

# MSQ4-12 - MOC 20761 - QUERYING DATA WITH TRANSACT-SQL

Categoria: **SQL Server 2017 e 2016**

## INFORMAZIONI SUL CORSO



Durata:  
5 Giorni



Categoria:  
SQL Server 2017 e  
2016



Qualifica Istruttore:  
Microsoft Certified  
Trainer



Dedicato a:  
Sviluppatore



Produttore:  
Microsoft

## OBIETTIVI

- Descrivere le funzionalità chiave e i componenti di SQL Server 2016.
- Descrivere T-SQL, gli insiemi e la logica dei predicati.
- Scrivere un'istruzione SELECT su singola tabella.
- Scrivere un'istruzione SELECT multi-tabella.
- Scrivere istruzioni SELECT con filtro e ordinamento.
- Descrivere come SQL Server utilizza le tipologie di dati.
- Scrivere istruzioni DML.
- Scrivere query che utilizzano le funzioni incorporate.
- Scrivere query che aggregano i dati.
- Scrivere subquery.
- Creare e implementare viste e funzioni con table-valued.
- Utilizzare gli operatori impostati per combinare i risultati delle query.
- Scrivere query che utilizzano le funzioni di classificazione, offset e aggregazione.
- Trasformare i dati implementando pivot, unpivot, rollup e cube.
- Creare e implementare procedure memorizzate.
- Aggiungere i costrutti di programmazione come variabili, condizioni e cicli al codice T-SQL.

## PREREQUISITI

- Conoscenza di base del sistema operativo Microsoft Windows e delle sue funzionalità principali.
- Conoscenza di lavoro con i database relazionali.

## CONTENUTI

### Module 1: Introduction to Microsoft SQL Server 2016

- The Basic Architecture of SQL Server
- SQL Server Editions and Versions
- Getting Started with SQL Server Management Studio

### Lab : Working with SQL Server 2016 Tools

- Working with SQL Server Management Studio
- Creating and Organizing T-SQL Scripts
- Using Books Online

After completing this module, you will be able to:

Describe relational databases and Transact-SQL queries.

Describe the on-premise and cloud-based editions and versions of SQL Server.

Describe how to use SQL Server Management Studio (SSMS) to connect to an instance of SQL Server, explore the databases contained in the instance, and work with script files that contain T-SQL queries.

## **Module 2: Introduction to T-SQL Querying**

Introducing T-SQL

Understanding Sets

Understanding Predicate Logic

Understanding the Logical Order of Operations in SELECT statements

### **Lab : Introduction to T-SQL Querying**

Executing Basic SELECT Statements

Executing Queries that Filter Data using Predicates

Executing Queries That Sort Data Using ORDER BY

After completing this module, you will be able to:

Describe the role of T-SQL in writing SELECT statements.

Describe the elements of the T-SQL language and which elements will be useful in writing queries.

Describe the concepts of the set theory, one of the mathematical underpinnings of relational databases, and to help you apply it to how you think about querying SQL Server

Describe predicate logic and examine its application to querying SQL Server.

Explain the elements of a SELECT statement, delineate the order in which the elements are evaluated, and then apply this understanding to a practical approach to writing queries.

## **Module 3: Writing SELECT Queries**

Writing Simple SELECT Statements

Eliminating Duplicates with DISTINCT

Using Column and Table Aliases

Writing Simple CASE Expressions

### **Lab : Writing Basic SELECT Statements**

Writing Simple SELECT Statements

Eliminating Duplicates Using DISTINCT

Using Column and Table Aliases

Using a Simple CASE Expression

After completing this module, you will be able to:

Describe the structure and format of the SELECT statement, as well as enhancements that will add functionality and readability to your queries

Describe how to eliminate duplicates using the DISTINCT clause

Describe the use of column and table aliases

Understand and use CASE expressions

## **Module 4: Querying Multiple Tables**

Understanding Joins

Querying with Inner Joins

Querying with Outer Joins

Querying with Cross Joins and Self Joins

### **Lab : Querying Multiple Tables**

Writing Queries that use Inner Joins

Writing Queries that use Multiple-Table Inner Joins

Writing Queries that use Self-Joins

Writing Queries that use Outer Joins

Writing Queries that use Cross Joins

After completing this module, you will be able to:

Explain the fundamentals of joins in SQL Server 2016

Write inner join queries

Write queries that use outer joins

Use additional join types

## **Module 5: Sorting and Filtering Data**

Sorting Data

Filtering Data with Predicates

Filtering Data with TOP and OFFSET-FETCH

Working with Unknown Values

### **Lab : Sorting and Filtering Data**

Writing Queries that Filter Data using a WHERE Clause

Writing Queries that Sort Data Using an ORDER BY Clause

Writing Queries that Filter Data Using the TOP Option

After completing this module, you will be able to:

Explain how to add an ORDER BY clause to your queries to control the order of rows displayed in your query's output

Explain how to construct WHERE clauses to filter out rows that do not match the predicate.

Explain how to limit ranges of rows in the SELECT clause using a TOP option.

Explain how to limit ranges of rows using the OFFSET-FETCH option of an ORDER BY clause.

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Explain how three-valued logic accounts for unknown and missing values, how SQL Server uses NULL to mark missing values, and how to test for NULL in your queries.

