# Lab Answer Key: Module 18: Implementing Transactions

# Lab: Implementing Transactions

## Exercise 1: Controlling Transactions with BEGIN, COMMIT, and ROLLBACK

### Task 1: Prepare the Lab Environment

1. Ensure that the **20761C-MIA-DC** and **20761C-MIA-SQL** virtual machines are both running, and then log on to **20761C-MIA-SQL** as **ADVENTUREWORKS\Student** with the password **Pa55w.rd**.
2. In the **D:\Labfiles\Lab18\Starter** folder, right-click **Setup.cmd** and then click **Run as administrator**.
3. In the **User Account Control** dialog box, click **Yes**, and then wait for the script to finish then press any key to continue.

### Task 2: Commit a Transaction

1. Start SQL Server Management Studio and connect to the **MIA-SQL** database engine using Windows authentication.
2. On the **File** menu, click **Open** and click **Project/Solution**.
3. In the **Open Project** window, open the project **D:\Labfiles\Lab18\Starter\Project\Project.ssmssln**.
4. In Solution Explorer, in the **Queries** folder, double-click the query **51 - Lab Exercise 1.sql**.
5. In the query window, highlight the statement **USE TSQL;** and click **Execute**.
6. Modify the T-SQL code under the **Task 1** description by adding the BEGIN TRAN and COMMIT TRAN statements. Your T-SQL code should look like this:

```
BEGIN TRAN;
INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Johnson', N'Test 1', N'Sales Manager', N'Mr.', '19700101', '20110101', N'Some
Address 18', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386) 113322', 2);

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Robertson', N'Test 2', N'Sales Representative', N'Mr.', '19850101',
'20110601', N'Some Address 22', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386)
553344', 10);

COMMIT TRAN;
```

7. Highlight the written T-SQL code and click **Execute**.

8. In the query pane, type the following query after the previous T-SQL code:

```
SELECT empid, lastname, firstname
FROM HR.Employees
ORDER BY empid DESC;
```

9. Highlight the written query and click **Execute**.



**Task 3: Delete the Previously Inserted Rows from the HR.Employees Table**

1. Highlight the following T-SQL code under the **Task 2** description:

```
DELETE HR.Employees
WHERE empid IN (10, 11);
DBCC CHECKIDENT ('HR.Employees', RESEED, 9);
```

2. Click **Execute**.



**Task 4: Open a Transaction and Use the ROLLBACK Statement**

1. Modify the T-SQL code under the **Task 3** description by adding the BEGIN TRAN statement. Your T-SQL code should look like this:



```
BEGIN TRAN;

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Johnson', N'Test 1', N'Sales Manager', N'Mr.', '19700101', '20110101', N'Some
Address 18', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386) 113322', 2);

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Robertson', N'Test 2', N'Sales Representative', N'Mr.', '19850101',
'20110601', N'Some Address 22', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386)
553344', 10);
```

2. Highlight the written T-SQL code and click **Execute**.
3. In the query pane, type the following query after the previous T-SQL code:

```
SELECT empid, lastname, firstname
FROM HR.Employees
ORDER BY empid DESC;
```

4. Highlight the written query and click **Execute**.
5. In the query pane, type the following statement after the SELECT statement:

```
ROLLBACK TRAN;
```

6. Highlight the written statement and click **Execute**.
7. Again, highlight the SELECT statement shown in **Step 3** and click **Execute**.

#### Task 5: Clear the Modifications Against the HR.Employees Table

1. Highlight the following T-SQL code after the **Task 4** description:

```
DBCC CHECKIDENT ('HR.Employees', RESEED, 9);
```

2. Click **Execute**.

**Result**: After this exercise, you should be able to control a transaction using the BEGIN TRAN, COMMIT, and ROLLBACK statements.

## Exercise 2: Adding Error Handling to a CATCH Block

#### Task 1: Observe the Provided T-SQL Code

1. In Solution Explorer, double-click the **query 61 - Lab Exercise 2.sql**.
2. In the query window, highlight the statement **USE TSQL;** and click **Execute**.
3. Highlight only the following SELECT statement under the **Task 1** description:

```
SELECT empid, lastname, firstname
FROM HR.Employees
ORDER BY empid DESC;
```

4. Click **Execute**.

5. In the provided T-SQL code, highlight the code between the BEGIN TRAN and COMMIT TRAN statements. Your highlighted T-SQL code should look like this:

```
BEGIN TRAN;

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Johnson', N'Test 1', N'Sales Manager', N'Mr.', '19700101', '20110101', N'Some
Address 18', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386) 113322', 2);

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Robertson', N'Test 2', N'Sales Representative', N'Mr.', '19850101',
'20110601', N'Some Address 22', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386)
553344', 10);

COMMIT TRAN;
```

6. Click **Execute**. Notice there is a conversion error in the second INSERT statement.

7. Again, highlight the SELECT statement shown in **Step 3** and click **Execute**.

### Task 2: Delete the Previously Inserted Row in the HR.Employees Table

1. Highlight the following T-SQL code under the **Task 2** description:

```
DELETE HR.Employees
WHERE empid IN (10, 11);
DBCC CHECKIDENT ('HR.Employees', RESEED, 9);
```

2. Click **Execute**.

### Task 3: Abort Both INSERT Statements If an Error Occurs

1. Modify the T-SQL code under the **Task 3** description to look like this:

```
BEGIN TRY

BEGIN TRAN;

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Johnson', N'Test 1', N'Sales Manager', N'Mr.', '19700101', '20110101', N'Some
Address 18', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386) 113322', 2);

INSERT INTO HR.Employees (lastname, firstname, title, titleofcourtesy, birthdate,
hiredate, address, city, region, postalcode, country, phone, mgrid)
VALUES (N'Robertson', N'Test 2', N'Sales Representative', N'Mr.', '19850101',
'10110601', N'Some Address 22', N'Ljubljana', NULL, N'1000', N'Slovenia', N'(386)
553344', 10);

PRINT 'Commit the transaction...';
COMMIT TRAN;

END TRY
BEGIN CATCH

IF @@TRANCOUNT > 0
BEGIN
PRINT 'Rollback the transaction...';
ROLLBACK TRAN;
END

END CATCH;
```

2. Highlight the modified T-SQL code and click **Execute**.
3. In the query pane, type the following query after the modified T-SQL code:

```
SELECT empid, lastname, firstname
FROM HR.Employees ORDER BY empid DESC;
```

4. Highlight the written query and click **Execute**.

### Task 4: Clear the Modifications Against the HR.Employees Table

1. Highlight the following T-SQL code under the **Task 4** description:

```
DBCC CHECKIDENT ('HR.Employees', RESEED, 9);
```

2. Click **Execute**.

**Result**: After this exercise, you should have a basic understanding of how to control a transaction inside a TRY/CATCH block to efficiently handle possible errors.