DCL : Data Control Language ====>
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* Oracle protects the data in the database by implementing security via users, roles, and privileges.

* The SQL language commands used to accomplish these security tasks are known as Data Control Language (DCL) commands.

* There are several different ways to enforce access control in Oracle , to ensure that only authorized users can log in and access the appropriate data.

* The 3 most popular ways for ensuring security are:
- System Privileges
- Object Privileges
- Roles

* System privileges determine the type of actions the user can perform, such as create tables, drop views, or create other users.

* Object privileges avoid any wrongful data modifications to individual tables or columns. The owner of database objects can assign these object privileges that control exactly who can access what objects and to what extent.

* System and object privileges can be grouped together into a role.

What Is A Schema ? ==>
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* A schema is a collection of objects (for example, tables, views, indexes, sequences, triggers, synonyms).

* Each schema is owned by a single user account with the same name.

* Thus , the two terms schema and user account are often used interchangeably.

* We can list the types of objects in the ORACLEBATCH schema by querying the USER_OBJECTS data dictionary view.

```
- select distinct object_type
  2  from user_objects;

OBJECT_TYPE
------------
TABLE
INDEX
VIEW
```

* To get more details on these objects we can further list their name, creation date and status also, -

```
- select object_name, object_type, created
  2  from user_objects;

OBJECT_NAME          OBJECT_TYP CREATED
-------------------- ---------- ---------
STUDENTS3            TABLE      20-FEB-24
STUDENTS2            TABLE      20-FEB-24
STUDENTS4            TABLE      20-FEB-24
STUDENTS5            TABLE      20-FEB-24
STUDENTS6            TABLE      20-FEB-24
```

```
PRODUCTS             TABLE      10-FEB-24
EMP                  TABLE      24-FEB-24
DEPT                 TABLE      25-FEB-24
SALGRADE             TABLE      26-FEB-24
ST_RN_UN             INDEX      29-FEB-24
STUDENTS             TABLE      29-FEB-24

OBJECT_NAME          OBJECT_TYP CREATED
-------------------- ---------- ---------
VENDOR_MASTER        TABLE      29-FEB-24
VM_VI_PK             INDEX      29-FEB-24
AUTHORS              TABLE      29-FEB-24
AU_ID_PK             INDEX      29-FEB-24
BOOKS                TABLE      29-FEB-24
BK_ID_PK             INDEX      29-FEB-24
MYPROD               TABLE      02-MAR-24
EMP_DPT              VIEW       03-MAR-24
IDX                  INDEX      03-MAR-24
```

Two Special Users ===>
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* When an Oracle database is created, it comes with a number of default accounts.

* Two extremely important accounts are:
- SYS
- SYSTEM

SYS ==>
=========

* Automatically created when Oracle database is installed
* Automatically granted the DBA role.
* Has a default password: CHANGE_ON_INSTALL
* Owns the base tables for the database data dictionary

SYSTEM ==>
============

* Automatically created when Oracle database is installed
* Automatically granted the DBA role
* Used to create internal tables and views used by various Oracle database options and tools
* We should never use the SYSTEM schema to store tables of our use.

Creating Users ===>
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* To log in to the Oracle database, a user must have a username, a password, and certain system privileges.

* A username is created with the CREATE USER command, whose syntax is mentioned in the next slide.

First Connect with the System User :- connect system , password oracle

* Syntax:

- CREATE USER <user_name> IDENTIFIED BY <password>;

* Example:
- create user indians
  2 identified by intelligent;

Granting TableSpace ===>
==========

* The previous command will create a new user called INDIANS with the password intelligent , but we will not be able to create any tables in this user as it has not been assigned any TABLESPACE.

* A TABLESPACE in Oracle is a special area in memory where the data of a particular user is saved and the name of this TABLESPACE is USERS.

* The command to allot access to TABLESPACE USERS is:
- ALTER USER <user_name> QUOTA <number> M On USERS;

* Example :
- ALTER USER indian QUOTA 100M On USERS;

* The QUOTA 100 M ON USERS clause allows the INDIAN user to use up to 100 MB on the USERS tablespace.

* Another way to grant tablespace is as follows:
- GRANT UNLIMITED TABLESPACE TO <user_name>;

* Example :
- grant unlimited tablespace to indians;

Locked Users ===>
==========

* Many times due to wrong login attempts Oracle locks a user or during the database installation process also , Oracle creates some default user accounts that may be locked.

* We can use the ALTER USER command with the ACCOUNT UNLOCK option to unlock those accounts.
# ALTER USER <user_name> ACCOUNT UNLOCK;

Dropping Users ===>
==========

* We use the DROP USER command to drop a user with the following syntax:

* Syntax:
- DROP USER <user_name> [CASCADE];

* Example:
- DROP USER INDIANS;

* The DROP USER command drops the user if the user does not own any objects.

* If we want to also drop the objects owned by the user, we must execute the DROP USER command with the CASCADE keyword.
# DROP USER INDIANS CASCADE;