

SQL School TM

Quality Training Assured

Complete Practical; Real-time Job Oriented Training

Query Tuning Training

	Plan A	Plan B	Plan C
Description	Query Tuning	Query Tuning Azure SQL	SQL Server TSQL Query Tuning Azure SQL
Course Curriculum	Ch 21 to 25	Ch 21 to 30	Ch 1 to 30
Completely Practical, Real-time	X	X	✓
Mock Interviews, Case Studies	X	X	✓
SQL Basics and Query Writing	X	X	✓
SQL DB Design, Table Design	X	X	✓
Normal Forms, Joins and Queries	X	X	✓
Indexes Basics and Stored Procedures	X	X	✓
Excel Integration and Pivot Charts	X	X	✓
Advanced Stored Procedures, TVP	X	X	✓
CTE, XML, Triggers, PIVOT, Cursors	X	X	✓
Real-time Project [Banking]	X	X	✓
In-depth Query Tuning, Exec" Plans	✓	✓	✓
Index Management & Partitions	✓	✓	✓
Profiler, Perfmon, AM, DTA Tools	✓	✓	✓
Locks, Deadlocks, Isolation Levels	✓	✓	✓
Memory Tables, Temporal Tables	✓	✓	✓
Azure SQL Database (Cloud)	X	✓	✓
Azure Storage, Database Migrations	X	✓	✓
Stretch Databases & Elastic Queries	X	✓	✓
Elastic Query Processing, Shard Maps	X	✓	✓
Azure Tuning and Azure Search	X	✓	✓
XEL Graphs, Traces, Audits, SP's	X	✓	✓
Real-time Project [Banking]	X	✓	✓
TOTAL DURATION	1 Week	2 Weeks	6 Weeks

Trainer: Mr. Sai Phanindra T [17+ Yrs of Real-time Exp]. Profile @ [linkedin.com/in/saiphanindra](https://www.linkedin.com/in/saiphanindra)

Query Tuning Training

Training Module		Duration	Plan A	Plan B	Plan C
Module 1	SQL Server & T-SQL	4 Weeks	X	X	✓
Module 2	Query (Performance) Tuning	1 Week	✓	✓	✓
Module 3	Azure SQL Dev	1 Week	X	✓	✓
TOTAL DURATION			1 Week	2 Weeks	6 Weeks

Module 1: SQL, T-SQL, Programming with Stored Procedures

Applicable for Query Tuning Plan C

Ch 1: DATABASE INTRODUCTION

Data, Databases and RDBMS Software; Database Types : OLTP, DWH, OLAP; Microsoft SQL Server Advantages, Use; Versions and Editions of SQL Server; SQL : Purpose, Real-time Usage Options; SQL Versus Microsoft T-SQL [MSSQL]; Microsoft SQL Server - Career Options; SQL Server Components and Usage; Database Engine Component and OLTP; BI Components, Data Science Components; ETL, MSBI and Power BI Components; Course Plan, Concepts, Resume, Project; 24 x 7 Online Lab for Remote DB Access; Software Installation Pre-Requisites;

Ch 2: SQL SERVER INSTALLATIONS

System Configuration Checker Tool; Versions and Editions of SQL Server; SQL Server and SSMS Installation Plan; SQL Server Pre-requisites : S/W, H/W; SQL Server 2022 / 2019 Installation; SQL Server 2017 Installation; Instance Name and Server Features; Instances : Types and Properties; Default Instance, Named Instances; Port Numbers, Instance Differences; Service and Service Account Use; Authentication Modes and Logins; Windows Logins and SQL Logins; FileStream and Collation Properties;

Ch 3: SSMS Tool, SQL BASICS - 1

SQL Server Management Studio; Local and Remote Connections; System Databases: Master and Model; MSDB, TempDB, Resource Databases; Creating Databases : Files [MDF, LDF]; Creating Tables in User Interface; Data Insertion & Storage. Limitations; SQL : Purpose and Real-time Usage; SQL Versus T-SQL : Basic Differences; DDL, DML, SELECT, DCL and TCL; Creating Tables using SQL Scripts; Data Storage, Inserts - Basic Level; Table Data Verifications with Select; SELECT Statement for Table Retrieval;

