Data Control Language(DCL) and Transaction Control Language(TCL)

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Data Control Language

- Data control language (DCL) is used to access the stored data.
- It is mainly used for revoke and to grant the user the required access to a database.
- It provides the administrators, to remove and set database permissions to desired users as needed.
- These commands are employed to grant, remove and deny permissions to users for retrieving and manipulating a database.

DCL Commands

- GRANT
- REVOKE

DCL Commands

GRANT Command:

- It is employed to grant a privilege to a user. GRANT command allows specified users to perform specified tasks
- **Syntax**

  GRANT privilege_name on objectname to user;

  - privilege names are SELECT,UPDATE,DELETE,INSERT
  - objectname is table name
  - user is the name of the user to whom we grant privileges

DCL Commands

Example of GRANT Command:

To grant SELECT privilege on a table named employees to a user named john and joe, you would use the following command:

```
GRANT SELECT ON employees TO john, joe
```

This allows the user john and joe to retrieve data from the employees table.

DCL Commands

Example of GRANT Command:

To grant UPDATE privilege on a table named employees for the attribute named salary to a user named john and joe, you would use the following command:

```
GRANT UPDATE(salary) ON employees TO john, joe
```

This allows the user john and joe to update salary data from the employees table.

DCL Commands

REVOKE Command:

- The REVOKE command is used to take back privileges that were previously granted.
- **Syntax**

  REVOKE privilege_name on objectname from user;

  - privilege names are SELECT,UPDATE,DELETE,INSERT
  - objectname is table name
  - user is the name of the user whose privileges are removing

DCL Commands

Example of REVOKE Command:

To revoke the SELECT privilege on the employees table from the user john, you would use the following command:

```
REVOKE SELECT ON employees FROM john, joe
```

This removes the SELECT privilege from the user john for the employees table.

Transaction Control Language

- Transaction Control language is a language that manages transactions within the database.

- It is used to execute the changes made by the DML statements.

TCL Commands

- Commit
- Rollback
- Savepoint

TCL Commands

COMMIT Command:

- The COMMIT command is used to make changes made during the current transaction permanent.
- It is used to save the transactions in the database.
- **Syntax**

    COMMIT;

TCL Commands

Example of COMMIT Command:

--Start a transaction

BEGIN TRANSACTION;

--Perform some updates

UPDATE Student SET DOB='2005-03-27' WHERE Stu_Name='Joey';

--Commit the changes

COMMIT;

Thus, this example would insert the DOB in the given table, which has the name = Joey and then COMMIT these changes in the DB.

TCL Commands

ROLLBACK Command:

- The ROLLBACK command is used to undo changes made during the current transaction.
- It is used to restore the database to that state which was last committed.
- **Syntax**

    ROLLBACK;

TCL Commands

Example of ROLLBACK Command:

--Start a transaction

BEGIN TRANSACTION;

--Perform some updates

UPDATE Student SET DOB='2005-03-27' WHERE Stu_Name='Joey';

--Rollback the changes

ROLLBACK;

Thus, this example would insert the DOB in the given table, which has the name = Joey and then COMMIT these changes in the DB.

TCL Commands

SAVEPOINT Command:

- It is used to roll back a certain transaction to a certain point rather than the entire transaction.
- The changes done till savepoint will be unchanged and all the transactions after savepoint will be rolled back.
- **Syntax**

    SAVEPOINT name_of_savepoint;

TCL Commands

Example of SAVEPOINT Command:

```
-- Start a transaction

BEGIN TRANSACTION;

-- Perform some updates

UPDATE employees SET salary = salary * 1.1 WHERE department_id = 10;

-- Set a savepoint

SAVEPOINT my_savepoint;

-- Perform more updates

UPDATE employees SET bonus = bonus + 500 WHERE department_id = 10;

-- Roll back to the savepoint

ROLLBACK TO my_savepoint;
```

THANK YOU