MOC2778 Writing Queries Using Microsoft SQL Server 2008 Transact-SQL

Course Summary

Description

This course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server 2008.

Objectives

At the end of this course, students will be able to:

- Describe the uses of and ways to execute the Transact-SQL language.
- Use querying tool.
- Write SELECT queries to retrieve data.
- Group and summarize data by using Transact-SQL.
- Join data from multiple tables.
- Write queries that retrieve and modify data by using subqueries.
- Modify data in tables.
- Query text fields with full-text search.
- Describe how to create programming objects.
- Use various techniques when working with complex queries.

Topics

- Getting Started with Databases and Transact-SQL in SQL Server 2008
- Querying and Filtering Data
- Grouping and Summarizing Data
- Joining Data from Multiple Tables
- Working with Subqueries
- Modifying Data in Tables
- Querying Metadata, XML, and Full-Text Indexes
- Using Programming Objects for Data Retrieval
- Using Advanced Querying Techniques

Audience

This course is intended for SQL Server database administrators, implementers, system engineers, and developers who are responsible for writing queries.

Prerequisites

Before attending this course, students must have:

- Knowledge of data integrity concepts.
- Core Windows Server skills.
- Relational database design skills.
- Programming skills.

Duration

Three days

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Course Outline

I. Getting Started with Databases and Transact-SQL in SQL Server 2008

The student will be introduced to how client/server architecture works, and examine the various database and business tasks that can be performed by using the components of SQL Server 2008. The student will also be introduced to SQL Server database concepts such as relational databases, normalization, and database objects. In addition, the student will learn how to use T-SQL to query databases and generate reports.

A. Overview of SQL Server 2008
B. Overview of SQL Server Databases
C. Overview and Syntax Elements of T-SQL
D. Working with T-SQL Scripts
E. Using T-SQL Querying Tools

Lab: Using SQL Server Management Studio and SQLCMD

- Exploring the Components and Executing Queries in SQL Server Management Studio
- Starting and Using SQLCMD
- Generating a Report from a SQL Server Database Using Microsoft Office Excel

After completing this module, students will be able to:

- Describe the architecture and components of SQL Server 2008.
- Describe the structure of a SQL Server database.
- Explain the basics of the SQL language.
- Describe the syntax elements of T-SQL.
- Explain how to manage T-SQL scripts.
- Use T-SQL querying tools to query SQL Server 2008 databases.

II. Querying and Filtering Data

The students will be introduced to the basic Transact-SQL (T-SQL) statements that are used for writing queries, filtering data, and formatting result sets.

A. Using the SELECT Statement
B. Filtering Data
C. Working with NULL Values
D. Formatting Result Sets
E. Performance Considerations for Writing Queries

Lab: Querying and Filtering Data

- Retrieving Data by Using the SELECT Statement
- Filtering Data by Using Different Search Conditions
- Using Functions to Work with NULL Values
- Formatting Result Sets

After completing this module, students will be able to:

- Retrieve data by using the SELECT statement.
- Filter data by using different search conditions.
- Explain how to work with NULL values.
- Format result sets.
- Describe the performance considerations that affect data retrieval.

III. Grouping and Summarizing Data

The students will learn to group and summarize data when generating reports in Microsoft SQL Server 2008 by using aggregate functions and the COMPUTE clause.

A. Summarizing Data by Using Aggregate Functions
B. Summarizing Grouped Data
C. Ranking Grouped Data
D. Creating Crosstab Queries

Lab: Grouping and Summarizing Data

- Summarizing Data by Using Aggregate Functions
- Summarizing Grouped Data
- Ranking Grouped Data
- Creating Crosstab Queries

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Course Outline (cont'd)

After completing this module, students will be able to:

- Summarize data by using aggregate functions.
- Summarize grouped data by using the GROUP BY and COMPUTE clauses.
- Rank grouped data.
- Create cross-tabulation queries by using the PIVOT and UNPIVOT clauses.

IV. Joining Data from Multiple Tables

The students will learn to write joins to query multiple tables, as well as limiting and combining result sets.