Ch 4: SQL BASICS - 2

Creating Databases & Tables in SSMS; Single Row Inserts, Multi Row Inserts; Rules for Data Insertion Statements; SELECT Statement @ Data Retrieval; SELECT with WHERE Conditions; Batch Concept and Go Statement; AND and OR Operators Usage; IN Operator and NOT IN Operator; Between, Not Between Operators; LIKE and NOT LIKE Operators; UPDATE Statement & Conditions; DELETE & TRUNCATE Statements; Logged and Non-Logged Operations; ADD, ALTER and DROP Columns;

Ch 5: SQL Basics - 3, T-SQL INTRO

Database Objects : Tables and Schemas; Schemas : Group Tables in Database; Schemas : Security Management Object; Creating Schemas & Batch Concept; Using Schemas for Table Creation; Data Storage in Tables with Schemas; Data Retrieval and Usage with Schemas; Table Migrations across Schemas; Import and Export Wizard in SSMS; Data Imports with Excel File Data; Performing Bulk Operations in SSMS; Temporary Tables : Real-time Use; Local and Global Temporary Tables; # and ## Prefix, Scope of Usage;

Ch 6 : CONSTRAINTS, INDEXES

Constraints and Keys - Data Integrity; NULL, NOT NULL Property on Tables; UNIQUE KEY Constraints: Importance; PRIMARY KEY Constraint: Importance; FOREIGN KEY Constraint: Importance; REFERENCES, CHECK and DEFAULT; Candidate Keys and Identity Property; Database Diagrams and ER Models; Relationships Verification and Links; Indexes : Basic Types and Creation; Index Sorting and Search Advantages; Clustered and NonClustered Indexes; Primary Key and Unique Key Indexes; Need for Indexes - working with Keys;

Case Study 1 - For Database, Table Design (Constraints, Keys)

Ch 7: JOINS & LINKED SERVERS

JOINS - Table Comparisons Queries; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins with Example Queries; Right Outer Joins with Example Queries; FULL Outer Joins - Realtime Scenarios; Join Queries with "ON" Conditions; CROSS JOIN and CROSS APPLY; One-way, Two way Data Comparisons; Linked Servers Configurations; Linked Servers: RPC Settings & Tests; Linked Servers, Remote Joins in TSQL; Multi Server Connections, DB Access; 2 Part, 3 Part, 4 Part Name Conventions;

Ch 8: VIEW, SPs, FUNCTIONS BASICS

Database Objects: Overview & Usage; Views: Types, Usage in Real-time; System Predefined Views and Audits; Listing Databases, Tables, Schemas; Functions: Types, Usage in Real-time; System Predefined Functions, Audits; DBId, DBName, ObjectID, ObjectName; Using Parameters in SQL Server; Dynamic Joins for Database Audits; Procedures: Types, Usage in Real-time; User & System Predefined Procedures; Parameters and Dynamic SQL Queries; Sp_help, Sp_helpdb and sp_helptext; sp_pkeys, sp_rename and sp_help;

Ch 9: Triggers & Transactions

Triggers - Purpose, Real-world Usage; FOR/AFTER Triggers - Real time Use; INSTEAD OF Triggers - Real time Use; INSERTED, DELETED Memory Tables; Using Triggers for Data Replication; Enable Triggers and Disable Triggers; Database Level, Server Level Triggers; Transactions : Types, ACID Properties; Transaction Types and AutoCommit; EXPLICIT & IMPLICIT Transactions; COMMIT and ROLLBACK Statements; Open Transaction Scenarios & Cause; Query Blocking Scenarios @ Real-time; NOLOCK and READPAST Lock Hints;

