Trainer Preparation Guide for Course 20761B: Querying Data with Transact-SQL

Design of the Course

The purpose of this course is to provide students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server.

The course focuses on the core querying tasks that a database developer must perform. As well as querying, filtering, and updating data, this course also includes error handling, transactions, and techniques for improving query performance.

The course has been written in such a way as those students only wishing to understand T-SQL as it's required for the remainder of the SQL curriculum only need attend days 1 thru 3. Days 4 and 5 teach additional skills required for exam 70-761.

Module 1

Module 1 provides an overview of SQL Server. It describes the components, editions, and versions of SQL Server 2016, SQL Server services and configuration options, and service accounts.

Module 2

Module 2 Introduces Transact-SQL and compares it to other languages.

Module 3

In Module 3, students learn how to write basic SELECT queries.

Module 4

In Module 4, students learn how to query multiple tables and return the results in a single dataset.

Module 5

Module 5 discusses how to sort the data and how to filter the query results to find the specific records that are of interest.

Module 6

Module 6 discusses SQL Server data types and how to convert one data type to another.

Module 7

Module 7 describes how to use T-SQL to insert, update, and delete data.

Module 8

Module 8 discusses the use of built-in functions to work with the results of a data set.

Module 9

In Module 9, students learn how to group records and then provide aggregate summaries for these groupings.

Module 10

Module 10 discusses the ability to create a query within a query and includes correlated subqueries.

Module 11

Module 10 introduces table expressions.

Module 12

In Module 12, students will learn how to use the set operators UNION, INTERSECT, and EXCEPT to compare rows between two input sets.

Module 13

Describe the benefits to using window functions. Restrict window functions to rows defined in an OVER clause, including partitions and frames. Write queries that use window functions to operate on a window of rows and return ranking, aggregation, and offset comparison results.

Module 14

Write queries that pivot and unpivot result sets. Write queries that specify multiple groupings with grouping sets.

Module 15

Return results by executing stored procedures. Pass parameters to procedures. Create simple stored procedures that encapsulate a SELECT statement. Construct and execute dynamic SQL with EXEC and sp_executesql.

Module 16

Enhance your T-SQL code with programming elements.

Required Materials to Teach This Course

To teach this course, you need the following materials:

- Course Handbook

- Course Companion Content on the ***http://www.microsoft.com/learning/companionmoc/*** site

- Microsoft PowerPoint® files

- OneNote Trainer Pack (OTP) on [MCT Download Center](#)

- Microsoft Virtual Server Classroom Setup Guide

- Course virtual machines

> ⚠ **Important** It is recommended that you use PowerPoint 2003 or later to display the slides for this course. If you use PowerPoint Viewer or an earlier version of PowerPoint, all the features of the slides might not display correctly.

Prerequisite Knowledge to Teach This Course

To present this course, you must have the following knowledge and skills:

- At least 12 months experience designing and implementing database solutions.

- Practical experience of the SQL Server database engine.

Preparation Tasks

Complete the following tasks to prepare for this course.

Courses or Workshops

It is highly recommended that you audit the following courses or workshops:

- 20761B: Querying Data with Transact-SQL

- 20762B: Developing SQL Databases

Exams

To identify your technical proficiency with the content of this course, it is highly recommended that you pass the exams necessary to achieve the following certification:

- Microsoft Certified Solutions Expert: Data Platform

Technical Preparation Activities

It is highly recommended that you complete the following technical preparation activities:

- Read the additional readings and references that are included in the Course Companion Content on the http://www.microsoft.com/learning/companionmoc site.

- Use the OneNote Trainer Pack (OTP) on MCT Download Center to prepare for delivering the course.

  - The OneNote Trainer Packs include the following content for each course on each page in the OTP (and in this order):

    - Slides

    - Instructor Notes

    - Student Handbook Content

  - Also included for each module are the Lab Answer Keys (LAKs).

- Practice setting up the classroom by following the instructions in the Microsoft® Hyper-V™ Classroom Setup Guide.

- Review the learning product error log, which is available on the MCT Download Center.

- Practice using the Microsoft product(s) and tools that are associated with this learning product:

  - SQL Server 2016

- Review the Microsoft product error log, which is available in the Microsoft Download Center.

Instructional Preparation Activities

- Read the About This Course at the beginning of the Course handbook for the learning product.

- Walk through the Introduction slide deck for the learning product.

- Walk through each module presentation slide deck and read the corresponding Instructor Notes (located in the notes view of the presentation slide deck) for the module. Note that additional hidden slides are used in each slide deck to accommodate the amount of Instructor Notes information for a given topic.

