

# 2778 – Writing Queries Using Microsoft SQL Server 2008 Transact – SQL

**Vendor Course Code:** 2771

**Course Length:** 3 days

**Overview:** This 3-day instructor led course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server 2008. This course is also appropriate for those wishing to study queries using SQL 2005

**Skills Gained:** After completing this course, students will be able to:

- Describe the uses of and ways to execute the Transact-SQL language.
- Use querying tools.
- Write SELECT queries to retrieve data.
- Group and summarise 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.

**Key Topics:** **Module 1: 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, normalisation, and database objects. In addition, the student will learn how to use T-SQL to query databases and generate reports.

**Lessons**

Lesson 1: Overview of SQL Server 2008  
Lesson 2: Overview of SQL Server Databases  
Lesson 3: Overview of the SQL Language  
Lesson 4: Syntax Elements of T-SQL  
Lesson 5: Working with T-SQL Scripts  
Lesson 6: Using T-SQL Querying Tools

**Lab: Getting Started with Databases and Transact-SQL in SQL Server 2008**

Exercise 1: (Level 200) Exploring SQL Server Management Studio  
Exercise 2: (Level 200) Executing Queries in SQL Server Management Studio  
Exercise 3: (Level 200) Examining a Database Diagram in SQL Server Management Studio  
Exercise 4: (Level 200) Using Excel to Generate a Report from a SQL Server Database

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.

**Module 2: 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.

**Lessons**

Lesson 1: Using the SELECT Statement

Lesson 2: Filtering Data  
Lesson 3: Working with NULL Values  
Lesson 4: Formatting Result Sets  
Lesson 5: Performance Considerations for Writing Queries

Lab: Querying and Filtering Data  
Exercise 1 (Level 200): Retrieving Data by Using the SELECT Statement  
Exercise 2 (Level 200): Filtering Data by Using Search Conditions  
Exercise 3: (Level 200) Using Functions to Work with NULL Values  
Exercise 4: (Level 200) Formatting Result Sets  
Exercise 5: (Level 200) Rewriting Queries for Performance

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.

### **Module 3: Grouping and Summarising Data**

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

Lessons

Lesson 1: Summarising Data by Using Aggregate Functions  
Lesson 2: Summarising Grouped Data  
Lesson 3: Ranking Grouped Data  
Lesson 4: Creating Crosstab Queries

Lab: Grouping and Summarising Data  
Exercise 1: (Level 200) Summarising Data by Using Aggregate Functions  
Exercise 2: (Level 200) Summarising Grouped Data  
Exercise 3: (Level 200) Ranking Grouped Data  
Exercise 4: (Level 200) Creating Crosstab Queries

After completing this module, students will be able to:

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

### **Module 4: Joining Data from Multiple Tables**

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

Lessons

Lesson 1: Querying Multiple Tables by Using Joins  
Lesson 2: Applying Joins for Typical Reporting Needs  
Lesson 3: Combining and Limiting Result Set

Lab: Joining Data from Multiple Tables  
Exercise 1: (Level 200) Querying Multiple Tables by Using Joins  
Exercise 2: (Level 200) Applying Joins for Typical Reporting Needs  
Exercise 3: (Level 200) 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.

### **Module 5: 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.

#### Lessons

Lesson 1: Writing Basic Subqueries  
Lesson 2: Writing Correlated Subqueries  
Lesson 3: Comparing Subqueries with Joins and Temporary Tables  
Lesson 4: Using Common Table Expressions

#### Lab: Working with Subqueries

Exercise 1: (Level 200) Writing Basic Subqueries  
Exercise 2: (Level 200) Writing Correlated Subqueries  
Exercise 3: (Level 200) Comparing Subqueries with Joins and Temporary Tables  
Exercise 4: (Level 200) 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.

### **Module 6: 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.

#### Lessons

Lesson 1: Overview of Transactions  
Lesson 2: Inserting Data into Tables  
Lesson 3: Deleting Data from Tables  
Lesson 4: Updating Data in Tables

#### Lab: Modifying Data in Tables

Exercise 1: (Level 200) Inserting Data into Tables  
Exercise 2: (Level 200) Deleting Data from Tables  
Exercise 3: (Level 200) Updating Data in Tables  
Exercise 4: (Level 200) Working with Transactions

After completing this module, students will be able to:

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

### **Module 7: 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.

#### Lessons

Lesson 1: Querying Metadata  
Lesson 2: Overview of XML  
Lesson 3: Querying XML Data  
Lesson 4: Overview of Full-Text Indexes  
Lesson 5: Querying Full-Text Indexes

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

Exercise 1: (Level 200) Querying Metadata  
Exercise 2: (Level 200) Querying XML Data  
Exercise 3: (Level 200) 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.

## Module 8: 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.

### Lessons

Lesson 1: Encapsulating Expressions by Using User-Defined Functions

Lesson 2: Encapsulating Queries by Using Views

Lesson 3: Overview of Stored Procedures

Lesson 4: Writing Distributed Queries

Lab: Using Programming Objects for Data Retrieval

Exercise 1: (Level 300) Creating User-Defined Functions

Exercise 2: (Level 200) Creating Views

Exercise 3: (Level 300) Writing Distributed Queries

After completing this module, students will be able to:

- Encapsulate expressions by using user-defined functions.
- Encapsulate queries by using views.
- Explain how stored procedures encapsulate T-SQL logic.
- Write distributed queries.

## Module 9: 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 analyse the recommended guidelines for executing queries and how to optimise query performance.

### Lessons

Lesson 1: Considerations for Querying Complex Data

Lesson 2: Querying Complex Table Structures

Lesson 3: Writing Efficient Queries

Lesson 4: Using Different Techniques for Complex Queries

Lesson 5: Maintaining Query Files

Lab: Using Advanced Querying Techniques

Exercise 1: (Level 300) Breaking up a Complex Business Reporting Requirement

Exercise 2: (Level 300) Writing Complex Queries

Exercise 3: (Level 300) Rewriting Complex 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.

### Target 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:

- Logical database design.
- Physical database design.
- How data is stored in tables (rows and columns).
- Data integrity concepts.
- Relationships between tables and columns (primary key and foreign key, one-to-one, one-to-many, and many-to-many).
- Basic knowledge of the Microsoft Windows operating system and its core functionality. For example, how to use Windows Explorer, open and save files, and what a client/server

application interaction means.