Ch 10: DB Architecture & Group By

Database Architecture: Data Files; Database Architecture: Log Files; Primary and Secondary Data Files; Log Files Creation and Realtime Use; Creating and Using Filegroups; Linking Tables with Filegroups; Scripting Database and Objects; GROUP BY: Importance, Realtime Use; GROUP BY Queries and Aggregations; Group By Queries with Having Clause; Group By Queries with Where Clause; Using WHERE and HAVING in T-SQL; Using Group By in Data Audits; Using Group By with Joins, Audits;

Ch 11: TSQL Queries: Group By, Joins

Joins with Group By Queries in TSQL; Joining 3 Tables with Group By; Joining 4 Tables with Group By; Multi Table Joins with Table Aliases; Table & Column Aliases with Joins; Joins with HAVING Conditions; Joins with WHERE & Aggregations; Joins with Sub Queries, Formatting; Joins with IIF() Function, Conditions; Joins with CASE Statement Conditions; UNION and UNION ALL Operator; Storing Queries in Database Views; Office Data Connections, Excel Reports; Manual Data Refresh & Reports;

Ch 12 : ER MODELS, NORMAL FORMS

First Normal Form and Atomicity; Second Normal Form, Candidate Keys; 3rd Normal Form Multi Value Dependency; Boycee-Codd Normal Form : BNCF; Fourth Normal Form Realtime Advantages; Self Reference Keys and 4 NF Usage; 1:1, 1:M, M:1, M:M Relationship Types; MERGE Statement - Comparing Tables; WHEN MATCHED and NOT MATCHED; Incremental Load with MERGE Statement; UPSERT Operations with MERGE; Stored Procedures for Merge Statement; DML Operations with ON Keyword; Tuning / Optmizing Merge Statement;

Case Study 2 - For Query Writing + Window Functions (Rank, RowNumber)

Ch 13: STORED PROCEDURES & TVP

Variables: Declaration, Realtime Usage; Variables: Value Assignment, Reporting; Identity Property - Missing ID Values; Data Validations, DMLs in Stored Procs; Dynamic Data Insertions with SPs; TRY..CATCH and THROW Operations; Error Handling, Rollback in SQL Server; Table Valued Parameters (TVP), Usage; ReadOnly Parameters, Stored Procedures; Output Parameters, Stored Procedures; User Data Types and Real-time Use; Table Cloning, Inserts @ Table Variables; Table Variables Usage in T-SQL; Output Parameters, Stored Procedures;

Ch 14: STORED PROCEDURES & Triggers

DML Triggers and DDL Triggers; FOR and INSTEAD OF Triggers; Magic Tables : Inserted, Deleted; Views on Tables - SCHEMABINDING; ENCRYPTION and CHECK OPTION; Cascaded Views, Encrypted Views; Updatable Views, Joins with Triggers; Stored Procedures @ Triggers, Views; FOR and INSTEAD OF Triggers; Magic Tables : Inserted, Deleted; ENCRYPTION and CHECK OPTION; Cascaded Views, Encrypted Views; Updatable Views, Joins with Triggers; Stored Procedures @ Triggers, Views;

Ch 15: STORED PROCEDURES & Cursors

Cursors - Benefits, Cursors in SProcs; Using Cursors in Real-world Scenarios; Cursors : Declaring Variables, Life Cycle; Declaration, Open / Close Cursors; Cursor Types: Forward Only, Scroll; Cursor Types: Static and Dynamic; Keyset Driven Cursors & Indexes; Default Cursor Types and Usage; FETCH operation and Data Retrieval; Keyset Cursors and @@FetchStatus; Nesting of Stored Procedures - Dynamic; Data Formatting and WHILE Loops; Using Temporary Tables for Formatting; Loading Data from SPs to Temp Tables;

