



Performance Tuning Course

(SQL Server 2019 and SQL Server 2017)

Training Highlights

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| <ul style="list-style-type: none">✓ Complete Practical✓ Resume Preparation✓ 24x7 LIVE Server, Lab✓ Material & Practice Labs✓ MCSA Certification Guidance✓ Real time Projects For Resume✓ 100% Job Orientation, Support | <ul style="list-style-type: none">✓ Queries: Basic to Advanced✓ Sub Queries, Nested Queries, Joins✓ Excel Integration with SQL Server✓ Stored Procedures: Basic to Advncd.✓ Query Tuning with CTEs & Isolations✓ Azure Cloud Migrations with SQL DB✓ Real-time Project Work @ End - End |
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Trainer : Mr. Sai Phanindra Tholeti is a Database Consultant, Microsoft Certified Trainer with more than 13 years expertise. He is rendering impeccable, highly interactive, friendly and highly technical Trainings on **Microsoft SQL Server Developer, SQL DBA, MSBI (SSIS, SSAS, SSRS), PowerBI and Azure** to our Corporate Clients: **Infosys, MindTree, ADP, Infotech, PrimeHealth.** Profile @ <http://www.linkedin.com/in/saiphanindra>

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Mock Interviews, Interview & Resume Guidance & Study Material are included in this course.

SQL Server Performance Tuning - Plans

	PLAN A	PLAN B
Applicable For	Performance Tuning	Performance Tuning + Azure SQL Dev
Course Duration	1 Week	2 Weeks
Completely Practical	✓	✓
Mock Interviews	✓	✓
Real-time Case Studies	✓	✓
Query Audits, Analysis	✓	✓
Query Store & Events	✓	✓
Extended Events, Traces	✓	✓
Table Partitions, Index Partitions	✓	✓
FT Indexes and Catalogs Usage	✓	✓
Memory Tables and File Stream	✓	✓
Temporal Tables & Event Audits	✓	✓
Statistics Management, Histograms	✓	✓
Index Management using DMPs	✓	✓
Tuning Tools : DTA and Perfmon	✓	✓
Perfmon Tool, Plan Analysis	✓	✓
Extended Events and Histograms	✓	✓
Resource Governor & DOP	✓	✓
Azure SQL Database Architecture	X	✓
Azure SQL Tuning Concepts	X	✓
Azure SQL Migrations, Tools	X	✓
Azure Data Studio Tool Usage	X	✓
Azure SQL Database Dashboards	X	✓

Training Highlights:

1. Resume Preparation & Guidance are included in every plan
2. Chapter wise Mock Interviews and Detailed Explanations, Answers
3. 24 x 7 LIVE Online Lab Access with Real-time Databases for SIX Months
4. Real-time Project with Complete Explanation & LIVE Deployments [Go LIVE]
5. Basic to Advanced Training Classes with 100% Practical and 100% Real-time
6. Every concept from the course curriculum will be discussed practically with Examples

SQL Server & T-SQL : Complete Course Plan

	Course Description	Applicable For	Duration
Module 1	Query Tuning, Extended Events, Programming	Plan A, B	1 Week
Module 1	SQL Database in Azure Cloud (Azure SQL)	Plan B	1 Week
			Total Dur : 2 W

Module 1: Query Tuning, SQL Database Programming

Applicable for Plans A, B

Day 1 : QUERY TUNING 1 - INDEXES, PARTITIONS

Audit Long Running Queries using DMVs and DMFs; Activity Monitor Tool and Query Statistics Reports; Logical I/O, Physical I/O and Database I/O, Wait Time; Recent Expensive Queries & Active Expensive Queries; Plan Handle and Execution Time - Query Usage Audit; Factors Impacting the Query Executions, Performance; Resumable Indexes, Usage in SQL Server 2017 & 2019; ONLINE, RESUME, PAUSE, MAX_DURATION Options; Query Store - Settings and Advantages. Options; PARTITIONS Mechanism : Advantages, Performance; Database Filegroups Usage with Partition Ranges; Partition Functions and Partition Schemes - Usage; Partitioning Un-partitioned Tables using Indexes; Aligned / Indexed Partitions - Query Importance; Partition SPLIT and Partition MERGE, NextUsed; Partition Compression Techniques : ROW, PAGE; Data Archival & SWITCH Partitions. Partitioned Views;

