Lab Answer Key: Module 2: Introduction to T-SQL Querying

Lab: Introduction to T-SQL Querying

Exercise 1: Executing Basic SELECT Statements

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\Lab02\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.
4. Press any key to close the command window.

Task 2: Execute the T-SQL Script

1. On the taskbar, click **Microsoft SQL Server Management Studio**.
2. In the **Connect to Server** dialog box, in the **Server name** box, type **MIA-SQL**, ensure Windows Authentication is selected, and then click **Connect**.
3. On the **File** menu, point to **Open**, and then click **Project/Solution**.
4. In the **Open Project** dialog box, browse to the **D:\Labfiles\Lab02\Starter\Project** folder, and then double-click **Project.ssmssln**.
5. In Solution Explorer, expand **Queries**, and then double-click **51 - Lab Exercise 1.sql**.
6. When the query window opens, click **Execute**. You will notice that the TSQL database is selected in the Available Databases box. The Available Databases box displays the current database context under which the T-SQL script will run. This information is also visible on the status bar.

Task 3: Execute a Part of the T-SQL Script

1. Highlight the following text under the **Task 2** description:

```
SELECT firstname
       ,lastname
       ,city
```

```
        ,country
FROM HR.Employees;
```

> **Note:** To highlight it, move the pointer over the statement while pressing the left mouse button or use the arrow keys to move the pointer while pressing the Shift key.

2. Click **Execute**. It is very important to understand that you can highlight a specific part of the code inside the T-SQL script, and execute only that part. If you click **Execute** without selecting any part of the code, the whole T-SQL script will be executed. If you highlight a specific part of the code by mistake, the SQL Server will attempt to run only that part.
3. On the **File** menu, click **Close**.
4. Close SQL Server Management Studio, without saving any changes.

Result: After this exercise, you should know how to open the T-SQL script and execute the whole script or just a specific statement inside it.

Exercise 2: Executing Queries That Filter Data Using Predicates

Task 1: Execute the T-SQL Script

1. On the taskbar, click **Microsoft SQL Server Management Studio**.
2. In the **Connect to Server** dialog box, in the **Server name** box, type **MIA-SQL**, and then click **Options**.
3. On the **Connection Properties** tab, in the **Connect to database** list, ensure **<default>** is selected, and then click **Connect**.
4. On the **File** menu, point to **Open**, and then click **Project/Solution**.
5. In the **Open Project** dialog box, browse to the **D:\Labfiles\Lab02\Starter\Project** folder, and then double-click **Project.ssmssln**.
6. In Solution Explorer, expand **Queries**, and then double-click **61 - Lab Exercise 2.sql**.
7. In the query pane, click **Execute**.
8. Notice that you get the error message:

```
Msg 208, Level 16, State 1, Line 18
Invalid object name 'HR.Employees'.
```

Why do you think this happened? This error is very common when you are beginning to learn T-SQL.

The message tells you that SQL Server could not find the object **HR.Employees**. This is because the current database context is set to the **master** database (look at the Available Databases box where the current database is displayed), but the IT department supplied T-SQL scripts to be run against the **TSQL** database. So you need to change the database context from master to TSQL. You will learn how to change the database context in the next task.

Task 2: Change the Database Context with the GUI

1. In the **Available Databases** list, click **TSQL** to change the database context.
2. Click **Execute**.
3. Notice that the result from the **SELECT** statement returns fewer rows than the one in exercise 1. That is because it has a predicate in the **WHERE** clause to filter out all rows that do not have the value **USA** in the country column. Only rows for which the logical expression evaluates to **TRUE** are returned by the **WHERE** phase to the subsequent logical query processing phase.

Task 3: Change the Database Context with T-SQL

1. In the script **61 - Lab Exercise 2.sql**, find the lines:

```
--USE TSQL;
--Go
```

2. Delete the first two characters, so that the line looks like this:

```
USE TSQL;
GO
```

3. By deleting these two characters, you have removed the comment mark. Now the line will not be ignored by SQL Server.
4. On the **File** menu, click **Save 61 - Lab Exercise 2.sql**.
5. In the **Save File As** dialog box, click **Save**.
6. In the **Confirm Save As** dialog box, click **Yes**.
7. On the **File** menu, click **Close**. This will close the T-SQL script.
8. In Solution Explorer, double-click **61 - Lab Exercise 2.sql**.
9. Click **Execute**.

10. Observe the results. Why did the script execute with no errors? The script now includes the uncommented *USE TSQL;* statement. When you execute the whole T-SQL script, the USE statement sets the database context to the **TSQL** database. The next statement in the T-SQL script, the **SELECT**, then executes against the **TSQL** database.

11. On the **File** menu, click **Close**.

Result: After this exercise, you should have a basic understanding of database context and how to change it.

Exercise 3: Executing Queries That Sort Data Using ORDER BY

Task 1: Execute the Initial T-SQL Script

1. In Solution Explorer, double-click **71 - Lab Exercise 3.sql**.

2. Click **Execute**.

3. Notice that the result window is empty. All the statements inside the T-SQL script are commented out, so SQL Server ignores them.

Task 2: Uncomment the Needed T-SQL Statements and Execute Them

1. Locate the line:

```
--USE TSQL;
```

2. Delete the two characters before the USE statement. The line should now look like this:

```
USE TSQL;
```

3. Locate the block comment start element **/*** after the **Task 1** description and delete it.

4. Locate the block comment end element ***/** and delete it. Any text residing within a block starting with **/*** and ending with ***/** is treated as a block comment and is ignored by SQL Server.

5. Highlight the statement:

```
USE TSQL;
```

6. Click **Execute**. The database context is now set to the **TSQL** database.

7. Highlight the statement:

```
SELECT
firstname, lastname, city, country
FROM HR.Employees
WHERE country = 'USA'
ORDER BY lastname;
```

8. Click **Execute**.

9. Observe the result and notice that the rows are sorted by the lastname column in ascending order.

Result: After this exercise, you should have an understanding of how comments can be specified inside T-SQL scripts. You will also have an appreciation of how to order the results of a query.