Basic Transaction with COMMIT

```
[2025-12-02 10:48:56] lab.public> UPDATE accounts
                                        SET balance = balance - 100.00
                                        WHERE name = 'Alice'
[2025-12-02 10:48:56] 1 row affected in 4 ms
[2025-12-02 10:48:56] lab.public> UPDATE accounts
                                        SET balance = balance + 100.00
                                        WHERE name = 'Bob'
[2025-12-02 10:48:56] 1 row affected in 2 ms
[2025-12-02 10:48:56] lab.public> COMMIT
[2025-12-02 10:48:56] completed in 6 ms
```

Undo changes with ROLLBACK

```
[2025-12-02 10:51:14] lab.public> BEGIN
[2025-12-02 10:51:14] completed in 2 ms
[2025-12-02 10:51:14] lab.public> UPDATE accounts
                              SET balance = 500.00
                              WHERE name = 'Alice'
[2025-12-02 10:51:14] 1 row affected in 2 ms
[2025-12-02 10:51:14] lab.public> SELECT *
                              FROM accounts
                              WHERE name = 'Alice'
[2025-12-02 10:51:15] 1 row retrieved starting from 1 in 575 ms (execution: 5 ms, fetching: 570 ms)
[2025-12-02 10:51:15] lab.public> ROLLBACK
[2025-12-02 10:51:15] completed in 2 ms
[2025-12-02 10:51:15] lab.public> SELECT *
                              FROM accounts
                              WHERE name = 'Alice'
[2025-12-02 10:51:15] 1 row retrieved starting from 1 in 349 ms (execution: 7 ms, fetching: 342 ms)
```

| Output | accounts ✕ |

id	name	balance
1	Alice	900.00

Working with SAVEPOINTS

```
[2025-12-02 10:52:42] lab.public> BEGIN
[2025-12-02 10:52:42] completed in 2 ms
[2025-12-02 10:52:42] lab.public> UPDATE accounts
                                  SET balance = balance - 100.00
                                  WHERE name = 'Alice'
[2025-12-02 10:52:42] 1 row affected in 2 ms
[2025-12-02 10:52:42] lab.public> SAVEPOINT my_savepoint
[2025-12-02 10:52:42] completed in 2 ms
[2025-12-02 10:52:42] lab.public> UPDATE accounts
                                  SET balance = balance + 100.00
                                  WHERE name = 'Bob'
[2025-12-02 10:52:42] 1 row affected in 2 ms
[2025-12-02 10:52:42] lab.public> ROLLBACK TO my_savepoint
[2025-12-02 10:52:42] completed in 2 ms
[2025-12-02 10:52:42] lab.public> UPDATE accounts
                                  SET balance = balance + 100.00
                                  WHERE name = 'Wally'
[2025-12-02 10:52:42] 1 row affected in 2 ms
[2025-12-02 10:52:42] lab.public> COMMIT
[2025-12-02 10:52:42] completed in 6 ms
```

Isolation Level Demonstration

```
[2025-12-02 10:57:08] Connected to lab
[2025-12-02 10:57:08] lab.public> set search_path = "public"
[2025-12-02 10:57:08] completed in 2 ms
[2025-12-02 10:57:08] lab.public> BEGIN TRANSACTION ISOLATION LEVEL READ COMMITTED
[2025-12-02 10:57:08] completed in 2 ms
[2025-12-02 10:57:08] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:57:08] 2 rows retrieved starting from 1 in 372 ms (execution: 7 ms, fetching: 365 ms)
[2025-12-02 10:57:08] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:57:09] 2 rows retrieved starting from 1 in 330 ms (execution: 5 ms, fetching: 325 ms)
[2025-12-02 10:57:09] lab.public> COMMIT
[2025-12-02 10:57:09] completed in 2 ms
[2025-12-02 10:57:09] lab.public> BEGIN TRANSACTION ISOLATION LEVEL SERIALIZABLE
[2025-12-02 10:57:09] completed in 2 ms
[2025-12-02 10:57:09] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:57:09] 2 rows retrieved starting from 1 in 342 ms (execution: 5 ms, fetching: 337 ms)
[2025-12-02 10:57:09] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:57:09] 2 rows retrieved starting from 1 in 359 ms (execution: 5 ms, fetching: 354 ms)
[2025-12-02 10:57:09] lab.public> COMMIT
[2025-12-02 10:57:09] completed in 2 ms
```

Phantom Read Demonstration

```
[2025-12-02 10:58:35] lab.public> BEGIN TRANSACTION ISOLATION LEVEL REPEATABLE READ
[2025-12-02 10:58:35] completed in 2 ms
[2025-12-02 10:58:35] lab.public> SELECT MAX(price), MIN(price) FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:58:35] 1 row retrieved starting from 1 in 363 ms (execution: 5 ms, fetching: 358 ms)
[2025-12-02 10:58:35] lab.public> SELECT MAX(price), MIN(price) FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:58:36] 1 row retrieved starting from 1 in 311 ms (execution: 5 ms, fetching: 306 ms)
[2025-12-02 10:58:36] lab.public> COMMIT
[2025-12-02 10:58:36] completed in 1 ms
```

Dirty Read Demonstration

```
[2025-12-02 10:59:23] lab.public> BEGIN TRANSACTION ISOLATION LEVEL READ UNCOMMITTED
[2025-12-02 10:59:23] completed in 2 ms
[2025-12-02 10:59:23] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:59:24] 2 rows retrieved starting from 1 in 371 ms (execution: 4 ms, fetching: 367 ms)
[2025-12-02 10:59:24] lab.public> SELECT * FROM products WHERE shop = 'Joe''s Shop'
[2025-12-02 10:59:24] 2 rows retrieved starting from 1 in 345 ms (execution: 5 ms, fetching: 340 ms)
[2025-12-02 10:59:24] lab.public> COMMIT
[2025-12-02 10:59:24] completed in 1 ms
```

Conditional Transfer

```
[2025-12-02 11:00:40] lab.public> BEGIN
[2025-12-02 11:00:40] completed in 2 ms
[2025-12-02 11:00:40] lab.public> DO $$
                                  DECLARE
                                      current_bal DECIMAL;
                                  BEGIN
                                      SELECT balance INTO current_bal FROM accounts WHERE name = 'Bob';
                                      IF current_bal >= 200 THEN
                                          UPDATE accounts SET balance = balance - 200 WHERE name = 'Bob';
                                          UPDATE accounts SET balance = balance + 200 WHERE name = 'Wally';
                                      ELSE
                                          RAISE NOTICE 'Insufficient funds for Bob';
                                      END IF;
                                  END $$
[2025-12-02 11:00:40] completed in 8 ms
[2025-12-02 11:00:40] lab.public> COMMIT
[2025-12-02 11:00:40] completed in 6 ms
```