Day 2 : QUERY TUNING 2 - FULLTEXT SEARCH, MEMORY TABLES, STATS

Full Text Search (FTS) Mechanism - Architecture, Tuning; Stop Words, Stemmer and Thesaurus For FullText Queries; Indexer Program, Query Processor & FT Query Compilation; Database Catalogs (FTC) and FDHost.exe. Daemon Threads; Full Text (FT) Indexes for Query Tuning with Tokenization; Crawler Threads and User Tables. Filter Daemon Host Excel; CONTAINS() Queries and FREETEXT() Queries with SELECT; In-Memory Tables : Creation and Practical Usage for Tuning; Memory Snapshots and Database Level and Table Level; FileStream Files and Memory Snapshot Filegroups for MOT; MEMORY_OPTIMIZED_ELEVATE_TO_SNAPSHOT Settings; Manual Table Stats Updates with FullScan, NoRecompute; Temporal Tables : Real-time Usage and History Tracking; Statistics : Purpose, Creation Scenarios and Usage; Index Statistics and Column Statistics for Tables, ReUse; Comparing Triggers with Temporal Tables for Audits;

Day 3 : QUERY TUNING 3 - INDEX MANAGEMENT, LOCKS

Index Management Concepts for Performance Tuning; Internal Fragmentation and External Fragmentation; Fragmentation Audits : DMFs and Threshold Values; Index Reorganization and Index Rebuild Options; Database Maintenance Plans (DMP) For Index Reorg; Compress Large Objects, Fragmentation Condition; Index Page Count Condition, Index Usage Condition; Fast, Sampled and Detailed Scan Types for Indexes; Statistics Updates : Full Scan Options, DMP Jobs; LOCKS : Mechanism, Types, Concurrency Control; Lock Types: X, S, IS, IX, U, MD, Sch-M and Sch-S; Lock Audits : SP_WHO2, SP_LOCK, sysprocesses; Deadlock Simulation, Deadlock Prevention Scenarios; Deadlock Audits and Lock Events in Profiler Tool; Isolation Levels - ReadCommitted, Read Uncommitted; Serializable, Snapshot, Repeatable Read Isolations; Read Committed Snapshot Isolation Level in Real-time;

Day 4 : QUERY TUNING 4 – TUNING TOOLS, PERFMON COUNTERS

Tuning Tools : Creating Workload Files and Trace Files; SQL Profiler Tool - Tuning Template and TSQL / SP Events; DTA Tool with Profiler Trace Files: Tuning Recommendations; DTA with Query Cache (Procedure Cache) & .SQL File Inputs; Execution Plans - Internals. Actual, LIVE Execution Plans; Plan Types : Index Scan, Index Seek, Tables Scan, Spooling; Query Costs : IO, CPU Cost, SubTree Cost, Operator Cost; NUMA Nodes, Boost SQL Priority, Thread Count, IO Affinity; Perfmon Counters and Real-time Tracking Of Resources; Processor, Disk, Memory, Transactions, Database Counters; Using Perfmon for Big Query Audits. Free & Total Memory; Longest Running Transactions & Transactions Per Second; Database Log Space - Issues, Solutions. Log Rebuilds; TempDB Issues - Causes, Precautions and Solutions; Memory Issues - Causes, Precautions and Solutions; Performance Tuning - Final Checklist and Precautions;

Day 5 : EXECUTION PLAN ANALYSIS and EVENTS

Parameter Sniffing : Real-time Scenarios, Issues; Execution Plan Issues with Parameter Sniffing; DBCC SHOW_STATISTICS - Statistics Accuracy; Histograms & Density Vectors for Query Optimizer; RANGE_HI_KEY, EQ_ROWS and RANGE_ROWS; DISTINCT_RANGE_ROWS and Index Overlapping; sp_createstats and sp_autostats System Procedures; Detection and Fix of (Overlapping) Duplicate Indexes; Resource Governor : Real-time Usage & Conditions; Resource Pools : Creation and Usage Options; Workload Groups : Creation, Settings and Limits; Query Priority : LOW, MEDIUM and HIGH; DOP : Degree Of Parallelism and Allocation Grants; Classifier Function : Creation and RECONFIGURE; SQL Traces : Creation and Audits. Limitations; Extended Events and Traces for T-SQL Query Analysis; Extended Events Packages, Targets, Actions, Sessions; TSQL and SP Debug Events with XEL Files for EventInfo; Global Fields and Event Filters with XEL Files @ Traces; XE Profiler - Default Templates for Event Profiling;