Ch 16: STORED PROCEDURES & CTEs

CTE: Common Table Expressions; Real-time Scenarios with CTEs - Usage; Using CTEs for Data Retrieval, SELECT; Using CTEs for Data Manipulations; Sub Queries with Self Joins : Issues; CTEs for Avoiding Self Joins, Tuning; CTEs for Avoiding Sub Queries, Tuning; Window Functions: RowNumber(); Rank() and Dense_Rank() Functions; ROW_NUMBER() with CTE Queries; Identifying Duplicated Rows; Remving Duplicate Rows with CTEs; Recursive CTEs and ANCHOR Element; Termination Checks in Recursive CTEs;

Ch 17: FUNCTIONS Level 2, XML & JSON

Functions: Types, Real-world Usage; Scalar Value Returning Functions; Inline Table Value Functions; Multi-Line Table Value Functions; WHILE Loops and Iterations in T-SQL; Table Variables Usage in T-SQL; Data Type Conversions with Functions; Composite Keys , Computed Columns; Self Referencing Keys, Self Joins; Adding Keys to Existing Tables; XML AUTO, XML RAW and XML PATH; BULK INSERT, BULKCOLUMN, JSON; OPENROWSET, PIVOT and UNPIVOT; JSON Files - Data Import into SQL DB;

Ch 18 - 20: REAL-TIME PROJECT (BANKING)

Includes 2500 Lines of Code (SOLVED);

Phase 1: DATABASE DESIGN

Understanding Project Requirements; End to End Project Work Flow; Naming Conventions in Real-time; Primary (mdf) and Secondary (ndf) Files; Implementing FileGroups For Performance; Table Schemas : Creation and Use; Implementing Normal Forms (OLTP); Computed Columns and Data Types; SQL_Variant, Bit, sysname Data Types; Test Data Insertions, Options; Email and Phone Number Validations; Data Types Conversions, Validations; Data Validations and Schema Validations;

Phase 2: QUERY DESIGN

Join Types and Join Options For Reports; Views with JOIN Options For Query Store; Implementing Functions for Calculations; Using PIVOT Tables in Queries; Dynamic Conditions in Queries; Parameterized Queries in T-SQL; Dynamic Joins and Conditions; Using User Defined Functions (UDF); Using Stored Procedures for T-SQL; Merge Option for Faster Queries; Using Lock Hints in T-SQL Queries; Creating and Using Office Data Connections; Excel Pivot Tables and Pivot Charts;

Phase 3: PROGRAMMING

Event Handling , Error Handling; Stored Procedures with Transactions; Error Handling, Event Handling Options; Transaction Nesting, Save Points; Stored Procedures with Tables; Stored Procedures with Views; Stored Procedures with Functions; Automating DML with Triggers; Project Deployments, Project FAQ; Project Solution Explanation; Resume Points from the Project; Interview FAQs from Project; Interview FAQs For Each Concept;

Module 2: Query (Performance) Tuning

Applicable for **Query Tuning Plan A, B, C**

Ch 21: Tuning 1 - Audits, Indexes

Audit Long Running Queries : DMV, DMF; Activity Monitor Tool, Server Dashboards; Logical I/O, Physical I/O, Database I/O; Recent Expensive Queries, Wait Time; Active Expensive Queries, Statistics; Plan Handle, Execution Time - Audits; CPU, IO, Memory Consumption Reports; Indexes: Architecture and Index Types; B Tree Structure, IAM Page [Root]; Clustered & NonClustered Indexes; Included,

Columnstore, Online; Filtered, Covering, Indexed Views; Fill Factor and Pad Index Options; Query Store - Settings and Advantages;

Ch 22: Tuning 2: Index Management

PARTITIONS: Performance Tuning; Partition Functions & Partition Schemes; Partitioning Un-partitioned Tables: GUI; Partition Compression : ROW & PAGE; Auditing Table Partitioned Structures; Statistics : Auto Creation, Updates; Internal and External Fragmentation; Index Rebuilding Process and Audits; Database Maintenance Plans Jobs; Last Used, Page Count, Fragmentation; Index Page Count and Index Condition; Degree Of Parallelism [DOP] Settings; Resumable Indexes: ONLINE, RESUME; PAUSE & RESUME in Index Rebuilds;

