training code: AA_20762 / ENG DL 5d / EN

Developing SQL Databases 2022/2025

Training recipients

The primary audience for this course is IT Professionals who want to become skilled on SQL Server product features and technologies for implementing a database. The secondary audiences for this course are individuals who are developers from other product platforms looking to become skilled in the implementation of a SQL Server database.

Benefits

After completing this course, students will be able to:

- Design and Implement Tables.
- Describe advanced table designs
- Ensure Data Integrity through Constraints.
- Describe indexes, including Optimized and Columnstore indexes
- Design and Implement Views.
- Design and Implement Stored Procedures.
- Design and Implement User Defined Functions.
- Respond to data manipulation using triggers.
- Design and Implement In-Memory Tables.
- Implement Managed Code in SQL Server.
- Store and Query XML Data.
- Work with Spatial Data.
- Store and Query Blobs and Text Documents

Training program

1. Introduction to Database Development
   - Introduction to the SQL Server Platform
   - SQL Server Database Development Tasks
2. Designing and Implementing Tables
   - Designing Tables
   - Data Types
   - Working with Schemas
   - Creating and Altering Tables
3. Advanced Table Designs
   - Partitioning Data
   - Compressing Data
   - Temporal Tables
4. Ensuring Data Integrity through Constraints
   - Enforcing Data Integrity
   - Implementing Data Domain Integrity
   - Implementing Entity and Referential Integrity
5. Introduction to Indexes
   - Core Indexing Concepts
   - Data Types and Indexes
   - Heaps, Clustered, and Nonclustered Indexes
   - Single Column and Composite Indexes
6. Designing Optimized Index Strategies
   - Index Strategies
   - Managing Indexes
   - Execution Plans
   - The Database Engine Tuning Advisor
   - Query Store
7. Columnstore Indexes
   - Introduction to Columnstore Indexes
   - Creating Columnstore Indexes
   - Working with Columnstore Indexes
8. Designing and Implementing Views
   - Introduction to Views
   - Creating and Managing Views
   - Performance Considerations for Views
9. Designing and Implementing Stored Procedures
   - Introduction to Stored Procedures
   - Working with Stored Procedures
   - Implementing Parameterized Stored Procedures
   - Controlling Execution Context
10. Designing and Implementing User-Defined Functions

- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-Valued Functions
- Considerations for Implementing Functions
- Alternatives to Functions

11. Responding to Data Manipulation via Triggers
    - Designing DML Triggers
    - Implementing DML Triggers
    - Advanced Trigger Concepts
12. Using In-Memory Tables
    - Memory-Optimized Tables
    - Natively Compiled Stored Procedures
13. Implementing Managed Code in SQL Server
    - Introduction to CLR Integration in SQL Server
    - Implementing and Publishing CLR Assemblies
14. Storing and Querying XML Data in SQL Server
    - Introduction to XML and XML Schemas
    - Storing XML Data and Schemas in SQL Server
    - Implementing the XML Data Type
    - Using the Transact-SQL FOR XML Statement
    - Getting Started with XQuery
    - Shredding XML
15. Storing and Querying Spatial Data in SQL Server
    - Introduction to Spatial Data
    - Working with SQL Server Spatial Data Types
    - Using Spatial Data in Applications
16. Storing and Querying BLOBs and Text Documents in SQL Server
    - Considerations for BLOB Data
    - Working with FILESTREAM
    - Using Full-Text Search
17. SQL Server Concurrency
    - Concurrency and Transactions
    - Locking Internals
18. Performance and Monitoring
    - Extended Events
    - Working with extended Events
    - Live Query Statistics
    - Optimize Database File Configuration
    - Metrics

Expected preparation of the participant

- Basic knowledge of the Microsoft Windows operating system and its core functionality.
- Working knowledge of Transact-SQL.
- 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