- Familiarize yourself with the Course Handbook and the Course Companion Content on the **http://www.microsoft.com/learning/companionmoc** site. Make note of when to direct students' attention to the Course Companion Content for further learning support. More information pertaining to the course components is present in the Introduction slide deck.

- Practice presenting each module:

- Identify the key points and must-know information for each topic.

- Perform each demonstration and hands-on lab.

- Anticipate the questions that students might have.

- Identify examples, analogies, impromptu demonstrations, and additional delivery tips that will help to clarify module content and provide a more meaningful learning experience for your specific audience.

- Note any problems that you might encounter during a demonstration or a lab exercise, and determine a course of action for how you will resolve the problems in the classroom. To access the lab answer keys, refer to the appendix in the Course Handbook.

- Work through the Module Review and Takeaways section at the end of each module and determine how you will use this section to reinforce student learning and promote knowledge transfer to on-the-job performance.

- Customize and enhance your instructor notes.

- Consult the MCT newsgroup for additional tips and strategies--posted by your fellow MCTs--for teaching the learning product.

- Review the updated information about the Microsoft Certification Program on the Microsoft Learning Certifications website.

Instructor Computer Setup

Set up the instructor computer by following the setup instructions in the "Microsoft Virtual Server Classroom Setup Guide" document. This document provides hardware requirements for the instructor computer in addition to detailed setup instructions. For best results, place the virtual hard disk files on a solid state disk other than the main system disk on the host. Additionally, assign as much memory to the virtual machines as possible and increase the number of virtual processors to match the number of cores in the host system.

Note that there are a lot of services installed on the main MIA-SQL virtual machine, and occasionally some services may fail to start in a timely fashion. Each demo and lab includes a setup script that restarts SQL Server services.

If you experience unexpected errors, use the **Services** app in Administrative Tools to ensure that all services that are configured to start automatically are running.

This course requires Internet connectivity from the virtual machines.

Note: The virtual machines for this course are un-activated with a grace period of 10 days. After this grace period, the virtual machines may shut down after 30 minutes of inactivity. It is particularly likely that the

MIA-DC domain controller will shut down unnoticed by students, which may lead to unexpected errors during labs. If you are teaching the course with virtual machines that have been started more than 10 days previously, consider reverting all virtual machines to the snapshot that was created after the virtual machines were imported into the Hyper-V host, started, and rearmed during classroom setup. This will reset the grace period.

Course Timing

The following schedule is an estimate of the course timing. Your timing might vary. Every student might not finish every lab. Use your judgment to set a reasonable time to move on to the next module.

Day 1

Start	End	Module
9:00	9:30	Introduction
9:30	10:00	Module 1
10:00	10:30	Lab 1
10:30	10:45	Break
10:45	11:30	Module 2
11:30	12:00	Lab 2
12:00	13:00	Lunch
13:00	13:45	Module 3
13:45	14:15	Lab 3
14:20	14:35	Break
14:35	15:35	Module 4
15:35	16:35	Lab 4

Day 2

Start	End	Module
9:00	9:30	Day 1 review
9:30	10:30	Module 5
10:30	10:45	Break
10:30	11:30	Lab 5
11:30	12:15	Module 6
12:15	13:15	Lunch
13:15	14:15	Lab 6
14:15	15:00	Module 7
15:00	15:15	Break
15:15	16:15	Lab 7
16:15	17:15	Module 8

Day 3

Start	End	Module
9:00	9:30	Day 2 review
9:30	10:15	Lab 8
10:15	11:00	Break
11:00	12:30	Module 9
12:30	13:30	Lunch
13:30	14:30	Lab 9
14:30	15:30	Module 10
15:30	15:45	Break
15:45	16:30	Lab 10
16:30	17:00	Review and close

Day 4

Start	End	Module
9:00	9:30	Day 3 review
9:30	10:15	Module 11
10:15	10:45	Break
10:45	11:30	Lab 11
11:30	13:00	Module 12
13:00	13:30	Lunch
13:30	14:30	Lab 12
14:30	15:30	Module 13
15:30	15:45	Break
15:45	17:00	Lab 13
17:00	17:30	Review and close

Day 5

Start	End	Module
9:00	9:30	Day 4 review
9:30	10:30	Module 14
10:15	10:45	Break
10:45	12:00	Lab 14
12:00	13:30	Module 15
13:30	14:20	Lunch
14:20	15:00	Lab 15
15:00	16:45	Module 16
16:45	17:15	Lab 16
17:15	17:45	Review and close