

Module 6 - TCL Command in SQL

What is a TCL Command in SQL?

TCL stands for **Transaction Control Language**. These commands are used to manage **transactions** in a relational database system. A **transaction** is a group of one or more SQL operations that are treated as a single unit. The goal is to ensure **data consistency** – either **all** the operations in a transaction succeed, or **none** of them do.

Key TCL Commands

1. **BEGIN TRANSACTION** (or just BEGIN)
  - Starts a new transaction.
  - Marks the point at which the database begins to track changes for possible commit or rollback.
2. **COMMIT**
  - Saves all changes made during the current transaction permanently to the database.
  - Once committed, changes cannot be rolled back.
3. **ROLLBACK**
  - Cancels all changes made during the current transaction.
  - Restores the database to the state before the transaction began.

Why Use TCL?

- Ensures **atomicity**: all-or-nothing execution
- Maintains **data integrity**
- Allows safe **multi-step operations**
- Helps recover from **errors or crashes**

Note:

Microsoft Access supports transactions, but **not through standard SQL queries** like other RDBMS systems (e.g., SQL Server, Oracle, MySQL). Instead, **TCL (Transaction Control Language)** commands in Access are handled using **VBA (Visual Basic for Applications)** with the **DAO** or **ADO** libraries.

BEGIN TRANSACTION Command in SQL

The **BEGIN TRANSACTION** command is part of **TCL (Transaction Control Language)**. It is used to **start a new transaction** in SQL. This command tells the database to **temporarily hold** the changes made by SQL statements, so they can be either committed (saved) or rolled back (undone) later.



CBSE



ICSE



NTSE



Banking &  
Insurance



Central Govt.  
Service



State Govt.  
Services



LAW  
Entrance



MBA  
Entrance



Railways & Metro  
Services

...many more

abhyasonline.in



Course  
&  
Test Series

Concepts of SQL

Purpose:

To group one or more SQL operations (like INSERT, UPDATE, DELETE) into a single logical unit that can be committed or rolled back together.

Syntax:

BEGIN TRANSACTION;

After beginning the transaction, you perform your SQL operations. Then:

- Use COMMIT to save all changes.
- Use ROLLBACK to undo all changes made after BEGIN.

Example:

BEGIN TRANSACTION;

UPDATE Accounts  
SET Balance = Balance - 100  
WHERE AccountID = 1;

UPDATE Accounts  
SET Balance = Balance + 100  
WHERE AccountID = 2;

COMMIT;

In this case:

- Both UPDATE operations are part of one transaction.
- If both succeed, COMMIT makes the changes permanent.
- If any error occurs, you can use ROLLBACK instead to cancel both.

COMMIT Command in SQL

The COMMIT command is part of TCL (Transaction Control Language) in SQL. It is used to permanently save all the changes made during the current transaction to the database.

Syntax:

COMMIT;

CBSE

ICSE

NTSE

Banking & Insurance

Central Govt. Service

State Govt. Services

LAW Entrance

MBA Entrance

Railways & Metro Services

...many more

abhyasonline.in

ROLLBACK Command in SQL

The ROLLBACK command is part of TCL (Transaction Control Language) and is used to **undo changes** made during the current transaction. If something goes wrong (like an error or failed condition), ROLLBACK reverts the database to its **previous state before the transaction began**.

Syntax:

ROLLBACK;

Example:

BEGIN TRANSACTION;

```
UPDATE Accounts  
SET Balance = Balance - 1000  
WHERE AccountID = 1;
```

-- Simulating an error (e.g., AccountID 2 does not exist)

```
UPDATE Accounts  
SET Balance = Balance + 1000  
WHERE AccountID = 99;
```

-- Error occurred, so rollback  
ROLLBACK;

In this case:

- The first update reduces the balance from Account 1.
- The second update fails (Account 99 doesn't exist).
- ROLLBACK undoes the first update, so no money is lost.

When to Use ROLLBACK:

- If you detect an error during a transaction.
- To cancel part or all of the operations in a complex process.
- To ensure data consistency and avoid partial updates.

 CBSE

 ICSE

 NTSE

 Banking & Insurance

 Central Govt. Service

 State Govt. Services

 LAW Entrance

 MBA Entrance

 Railways & Metro Services

...many more

abhyasonline.in