

SQL Server Examples Using SAVEPOINT and ROLLBACK

1. Multiple Inserts with Savepoint

```
BEGIN TRANSACTION;

INSERT INTO Customers (CustomerID, Name, Balance)
VALUES (201, 'Ali', 100.00);

SAVE TRANSACTION SaveAfterCustomer;

INSERT INTO Orders (OrderID, CustomerID, ProductID, Quantity, TotalPrice, OrderDate)
VALUES (301, 201, 1, 2, 50.00, GETDATE());

-- Simulate error (e.g., wrong ProductID)
-- INSERT INTO Products (ProductID) VALUES ('Invalid'); -- Uncomment to simulate

-- ROLLBACK to savepoint
-- ROLLBACK TRANSACTION SaveAfterCustomer;

COMMIT;
```

2. Partial Rollback on Error

```
BEGIN TRANSACTION;

UPDATE Products SET Price = 9.99 WHERE ProductID = 1;
SAVE TRANSACTION SaveAfterPriceUpdate;

UPDATE Products SET Stock = Stock - 1000 WHERE ProductID = 1;

IF (SELECT Stock FROM Products WHERE ProductID = 1) < 0
BEGIN
    ROLLBACK TRANSACTION SaveAfterPriceUpdate;
    PRINT 'Rollback to before stock update.';
END

COMMIT;
```

3. Inserting Multiple Rows Safely

```
BEGIN TRANSACTION;

INSERT INTO Customers (CustomerID, Name, Balance)
VALUES (202, 'Sara', 150.00);

SAVE TRANSACTION AfterSara;

INSERT INTO Customers (CustomerID, Name, Balance)
```

```
VALUES (202, 'Sara Duplicate', 180.00); -- Will fail due to duplicate key

-- This will throw error, so rollback to savepoint
ROLLBACK TRANSACTION AfterSara;

COMMIT;
```

4. Using Savepoint in Loops

```
BEGIN TRANSACTION;

DECLARE @i INT = 1;

WHILE @i <= 3
BEGIN
    SAVE TRANSACTION SaveLoop;

    BEGIN TRY
        INSERT INTO Customers (CustomerID, Name, Balance)
        VALUES (300 + @i, CONCAT('Test', @i), 100.00);
    END TRY
    BEGIN CATCH
        PRINT 'Error on iteration ' + CAST(@i AS VARCHAR);
        ROLLBACK TRANSACTION SaveLoop;
    END CATCH

    SET @i = @i + 1;
END

COMMIT;
```

5. Rollback Before Final Commit

```
BEGIN TRANSACTION;

INSERT INTO Products (ProductID, Name, Price, Stock)
VALUES (10, 'Pen', 1.50, 100);

SAVE TRANSACTION AfterInsert;

-- Simulate logic that changes mind
ROLLBACK TRANSACTION AfterInsert;

-- Nothing left to commit
COMMIT;
```