MOCK INTERVIEW - 1

Module 2: Azure SQL Database Development

Applicable for Plans B

Day 6 : AZURE CLOUD & AZURE SQL DATABASE

Introduction to Cloud. Need for Cloud, Advantages; Cloud Architecture Basics - IaaS, PaaS and SaaS Advantages of Microsoft Cloud - Azure Platform; Azure Products and Azure Services - Marketplace; Comparing Azure with Google Cloud for SQL Server; Comparing Azure with AWS Cloud for SQL Server; Azure Sources - Types, Microsoft Market Place; SQL Database Implementations in Azure Platform; Logical Servers, Virtual Machines, Managed Instance; Azure SQL Database Architecture Components; Creating Azure SQL Server (Logical Server); Creating Azure SQL Databases and Pricing Tiers; Price Tiers: Basic, Standard, Premium, PremiumRS; DTUs Allocation for Database Size, Cost Models; Firewall Settings for Azure SQL Server (Logical Server); Adding Firewall Rules - IP for Remote Access; Password Resets and Azure SQL Server Name Format;

Day 7 : DTU ARCHITECTURE, ELASTIC QUERIES

DTU : Data Transaction Units : Architecture, Pools; DTU - Memory and IO Resources for Reads & Writes; Bounding Box Model for Optimal Performance; Static Pools (DTU) and Elastic Pools (eDTU); eDTUs and Elastic Pool, per Database Settings; EDTU Cost, eDTU max/min Limits and Performance; Configuring Elastic Pools for Azure SQL Databases; Elastic Pools & Tier Selection -

Recommendations; Elastic Scale for Azure SQL Database - Strategies; Vertical Partitioning and Horizontal Partitioning; Elastic Database Tool Libraries for Elastic Queries; Sharding - Topology for Elastic Query Processing; Split-Merge Service for SaaS Software Applications; Elastic Database Features - ShardMap, ShardKey; MultiShard Queries and Elastic Transactions; LOOKUP, HASH and RANGE Strategies for Sharding;

Day 8 : AZURE SQL DB MIGRATIONS, AZURE DATA STUDIO

Data Migration Assistant (DMA) Tool; On-premise to Azure SQL Database Migration; Logical Server, Virtual Machine, Managed Instance; Schema Generation and Compatibility For Migration; Generating Data Scripts and Assessment; Generate and Validate Schemas. Migrations; Migration Scopes : Schema, Data, Schema & Data; Compatibility Checks and Assessment Checks; Resolving Database Migration Compatibility Issues; Azure Data Studio Tool for Database Connections; Azure Data Studio Features - Insights, Metrics; Comparing Azure Data Studio with SQL OPS Tool; SSMS Tool for Azure SQL Database Connections; SQLOPS Tool for Azure SQL Database Connections; SSDT (Visual Studio) for SQL Database Connections; Query Editor for Azure Database Access - in Portal; Azure Database Connections with Other Tools;

DAY 9 : Azure SQL DATABASE TUNING, AZURE SEARCH

Azure SQL Server Level Tuning Options; Azure SQL Database Level Tuning Options; Automated Tuning Options and Peak-Loads; Force Plan, Create Index and Drop Index; Query Performance Insight, Intelligence; Index Recommendations with CPU and IO; IO Metrics, CPU Metrics & Query Statistics; Data File IO, Log File IO, Custom Reports; Identify Long Running Queries, Intensive Queries; Query Level Recommendations and Query Costs; Azure Search Service - Configuration, Pricing Tiers; Azure Search for Data Import and Indexer Options; Suggester and Analyzer Index Modes for Tuning; Retrievable, Facetable, Filterable Indexes; Facetable and Searchable Indexes for Tuning; Change Tracking Options, Watermark Columns;

DAY 10 : AZURE SQL DATABASE VERSUS ON-PREMISE

Azure SQL Server Architecture Differences; Network Protocols and DB Engine Differences; File Structure and Filegroup Allocations; Secondary Files and FileStream Differences; Table Architecture for Partitions, FT Queries; Query Processing Differences with TDS Packets; Query Monitoring and Resources - Dashboards; Unsupported Commands with T-SQL Queries;

Real-time Case Study for Azure SQL Database (DEV)

This Case Study includes :

- ✓ Database Assessment
- ✓ Database Migrations
- ✓ Azure SQL DB Scaling
- ✓ Execution Plan Analysis
- ✓ Query Processing Metrics
- ✓ DTU Allocations and Insights
- ✓ Performance Tuning Implementation
- ✓ Azure Search Service Implementation
- ✓ Azure SQL Database Event Log Commands

For Free Demo, please call or email us [24x7]

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