

# SQL Performance Tuning Part 1 of 2

(Common performance issues)

- issues with tempdb
- issues with indexes
- issues with slow running queries
- issues with blocking
- issues with deadlocks
- issues with locking
- issues with fill factor
- issues with page splits
- issues with data and log files
- issues with fragmentation
- issues with recompilations
- issues with wait stats
- issues with SQL Server Backups at peak usage time
- issues with Statistics update

## SQL Performance Tuning Part 1

### Table of contents

- INTRODUCING SQL PERFORMANCE TUNING
- DOWNLOAD AND INSTALLING APPS
- FIRST CREATE A VM
- HOW TO CONFIGURE SERVER
- INSTALLING SQL SERVER 2016
- INSTALLING SQL SERVER 2016 PART 2

- INSTALLING SSMS
- RESTORING ADVENTUREWORKS DATABASE
- WHAT IS SQL PERFORMANCE TUNING
- HARDWARE NEEDED
- DETAIL KNOWLEDGE OF HARDWARE PARTS
- AUTOGROWTH SETTING
- TYPES OF INDEXES
- WHAT IS INDEXING
- CREATE A CLUSTERED INDEX WITH PK
- CREATING A NON CLUSTERED INDEX
- WHAT IS A B TREE
- B TREE NON CLUSTER INDEX
- ANATOMY OF SQL PAGE
- CAUSING A PAGE SPLIT
- TYPES OF INDEXES
- WHAT IS THE QUERY OPTOMIZER
- WHAT ARE OPERATORS
- WHAT IS A TABLE SCAN
- CREATING A NON CLUSTERED INDEX
- ORDER OF COLUMN IN NON CLUSTERED INDEX
- FILTER NON CLUSTERED INDEX
- SORT OPERATOR IN EXECUTION PLAN
- JOIN OPERATORS IN EXECUTION PLAN
- IMORTANCE OF STATISTICS
- WHAT IS THE FILL FACTOR
- WHAT IS LOCKING
- WHAT IS BLOCKING
- WHAT ARE DEADLOCKS
- IMPORTANCE OF WAIT STATISTICS
- WHAT IS RECOMPILATIONS
- CONFIGURING TEMPDB

**SEPARATE COURSE (PUBLISHED APPROX 6 WEEKS FROM TODAY)**

## **SQL Performance Tuning Part 2**

(Not necessarily in this order)

- Reviewing PerfMonTool
- Reviewing Dynamic Management Views
- Reviewing Hardware Resource Bottlenecks
- Reviewing Memory Bottleneck Analysis
- Reviewing Disk Bottleneck Analysis
- Reviewing Processor Bottleneck Analysis
- Reviewing Network Bottleneck Analysis
- Creating a Baseline for workload
- Reviewing Extended Events
- Reviewing SQL Profiler
- Query Store Metrics
- Index Design Recommendations
- Database Engine Tuning Advisor
- Resolving Bookmark Lookups
- What Causes Fragmentation
- Analyzing the Amount of Fragmentation
- Rebuild or Recreate Indexes
- Analyzing Causes of Recompilation
- Avoiding Recompilations
- Using Indexes Effectively
- Blocking Analysis
- Blocking Resolutions
- Deadlock Analysis
- Avoiding Deadlocks
- Database Performance Testing

- Resolving issues with tempdb
- Resolving issues with indexes
- Resolving issues with slow running queries
- Resolving issues with blocking
- Resolving issues with deadlocks
- Resolving issues with locking
- Resolving issues with fill factor
- Resolving issues with page splits
- Resolving issues with data and log files
- Resolving issues with statistics
- Resolving issues with fragmentation
- Resolving issues with recompilations
- Resolving issues with wait stats
- Resolving issues with SQL Server Backups at peak usage time
- More