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## **Module 6: Working with SQL Server 2016 Data Types**

Introducing SQL Server 2016 Data Types

Working with Character Data

Working with Date and Time Data

### **Lab : Working with SQL Server 2016 Data Types**

Writing Queries that Return Date and Time Data

Writing Queries that use Date and Time Functions

Writing Queries That Return Character Data

Writing Queries That Return Character Functions

After completing this module, you will be able to:

Explore many of the data types SQL Server uses to store data and how data types are converted between types

Explain the SQL Server character-based data types, how character comparisons work, and some common functions you may find useful in your queries

Describe data types that are used to store temporal data, how to enter dates and times so they will be properly parsed by SQL Server, and how to manipulate dates and times with built-in functions.

## **Module 7: Using DML to Modify Data**

Inserting Data

Modifying and Deleting Data

### **Lab : Using DML to Modify Data**

Inserting Data

Updating and Deleting Data

After completing this module, you will be able to:

Use INSERT and SELECT INTO statements

Use UPDATE, MERGE, DELETE, and TRUNCATE.

### **Module 8: Using Built-In Functions**

Writing Queries with Built-In Functions

Using Conversion Functions

Using Logical Functions

Using Functions to Work with NULL

#### **Lab : Using Built-In Functions**

Writing Queries That Use Conversion Functions

Writing Queries that use Logical Functions

Writing Queries that Test for Nullability

After completing this module, you will be able to:

Describe the types of functions provided by SQL Server, and then focus on working with scalar functions

Explain how to explicitly convert data between types using several SQL Server functions

Describe how to use logical functions that evaluate an expression and return a scalar result.

Describe additional functions for working with NULL

### **Module 9: Grouping and Aggregating Data**

Using Aggregate Functions

Using the GROUP BY Clause

Filtering Groups with HAVING

#### **Lab : Grouping and Aggregating Data**

Writing Queries That Use the GROUP BY Clause

Writing Queries that Use Aggregate Functions

Writing Queries that Use Distinct Aggregate Functions

Writing Queries that Filter Groups with the HAVING Clause

After completing this module, you will be able to:

Describe the built-in aggregate function in SQL Server and write queries using it.

Write queries that separate rows using the GROUP BY clause.

Write queries that use the HAVING clause to filter groups.

### **Module 10: Using Subqueries**

Writing Self-Contained Subqueries

Writing Correlated Subqueries

Using the EXISTS Predicate with Subqueries

#### **Lab : Using Subqueries**

Writing Queries That Use Self-Contained Subqueries

Writing Queries That Use Scalar and Multi-Result Subqueries

Writing Queries That Use Correlated Subqueries and an EXISTS Clause

After completing this module, you will be able to:

Describe where subqueries may be used in a SELECT statement.

Write queries that use correlated subqueries in a SELECT statement

Write queries that use EXISTS predicates in a WHERE clause to test for the existence of qualifying rows

Use the EXISTS predicate to efficiently check for the existence of rows in a subquery.

### **Module 11: Using Table Expressions**

Using Views

Using Inline Table-Valued Functions

Using Derived Tables

Using Common Table Expressions

### **Lab : Using Table Expressions**

Writing Queries That Use Views

Writing Queries That Use Derived Tables

Writing Queries That Use Common Table Expressions (CTEs)

Writing Queries That Use Inline Table-Valued Expressions

After completing this module, you will be able to:

Write queries that return results from views.

Use the CREATE FUNCTION statement to create simple inline TVFs.

Write queries that create and retrieve results from derived tables.

Write queries that create CTEs and return results from the table expression.

### **Module 12: Using Set Operators**

Writing Queries with the UNION operator

Using EXCEPT and INTERSECT

Using APPLY

### **Lab : Using Set Operators**

Writing Queries That Use UNION Set Operators and UNION ALL

Writing Queries That Use CROSS APPLY and OUTER APPLY Operators

Writing Queries That Use the EXCEPT and INTERSECT Operators

### **Module 13: Using Windows Ranking, Offset, and Aggregate Functions**

Creating Windows with OVER

Exploring Window Functions

### **Lab : Using Windows Ranking, Offset, and Aggregate Functions**

Writing Queries that use Ranking Functions

Writing Queries that use Offset Functions

Writing Queries that use Window Aggregate Functions

### **Module 14: Pivoting and Grouping Sets**

Writing Queries with PIVOT and UNPIVOT

Working with Grouping Sets

### **Lab : Pivoting and Grouping Sets**

Writing Queries that use the PIVOT Operator

Writing Queries that use the UNPIVOT Operator

Writing Queries that use the GROUPING SETS CUBE and ROLLUP Subclauses

### **Module 15: Executing Stored Procedures**

Querying Data with Stored Procedures

Passing Parameters to Stored procedures

Creating Simple Stored Procedures

Working with Dynamic SQL

### **Lab : Executing Stored Procedures**

Using the EXECUTE statement to Invoke Stored Procedures

Passing Parameters to Stored procedures

Executing System Stored Procedures

**Module 16: Programming with T-SQL**

T-SQL Programming Elements

Controlling Program Flow

**Lab : Programming with T-SQL**

Declaring Variables and Delimiting Batches

Using Control-Of-Flow Elements

Using Variables in a Dynamic SQL Statement

Using Synonyms

**Module 17: Implementing Error Handling**

Implementing T-SQL error handling

Implementing structured exception handling

**Lab : Implementing Error Handling**

Redirecting errors with TRY/CATCH

Using THROW to pass an error message back to a client

**Module 18: Implementing Transactions**

Transactions and the database engines

Controlling transactions

**Lab : Implementing Transactions**

Controlling transactions with BEGIN, COMMIT, and ROLLBACK

Adding error handling to a CATCH block

## INFO

**Materiale didattico:** Materiale didattico e relativo prezzo da concordare

**Costo materiale didattico:** NON incluso nel prezzo del corso

**Natura del corso:** Operativo (previsti lab su PC)