

DB-TUNING

Performance Tuning and Optimizing SQL Databases

Description:

This 4-day instructor led course provides students to optimize and tune SQL Server and databases with SQL Server tools. The aim is also to solve the bottlenecks to increase performance.

Students will be able to:

- Describe the high level architectural overview of SQL Server and its various components
- Describe the SQL Server execution model, waits and queues
- Describe core I/O concepts, Storage Area Networks and performance testing
- Describe architectural concepts and best practices related to data files for user databases and TempDB, rewrite SQL queries
- Describe architectural concepts and best practices related to Concurrency, Transactions, Isolation Levels and Locking
- Describe architectural concepts of the Optimizer and how to identify and fix query plan issues
- Describe architectural concepts, troubleshooting scenarios and best practices related to Plan Cache
- Describe architectural concepts, troubleshooting strategy and usage scenarios for Extended Events
- Explain data collection strategy and techniques to analyze collected data
- Understand techniques to identify and diagnose bottlenecks to improve overall performance
- Adaptive Query Processing, Intelligent Query Processing
- Create baseline, monitor and trace database server, databases and applications

Course requirements:

- Basic knowledge of T-SQL
- Basic knowledge of SQL Server databases
- Basic knowledge of the Microsoft Windows operating system

This course is intended for:

This course is intended for end users, Database Administrators, analytics, Database Developers, and BI professionals.

Literature:

All participants will get internal OKsystem student materials.

Hardware:

Classrooms are equipped with high-performance computers with Internet access and the possibility of wireless connection.

Syllabus:

Module 1: SQL Server Architecture

- Lesson 1: SQL Server Components and SQLOS
- Lesson 2: Windows Scheduling vs. SQL Server Scheduling
- Lesson 3: Waits and Queues

Module 2: SQL Server I/O

- Lesson 1: Core Concepts of I/O
- Lesson 2: Storage Solutions
- Lesson 3: I/O Setup and Testing

Module 3: Database Structures

- Lesson 1: Database Structure Internals
- Lesson 2: SQL queries
- Lesson 3: Data File Internals
- Lesson 4: TempDB Internals

Module 4: SQL Server Memory

- Lesson 1: Windows Memory
- Lesson 2: SQL Server Memory
- Lesson 3: In-Memory OLTP

Module 5: SQL Server Concurrency

- Lesson 1: Concurrency and Transactions
- Lesson 2: Locking Internals

Module 6: Statistics and Index Internals

- Lesson 1: Statistics Internals and Cardinality Estimation
- Lesson 2: Index Internals
- Lesson 3: Columnstore Indexes

Module 7: Query Execution and Query Plan Analysis

- Lesson 1: Query Execution and Query Optimizer Internals
- Lesson 2: Query Execution Plans
- Lesson 3: Analyzing Query Execution Plans
- Lesson 4: Adaptive Query Processing, Intelligent Query Processing

Module 8: Plan Caching and Recompilation

- Lesson 1: Plan Cache Internals
- Lesson 2: Troubleshooting with the Plan Cache
- Lesson 3: Query Store

Module 9: Extended Events

- Lesson 1: Extended Events Core Concepts

- Lesson 2: SQL Trace, SQL Server Profiler
- Lesson 3: Working with Extended Events

Module 10: Monitoring, Tracing, and Baselines

- Lesson 1: Monitoring and Tracing
- Lesson 2: Baselining and Benchmarking

Contact us

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