {SYSOPER | SYSDBA}]

The syntax of logon is:

{username | /} [@connect\_identifier] [edition = {edition\_name | DATABASE\_DEFAULT}]

Syntax

/

{SYSOPER | SYSDBA}

username

connect\_identifier

Description  
Calls for external authentication of connection request  
↓  
OS authentication

Database user is connecting with either SYSOPER or SYSDBA system privilege.

Valid database user name.

It is an Oracle Net connect identifier. If omitted, SQL Plus attempts to connect to a local instance.

to a local database as user SYSTEM?

How do you connect to a system user password

[A] SQL Plus prompts for a system user password  
>>> connect system

21) How do you connect to a local database as user sys with sysdba privilege?

[A] connect sys as sysdba



username

connect sys as sysdba



username

with sysdba privilege

22) How do you connect locally with OS authentication?

[A] connect / as sysdba



/

as

sysdba

with OS authentication

23) How do you connect as user salesadmin to a remote database running on host dbhost.example.com?

[A] connect salesadmin@ "dbhost.example.com/sales.example.com"



salesadmin

@

"

dbhost.example.com

/

sales.example.com

"

remote

database

Internet address

(host name)

)

Database Service

handler

particular

- 25) Same as Q23, except that the listener is listening on a non-default port number 1522.  
[A] connect salesadmin @ "dbhost.example.com:1522/sales"  
  
26) Same as Q23, except that the host IP address is substituted for host name.  
[A] connect salesadmin @ "192.0.2.5/sales.example.com"  
  
27) Same as Q23 but the host is connected to using an IPv6 address.  
[A] connect salesadmin @ "[2001:0DB8:0:0:200C:417A]/sales.example.com"  
  
28) Specify the command to specify the instance to which to connect and omit the database service name.  
[A] connect salesadmin @ "dbhost.example.com//orc1"  
  
29) Provide an example for a host to connect remotely with external authentication to the database service designated by the net service name sales).  
[A] connect /@ sales  
    ↑  
    ↑  
    OS net service name  
    authentication

30) Provide an example for a host to connect remotely with SYSDBA privilege and with external authentication to database service designated by net service name

sales 1.

connect /@ sales1 as sysdba  
↑ ↑  
service name      privilege type.

## authentication

authentication

Provide an example to connect remotely as user sales admin to database service designated by net service name sales1. The database session starts in SQL \* Plus for sales admin edition.

user password

```

graph LR
    connect[connect] --> Sales[Sales]
    Sales --- username[username]
    Sales --- name[name]
    name --- netService[net service]
  
```

username name

Explain the ORACLE Release Number Format.

二

33)

Explain the individual fields in ORACLE Release number format.

[A]

Major    Database    Release    Number:

- It represents a major new version of software that contains significant new functionality.

Database    Maintenance    Release    Number:

- Some new features may be included here compared to the earlier release

Fusion    Middleware    Release    Number:

- Release level of Oracle Fusion Middleware (connecting hardware to software)

Component    specific    release    number:

- Release level which is specific to a component.

Eg. Component patch or interim release

Platform    specific    release    number:

- Eg. patch set
- When different platforms require equivalent patch set, the

numerical will be the same across affected platforms.

Explain about administrative user accounts.

Two admin user accounts are created:

a) sys (default pwd: CHANGE\_ON\_INSTALL)

b) SYSTEM (default pwd: MANAGER)

Note: Change passwords on sys & system accounts as soon as you enter the accounts.

Explain about sys account.

When an ORACLE database is created, sys account is created, sys account is granted DBA role.

- All tables, views are modifiable only by the database tables, views etc
- Users must not be able to modify data base dictionary
- However, storage parameters of user data base dictionary can be modified.
- Ensure that database users are not able to connect to ORACLE data base using sys account.

36) Explain about SYSTEM account.

[A] - SYSTEM user name/account is used to create additional

tables/views

- Never use SYSTEM schema to store tables of interest.

Note: DBA role is automatically created with every installation. DBA role must be granted

Oracle database  
only to DBA administrators.

system privileges?

What are SYSDBA or SYSOPER system privileges that allow an

administrator to perform basic DBA tasks, such as, creating database & instance startup/shutdown.

What are the operations authorized with SYSDBA & SYSOPER system privileges?

System Privilege

SYSDBA

Operations authorized

- Startup & Shutdown operations
- Alter database to change
- CREATE DATABASE
- DROP DATABASE
- CREATE SPFILE

DATABASE

DATABASE

(binary representation  
of text files)

- Alter database archive log
- Alter database recover

sysOPER

- Perform STARTUP & SHUTDOWN operations

- Create SPfile

- Alter database archive log

- Alter database recover

- Includes Restricted session privilege

- Includes administrative privileges?

39) How do you connect

CONNECT oe

Here oe is username

sysDBA ?

How do you connect as sysDBA

connect oe AS sysDBA

Select an Authentication method for DBAs.

DBAs can authenticate other DBAs through a data dictionary (using password) like other users.

In addition to normal data dictionary authentication, the

following methods are available : OS authentication  
Password filesStrong authentication with R/W based  
authentication service.