# Practical 8

**Name:** Shivam Tawari

**Roll Number:** A-58

**Aim:** Exercise 4: Database updates and data integrity.

**Theory:**

TCL (Transaction Control Language): TCL commands deal with the transaction within the database.
Examples of TCL commands:
COMMIT– commits a Transaction.
ROLLBACK– rollbacks a transaction in case of any error occurs.
SAVEPOINT–sets a savepoint within a transaction.
SET TRANSACTION–specify characteristics for the transaction.

**1. COMMIT** command is used to permanently save any transaction into the database.
When we use any DML command like INSERT, UPDATE or DELETE, the changes made by these commands are not permanent, until the current session is closed, the changes made by these commands can be rolled back.
To avoid that, we use the COMMIT command to mark the changes as permanent.

**2. SAVEPOINT** command is used to temporarily save a transaction so that you can rollback to that point whenever required.
Following is savepoint command's syntax,
SAVEPOINT savepoint_name;

**3. ROLLBACK** command restores the database to last commited state. It is also used with SAVEPOINT command to jump to a savepoint in an ongoing transaction.
If we have used the UPDATE command to make some changes into the database, and realise that those changes were not required, then we can use the ROLLBACK command to rollback those changes, if they were not commited using the COMMIT command.

Following is rollback command's syntax,
ROLLBACK TO savepoint_name;

**Program/Queries:**

**SQL Scripts:**

1) BEGIN;
INSERT INTO Students VALUES

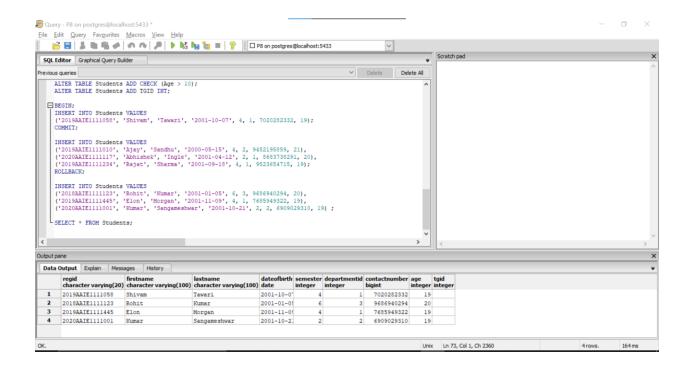('2019AAIE1111058', 'Shivam', 'Tawari', '2001-10-07', 4, 1, 7020282332, 19);
COMMIT;

INSERT INTO Students VALUES
('2019AAIE1111010', 'Ajay', 'Sandhu', '2000-05-15', 4, 2, 9452195859, 21),
('2020AAIE1111117', 'Abhishek', 'Ingle', '2001-04-12', 2, 1, 8683738291, 20),
('2019AAIE1111234', 'Rajat', 'Sharma', '2001-09-18', 4, 1, 9523654715, 19);
ROLLBACK;

INSERT INTO Students VALUES
('2018AAIE1111123', 'Rohit', 'Kumar', '2001-01-05', 6, 3, 9686940294, 20),
('2019AAIE1111445', 'Elon', 'Morgan', '2001-11-09', 4, 1, 7685949322, 19),
('2020AAIE1111001', 'Kumar', 'Sangameshwar', '2001-10-21', 2, 2, 6909029310, 19) ;

SELECT * FROM Students;



2)  BEGIN;
INSERT INTO Students VALUES
('2019AAIE1111058', 'Shivam', 'Tawari', '2001-10-07', 4, 1, 7020282332, 19);
SAVEPOINT save_1;

INSERT INTO Students VALUES
('2019AAIE1111010', 'Ajay', 'Sandhu', '2000-05-15', 4, 2, 9452195859, 21),

('2020AAIE1111117', 'Abhishek', 'Ingle', '2001-04-12', 2, 1, 8683738291, 20),
('2019AAIE1111234', 'Rajat', 'Sharma', '2001-09-18', 4, 1, 9523654715, 19);
SAVEPOINT save_2;

