

training code: SOS+SOZ SQL / ENG DL 4d / EN

Tuning and optimising server and SQL Server 2019 queries

Altkom Akademia's **authorial training** Tuning and optimising server and SQL Server 2019 queries SOS+SOZ SQL Distance Learning course. The training is addressed to:

- Database administrator
- Microsoft® SQL Server™ administrator
- Database developer
- SQL developer
- Developer Microsoft® SQL Server™
- Backend developer
- Frontend developer
- System architect
- Application architect



Purpose of the training

The course aims to deliver a huge amount of knowledge about internal Microsoft SQL Server structure (such as internals, database engine) together with discussing tuning and optimisation techniques which can be deployed to target systems (among others production systems).

The training offers a thorough discussion of:

- SQL Server architecture,
- indexing and statistics strategy,
- optimising transaction log operations,
- configuring bazy tempdb base and data files,
- transaction and levels of isolation and blocking.
- it also teaches how to analyze overloads and how to learn where problems with performance occur and how to troubleshoot them.
- discussed in-memory objects (tables and stored procedures) and allows to use this exciting brand new technology.

The audience of this course are both people who develop applications SQL Server databases content and

the ones who administer and maintain databases operating under control of RDBMS Microsoft SQL Server, and are responsible for optimal performance of SQL Server instances which they manage or use. Additional audience of the course are all professional groups developing data related queries and obliged to provide optimal workload performance.



Benefits of completing the training

- Understanding and applying new harvesting force taxifier.
- Understanding database structures and influence of project of tables on query performance and server itself.
- Understanding and applying technique related to Instant File Initialization.
- Understanding how SQL Server stores data.
- Understanding how SQL Server localises data.
- Acquaintance with recommendations related to tempdb base optimisation.
- Understanding how to use temporary tables together with tabelaric type of variables.
- Understanding concurrence.
- Understanding levels of isolation and related terms such as blockades architecture.
- Understanding and using transactions.
- Understanding and using table and index partitioning.
- Understanding and using performance-related Dynamic Management Objects.
- Reading query execution plans.
- Understanding indexes and their influence on SQL Server performance.
- Acquaintance and understanding types of indexes and their structures.
- Understanding and using index-related metadata.
- Understanding and using Index Data Management Objects.
- Understanding index fragmentation process and acquaintance with techniques of counteracting it.
- Understanding and using statistics objects.
- Acquaintance and understanding histograms.
- Comparing, understanding and better use of old and new harvesting force taxator.
- Acquaintance and use of incremental statistics.
- Acquaintance and use of filtered statistics.
- Creating plans of statistics maintenance.
- And many others...



Expected Listener Preparation

- Knowledge of Microsoft Windows operational systems and their basic functions.
- Practical knowledge of administering and maintaining databases.
- Practical knowledge of Transact-SQL.

To make your work more convenient and training more effective, we suggest using an additional screen. Lack of such screen does not exclude participation in the training; however, it significantly influences working comfort during classes.

You can find information and requirements of participation in Distance Learning trainings at:

<https://www.altkomakademia.pl/distance-learning/#FAQ>



Training Language

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



Training Includes

- electronic handbook available at:
<https://www.altkomakademia.pl/>
- access to Altkom Akademia student

Training method:

- lecture + workshops



Duration

4 days / 28 hours

Training agenda

- New harvesting force taxifier

- Databases structures
 - Immediate File Initialization (IFI)
 - How Microsoft® SQL Server™ stores data
 - How Microsoft® SQL Server™ localises data
 - Lab
2. Detecting and analyzing information on database engine
- Working with tables and temporary variables
 - Concurrence
 - Transactions
 - Isolation levels
 - Microsoft® SQL Server™ blockades architecture
 - Microsoft® SQL Server™ and Storage Area Networks
 - Partitioning tables and indexes
 - Lab
3. Project and table structures' influence on DML and RDBMS operation performance
- Lab
4. Optimising queries and data access operators
- Tuning process
 - Performance monitoring tool
 - SQL query processing steps
 - Understanding execution plans
 - Measuring query performance (TIME and IO)
 - Data access operators
 - Lab
5. Working with indexes
- Introduction to indexes
 - Types of indexes
 - Creating and modifying indexes
 - Metadata
 - Index-related Data Management Views
 - Index fragmentation in Microsoft® SQL Server™ and counteracting the event
 - Indexed views
 - Monitoring indexes
 - Best practices
 - Lab
6. Working with statistics
- Statistics – what for?
 - Numerical taxifier
 - Incremental statistics
 - Filtered type statistics

- Statistics maintenance
- Lab

7. Working with „in-memory" objects (as an option)

- „in-memory" architecture
- Tables and indexes
- Stored and natively compiled procedures
- Constraints
- Data Management Views for „in-memory" objects
- Lab

8. Performance measuring tools and techniques (as an option)

- Techniques and tools used among others to:
- Identify long-term queries
- Deadlock detection
- Detecting blocked processes
- Creating baseline