

SQL SERVER 2008 PERFORMANCE TUNING COURSE CONTENT

❖ **PERFORMANCE TUNING OVERVIEW:**

- The Performance-Tuning Process
- Performance vs. Price
- Performance Baseline
- Where to Focus Efforts
- SQL Server Performance Killers

❖ **SYSTEM PERFORMANCE ANALYSIS:**

- Performance Monitor Tool
- Dynamic Management Views
- Hardware Resource Bottlenecks
- Memory Bottleneck Analysis
- Memory Bottleneck Resolutions
- Disk Bottleneck Analysis
- Disk Bottleneck Resolutions
- Processor Bottleneck Analysis
- Processor Bottleneck Resolutions
- Network Bottleneck Analysis
- Network Bottleneck Resolutions
- SQL Server Overall Performance
- Creating a Baseline
- System Behaviour Analysis Against Baseline

❖ **SQL QUERY PERFORMANCE ANALYSIS:**

- The SQL Profiler Tool
- Trace Automation
- Combining Trace and Performance Monitor Output
- SQL Profiler Recommendations
- Query Performance Metrics Without Profiler
- Costly Queries
- Execution Plans
- Query Cost

❖ **INDEX ANALYSIS:**

- What Is an Index?
- Index Design Recommendations
- Clustered Indexes
- Nonclustered Indexes
- Clustered vs. Nonclustered Indexes
- Advanced Indexing Techniques
- Special Index Types
- Additional Characteristics of Indexes

❖ **DATABASE ENGINE TUNING ADVISOR:**

- Database Engine Tuning Advisor Mechanisms
- Database Engine Tuning Advisor Examples
- Database Engine Tuning Advisor Limitations

❖ **BOOKMARK LOOKUP ANALYSIS:**

- Purpose of Bookmark Lookups
- Drawbacks of Bookmark Lookups
- Analyzing the Cause of a Bookmark Lookup
- Resolving Bookmark Lookups

❖ **STATISTICS ANALYSIS:**

- The Role of Statistics in Query Optimization
- Statistics on an Indexed Column
- Statistics on a Nonindexed Column
- Analyzing Statistics
- Statistics Maintenance
- Analyzing the Effectiveness of Statistics for a Query
- Recommendations

❖ **FRAGMENTATION ANALYSIS:**

- Causes of Fragmentation
- Fragmentation Overhead
- Analyzing the Amount of Fragmentation
- Fragmentation Resolutions
- Significance of the Fill Factor
- Automatic Maintenance

❖ **EXECUTION PLAN CACHE ANALYSIS:**

- Execution Plan Generation
- Execution Plan Caching
- Components of the Execution Plan
- Aging of the Execution Plan
- Analyzing the Execution Plan Cache
- Execution Plan Reuse
- Query Hash and Query Hash
- Execution Plan Cache Recommendations

❖ **STORED PROCEDURE RECOMPILATION:**

- Benefits and Drawbacks of Recompilation
- Identifying the Statement Causing Recompilation
- Analyzing Causes of Recompilation
- Avoiding Recompilations

❖ **QUERY DESIGN ANALYSIS:**

- Query Design Recommendations
- Operating on Small Result Sets
- Using Indexes Effectively
- Avoiding Optimizer Hints
- Using Domain and Referential Integrity
- Avoiding Resource-Intensive Queries
- Reducing the Number of Network Round-Trips
- Reducing the Transaction Cost

❖ **BLOCKING ANALYSIS:**

- Blocking Fundamentals
- Understanding Blocking

- Database Locks
- Isolation Levels
- Effect of Indexes on Locking
- Capturing Blocking Information
- Blocking Resolutions
- Recommendations to Reduce Blocking
- Automation to Detect and Collect Blocking Information

❖ **DEADLOCK ANALYSIS:**

- Deadlock Fundamentals
- Using Error Handling to Catch a Deadlock
- Deadlock Analysis
- Avoiding Deadlocks

❖ **CURSOR COST ANALYSIS:**

- Cursor Fundamentals
- Cursor Cost Comparison
- Default Result Set
- Analyzing SQL Server Overhead with Cursors
- Cursor Recommendations

❖ **DATABASE WORKLOAD OPTIMIZATION:**

- Workload Optimization Fundamentals
- Workload Optimization Steps
- Capturing the Workload
- Analyzing the Workload
- Identifying the Costliest Query
- Determining the Baseline Resource Use of the Costliest Query
- Analyzing and Optimizing External Factors
- Analyzing the Internal Behavior of the Costliest Query
- Optimizing the Costliest Query
- Analyzing the Effect on Database Workload
- Iterating Through Optimization Phases

❖ **CONCLUSION:**