training code: AA_20761 / ENG DL 5d / EN

Querying Data with Transact-SQL 2022/2025

Training recipients

The main purpose of the course is to give students a good understanding of the Transact-SQL language which is used by all SQL Server-related disciplines; namely, Database Administration, Database Development and Business Intelligence.
As such, the primary target audience for this course is:

- Database Administrators,
- Database Developers
- BI professionals.

Benefits

After completing this course, students will be able to:

- Describe key capabilities and components of SQL Server.
- Describe T-SQL, sets, and predicate logic.
- Write a single table SELECT statement.
- Write a multi-table SELECT statement.
- Write SELECT statements with filtering and sorting.
- Describe how SQL Server uses data types.
- Write DML statements.
- Write queries that use built-in functions.
- Write queries that aggregate data.
- Write subqueries.
- Create and implement views and table-valued functions.
- Use set operators to combine query results.
- Write queries that use window ranking, offset, and aggregate functions.
- Transform data by implementing pivot, unpivot, rollup and cube.
- Create and implement stored procedures.
- Add programming constructs such as variables, conditions, and loops to T-SQL code.

Training program

1. Introduction to Microsoft SQL Server
   - The Basic Architecture of SQL Server
   - SQL Server Editions and Versions
   - Getting Started with SQL Server Management Studio
2. Introduction to T-SQL Querying
   - Introducing T-SQL
   - Understanding Sets
   - Understanding Predicate Logic
   - Understanding the Logical Order of Operations in SELECT statements
3. Writing SELECT Queries
   - Writing Simple SELECT Statements
   - Eliminating Duplicates with DISTINCT
   - Using Column and Table Aliases
   - Writing Simple CASE Expressions
4. Querying Multiple Tables
   - Understanding Joins
   - Querying with Inner Joins
   - Querying with Outer Joins
   - Querying with Cross Joins and Self Joins
5. Sorting and Filtering Data
   - Sorting Data
   - Filtering Data with Predicates
   - Filtering Data with TOP and OFFSET-FETCH
   - Working with Unknown Values
6. Working with SQL Server Data Types
   - Introducing SQL Server Data Types
   - Working with Character Data
   - Working with Date and Time Data
7. Using DML to Modify Data
   - Adding Data to Tables
   - Modifying and Removing Data
   - Generating automatic column values
8. Using Built-In Functions
   - Writing Queries with Built-In Functions
   - Using Conversion Functions
   - Using Logical Functions

- Using Functions to Work with NULL

9. Grouping and Aggregating Data
   - Using Aggregate Functions
   - Using the GROUP BY Clause
   - Filtering Groups with HAVING
10. Using Subqueries
   - Writing Self-Contained Subqueries
   - Writing Correlated Subqueries
   - Using the EXISTS Predicate with Subqueries
11. Using Table Expressions
   - Using Views
   - Using Inline Table-Valued Functions
   - Using Derived Tables
   - Using Common Table Expressions
12. Using Set Operators
   - Writing Queries with the UNION operator
   - Using EXCEPT and INTERSECT
   - Using APPLY
13. Using Windows Ranking, Offset, and Aggregate Functions
   - Creating Windows with OVER
   - Exploring Window Functions
14. Pivoting and Grouping Sets
   - Writing Queries with PIVOT and UNPIVOT
   - Working with Grouping Sets
15. Executing Stored Procedures
   - Querying Data with Stored Procedures
   - Passing Parameters to Stored procedures
   - Creating Simple Stored Procedures
   - Working with Dynamic SQL
16. Programming with T-SQL
   - T-SQL Programming Elements
   - Controlling Program Flow
17. Implementing Error Handling
   - Implementing T-SQL error handling
   - Implementing structured exception handling
18. Implementing Transactions
   - Transactions and the database engines
   - Controlling transactions

Expected preparation of the participant

- Basic knowledge of the Microsoft Windows operating system and its core functionality.
- Working knowledge of relational databases.

To increase the comfort of work and training’s effectiveness we suggest using an additional monitor. The lack of additional monitor does not exclude participation in the training, however, it significantly influences the comfort of work during classes.
You can find information and requirements of participation in Distance Learning trainings at: https://www.altkomakademia.pl/en/how-it-works/about-courses/

Training Includes

- manual in electronic form available on the platform: https://www.altkomakademia.pl/
- access to Altkom Akademia's student portal

Duration

5 days / 35 hours

Language

- **Training**: English
- **Materials**: English