A. Querying Multiple Tables by Using Joins
B. Applying Joins for Typical Reporting Needs
C. Combining and Limiting Result Set

Lab: Joining Data from Multiple Tables

- Querying Multiple Tables by Using Joins
- Applying Joins for Typical Reporting Needs
- Combining and Limiting Result Sets

After completing this module, students will be able to:

- Query multiple tables by using joins.
- Apply joins for typical reporting needs.
- Combine and limit result sets.

V. Working with Subqueries

The students will be introduced to basic and correlated subqueries and how these compare with joins and temporary tables. The students will also be introduced to using common table expressions in queries.

A. Writing Basic Subqueries
B. Writing Correlated Subqueries
C. Comparing Subqueries with Joins and Temporary Tables
D. Using Common Table Expressions

Lab: Working with Subqueries

- Writing Basic Subqueries
- Writing Correlated Subqueries
- Comparing Subqueries with Joins and Temporary Tables
- Using Common Table Expressions

After completing this module, students will be able to:

- Write basic subqueries.
- Write correlated subqueries.
- Compare subqueries with joins and temporary tables.
- Use common table expressions in queries.

VI. Modifying Data in Tables

The students will be able to modify the data in tables by using the INSERT, DELETE, and UPDATE statements. In addition, students will examine how transactions work in a database, the importance of transaction isolation levels, and how to manage transactions.

A. Inserting Data into Tables
B. Deleting Data from Tables
C. Updating Data in Tables
D. Overview of Transactions

Lab: Modifying Data in Tables

- Inserting Data into Tables
- Deleting Data from Tables
- Updating Data in Tables
- Working with Transactions

After completing this module, students will be able to:

- Insert data into tables.
- Delete data from tables.
- Update data in tables.
- Describe transactions.

VII. Querying Metadata, XML, and Full-Text Indexes

The students will learn to query semi-structured and unstructured data. The students will also learn how SQL Server 2008 handles XML data and will query XML data. The students will also be introduced to full-text indexing in SQL Server 2008.

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Course Outline (cont'd)

A. Querying Metadata
B. Overview of XML
C. Querying XML Data
D. Overview of Full-Text Indexes
E. Querying Full-Text Indexes

Lab: Querying Metadata, XML, and Full-Text Indexes

- Querying Metadata
- Querying XML Data
- Creating and Querying Full-Text Indexes

After completing this module, students will be able to:

- Query metadata.
- Describe the functionality of XML.
- Query XML data.
- Describe the functionality of full-text indexes.
- Query full-text indexes.

VIII.Using Programming Objects for Data Retrieval

The students will be introduced to user-defined functions and executing various kinds of queries by using user-defined functions. The students will be introduced to SQL Server views that encapsulate data and present users with limited and relevant information. In addition, the students will be introduced to SQL Server stored procedures and the functionalities of the various programming objects. The students will learn how to perform distributed queries and how SQL Server works with heterogeneous data such as databases, spreadsheets, and other servers.

A. Overview of Views
B. Overview of User-Defined Functions
C. Overview of Stored Procedures
D. Overview of Triggers
E. Writing Distributed Queries

Lab: Using Programming Objects for Data Retrieval

- Creating Views
- Creating User-Defined Functions
- Creating Stored Procedures
- Writing Distributed Queries

After completing this module, students will be able to:

- Encapsulate queries by using views.
- Encapsulate expressions by using user-defined functions.
- Explain how stored procedures encapsulate T-SQL logic.
- Define triggers, types of triggers, create a trigger.
- Write distributed queries.

IX. Using Advanced Querying Techniques

The students will be introduced to best practices for querying complex data. The students will also examine how to query complex table structures such as data stored in hierarchies and self-referencing tables. The students will analyze the recommended guidelines for executing queries and how to optimize query performance.

A. Considerations for Querying Data
B. Working with Data Types
C. Cursors and Set-Based Queries
D. Dynamic SQL
E. Maintaining Query Files

Lab: Using Advanced Querying Techniques

- Using Execution Plans
- Converting Data Types
- Implementing a Hierarchy
- Using Cursors and Set-Based Queries

After completing this module, students will be able to:

- Explain the recommendations for querying complex data.
- Query complex table structures.
- Write efficient queries.
- Use various techniques when working with complex queries.
- Maintain query files.

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