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PROBLEM STATEMENT

Study and Implementation of Database Control language and Transaction Control language

ALGORITHM & CODE :

Commands .

Objective : To Understand the concept of administrative Commands

Theory :

TCL

A transaction is a logical unit of work. All changes made to the database can be referred to as a transaction. Transaction changes can be made permanent to the database only if they are committed. A transaction begins with an executable SQL statements & ends explicitly with either rollback or commit statement.

1. Commit: This command is used to end a transaction only, with the help of the commit command transaction changes can be made permanent to the database.

Syntax: COMMIT.

Example: COMMIT

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2. **SAVE POINT :** Save Points are like marks to divide a very lengthy transaction to smaller ones. They are used to identify a point in a transaction to which we can latter roll back. Thus, Save Point is used in conjunction with roll back.

Syntax : `SAVE POINT ID;`

Example : `SAVE POINT xyz;`

3. **Rollback :** A rollback command is used to undo the current transactions.

Syntax :

`ROLLBACK` (current transaction can be roll back)

`ROLLBACK TO Save Point ID;`

Example :

`ROLLBACK;`

`ROLLBACK TO SAVE POINT xyz;`

DCL

1. **DATABASE** is collection of coherent data.

To create database we have :

Syntax :

`CREATE DATABASE <database_name>`

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Example

CREATE DATABASE my-db;

## 2. TABLESPACE

The Oracle database consists of one or more logical storage units called tablespaces. Each tablespace in an Oracle database consists of one or more files called datafiles.

Syntax:

```
CREATE (tablespace name)
DATAFILE 'C:\oracle\ora10\app\oracle\product\10.2.0\
Server\file_name.dbf' SIZE 50m;
```

## 3. CREATE USER:

The DBA creates user by executing CREATE USER Statement.

Syntax:

```
SQL > CREATE USER (username) - (name of user
to be created)
```

IDENTIFIED BY (password) - (specifies that the user must login with this password)

```
SQL > user created
```

e.g. create user SYSTEM identified by PASSWORD.

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#### 4. PRIVILEGES:

A privilege is a right to execute an SQL Statement or to access another user's object.

In Oracle, there are two types of privileges

- \* System Privileges
- \* Object Privileges

##### • System Privileges:-

are those through which the user can manage the performance of database actions.

Eg. Create Session, Create Table, Create user etc..

##### • Object Privileges:-

allow access to objects of privileges on object, i.e. tables, table.

Columns, tables, views etc.. It includes alter, delete, insert, select, update etc.

#### 5. GRANT

The DBA uses the GRANT Statement to allocate System Privileges to other user.

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Syntax

GRANT Privilege [Privilege . . . . .]

TO USER;

SQL &gt; Grant Succeeded

Eg: Grant create session, create table,  
create view to James;

SQL &gt; GRANT Object-Priv [(column)]

ON Object

TO user;

SQL &gt; GRANT select, insert ON emp TO James;

SQL > GRANT select, update (e-name, e-address)  
ON emp TO James;

6. CHANGE PASSWORD

The DBA creates an account and initializes a password for every user. You can change password by using ALTER USER statement

Syntax:

ALTER USER (some user name)

IDENTIFIED BY (New Password)

Eg. ALTER USER James  
IDENTIFIED BY Sam

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### 7. REVOKE :

REVOKE statement is used to remove privileges granted to other users. The privileges you specify are revoked from the users.

Syntax:

REVOKE [privilege.....]  
ON object  
FROM user

Eg:

- REVOKE create session, create table from James;
- REVOKE select, insert

ON emp  
FROM James

### 8. ROLE:

A role is a named group of related privileges that can be granted to user. In other words, role is a predefined collection of privileges that are grouped together, thus privileges are easier to assign user.

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SQL > Create table custom;  
SQL > Grant create table, create view TO custom;  
SQL > Grant select, insert ON Emp TO custom;  
Eg: Grant custom to James, Steve;

LAB PRACTICE ASSIGNMENT :

1. create user and implement the following commands on relation (Emp and Dept)

-- create a new user

CREATE USER emp\_dept-user IDENTIFIED BY Password;

-- Grant necessary privileges to the user

GRANT CONNECT, RESOURCE TO emp\_dept-user;

GRANT CREATE SESSION TO emp\_dept-user;

GRANT CREATE TABLE TO emp\_dept-user;

GRANT CREATE VIEW TO emp\_dept-user;

GRANT CREATE SEQUENCE TO emp\_dept-user;

GRANT CREATE SYNONYM TO emp\_dept-user;

GRANT CREATE PROCEDURE TO emp\_dept-user;

-- Switched to the newly created user (optional)

ALTER SESSION SET CURRENT\_SCHEMA = emp\_dept-user;

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-- Create Emp Table

```
CREATE TABLE Emp (  
    EmpID NUMBER PRIMARY KEY,  
    EmpName VARCHAR(50),  
    Salary NUMBER,  
    DeptID NUMBER  
);
```

-- Create Dept table

```
CREATE TABLE Dept(  
    DeptID NUMBER PRIMARY KEY,  
    DeptName VARCHAR2(50)  
);
```

2. Develop a query to grant all privileges of employees table into departments table.

GRANT ALL ON Emp TO Dept.

3. Develop a query to grant some privileges of employees table into departments table.

GRANT SELECT, INSERT, UPDATE ON Emp TO Dept;

4. Develop a query to revoke all privileges of employees table from departments table.

REVOKE ALL ON Emp FROM Dept.

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5. Develop a query to revoke some Privileges of employees table from departments table.  
REVOKE INSERT, UPDATE ON Emp FROM Dept;

6. Write a query to implement the save point  
-- Start a transaction  
INSERT INTO Emp VALUES (1, 'John Doo', 50000, 10);  
SAVEPOINT SP1;  
INSERT INTO Emp VALUES (2, 'Jane Smith', 60000, 102);  
SAVEPOINT SP2;

7 Write a query to implement to roll back.  
-- Rollback to the previous savepoint  
ROLLBACK TO SP1;  
-- If you want to rollback the entire transaction  
ROLLBACK;

8. Write a query to implement the commit.  
-- Commit all changes made so far  
COMMIT;

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