INSERT INTO Students VALUES
('2018AAIE1111123', 'Rohit', 'Kumar', '2001-01-05', 6, 3, 9686940294, 20),
('2019AAIE1111445', 'Elon', 'Morgan', '2001-11-09', 4, 1, 7685949322, 19),
('2020AAIE1111001', 'Kumar', 'Sangameshwar', '2001-10-21', 2, 2, 6909029310, 19) ;
ROLLBACK to SAVEPOINT save_2;



3) CREATE VIEW STUDENT_058 AS
SELECT REGID, FIRSTNAME, LASTNAME, SEMESTER
FROM Students
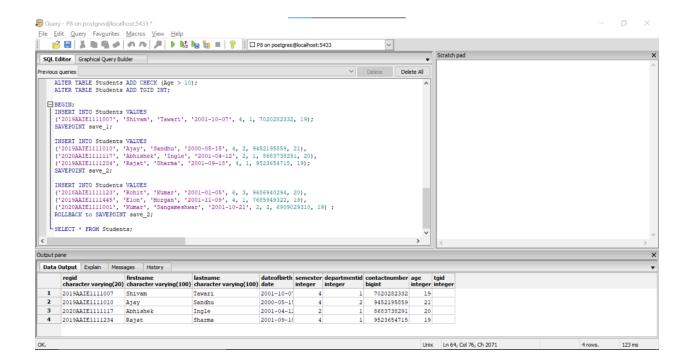WHERE REGID='2019AAIE1111058';

SELECT * FROM STUDENT_058;

```
SAVEPOINT save_1;

INSERT INTO Students VALUES
('2019AAIE1111010', 'Ajay', 'Sandhu', '2000-05-15', 4, 2, 9452195859, 21),
('2020AAIE1111117', 'Abhishek', 'Ingle', '2001-04-12', 2, 1, 8683738291, 20),
('2019AAIE1111234', 'Rajat', 'Sharma', '2001-09-18', 4, 1, 9523654715, 19);
SAVEPOINT save_2;

INSERT INTO Students VALUES
('2018AAIE1111123', 'Rohit', 'Kumar', '2001-01-05', 6, 3, 9686940294, 20),
('2019AAIE1111445', 'Elon', 'Morgan', '2001-11-09', 4, 1, 7685949322, 19),
('2020AAIE1111001', 'Kumar', 'Sangameshwar', '2001-10-21', 2, 2, 6909029310, 19) ;
ROLLBACK to SAVEPOINT save_2;

CREATE VIEW STUDENT_058 AS
SELECT REGID, FIRSTNAME, LASTNAME, SEMESTER
FROM Students
WHERE REGID='2019AAIE1111058';

SELECT * FROM STUDENT_058;
```
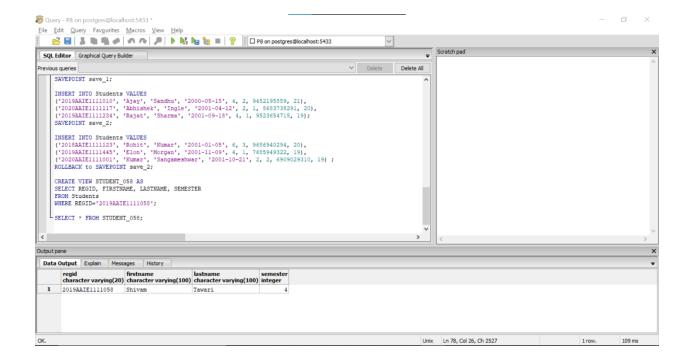
| regid character varying(20) | firstname character varying(100) | lastname character varying(100) | semester integer |
|---|---|---|---|
| 1 | 2019AAIE1111058 | Shivam | Tawari | 4 |

**Conclusion:** Hence, we have learnt and performed up-dation in database and data integrity, Transaction processing and control statement use in transaction.