Ch 23: Tuning 3 - Tuning Tools

Tuning Tools: Workload Files, .trc Files; Profiler Tuning Template, SP Events; DTA, Profiler Trace : Recommendations; PDS: Physical Design Structures; Index, Stats, Partition Recommendations; DTA with Query Execution Cache; Perfmon Tool : Usage, Permon Counters; Real-time Tracking: CPU, Memory, IO; Execution Plan Analysis and Internals; Query Costs: IO Cost and CPU Cost; Query Costs: SubTree & Operator Cost; NUMA Nodes, Processor, IO Affinity; Thread Count, Degree of Parallelism; Table Scan, Index Scan, Index Seek;

Ch 24: Tuning 4 - Lock Management

LOCKS : Types and Isolation Levels; S, X, IX,U, MD, Sch-M and Sch-S; Lock Audits : SP_WHO2 & SP_LOCK; sysprocesses and Lock Waits : Audits;Open Transactions, Query Blocking; Lock Hints and Isolation Levels; Read Committed, Read Uncommitted; Serializable and Repeatable Read; Snapshot Isolation, Page Versioning; Read Committed Snapshot Row Version; Choosing Correct Isolation Level; Profiler Tool and Lock Templates; Profiler Filters, Column Selections; XDL Files and Deadlocks Prevention;

Ch 25: FULL TEXT SEARCH, MOT

Introduction to Full Text Search (FTS); Stop Words, Stemmer and Thesaurus; Indexer Program, Query Processor; Database Catalogs (FTC), FDHost.exe; Creating Full Text Catalogs (FTCs); CONTAINS() & FREETEXT() Queries; Query Performance Impact with FTS; Resumable Indexes with SQL Server; ONLINE, RESUME, PAUSE Options; In-Memory Tables: Creation & Usage; Memory Snapshots at Database; Temporal Tables : for DML Audits; Using Temporal Tables for Data Audits; System Versioning, MAX_DURATION;

Module 3: Azure SQL Dev

Applicable for **Query Tuning Plan B, C**

Ch 26: CLOUD, AZURE CONFIG

Introduction to Cloud & Advantages; Cloud Architecture: IaaS, PaaS and SaaS; Microsoft Cloud Advantages, Azure; Azure Products and SQL Services; PaaS Implementations For SQL Server; IaaS Implementations For SQL Server; Comparing PaaS, IaaS Implementations; Benefits of SQL Server in Azure Cloud; Azure Account and Free Subscription; Subscription: Need, Subscription Types; Resources: Creation and Usage; Resource Groups: Creation and Usage; Azure SQL: Realtime Implementations; Logical Server, Virtual Machine Options;

Ch 27: AZURE SQL SERVER CONFIG

Installing SSMS and Azure Data Studio; Azure Account and Free Subscriptions; Azure SQL Server (Logical Server); Azure SQL Server Firewall Settings; Firewall Rules - IP for Remote Access; Server Properties and Status Format; Password Resets in Azure SQL Server; Azure SQL Databases & Pricing Tiers; Azure SQL Database Access from SSMS; Elastic Scaling with Azure Databases; General Purpose and Business Critical; Basic, Standard and Premium Plans; vCore Based Purchasing : Gen 4, Gen 5; Resource Groups For Azure SQL Server;

Ch 28: ELASTIC DTUs, DB MIGRATION

Azure Storage: Creation & Containers; LRS, GRS, RA-GRS Storage Accounts; Storage Containers, Explorer Tool; Data and Database Migration in Azure; Data Migration Assistant (DMA) Tool; DB Migrations To Azure SQL Databases; Database Exports and Imports in Azure; Migration Scopes: Schema and Data; Schema Generation, Data Migration; Data Migration Verification, Row Count; DTU: Data Transaction Unit; Bounding Box Model, Elastic Pool; eDTUs, Elastic Pool. Per DB Settings; Performance Recommendations;

Ch 29: AZURE SQL DATABASE TUNING

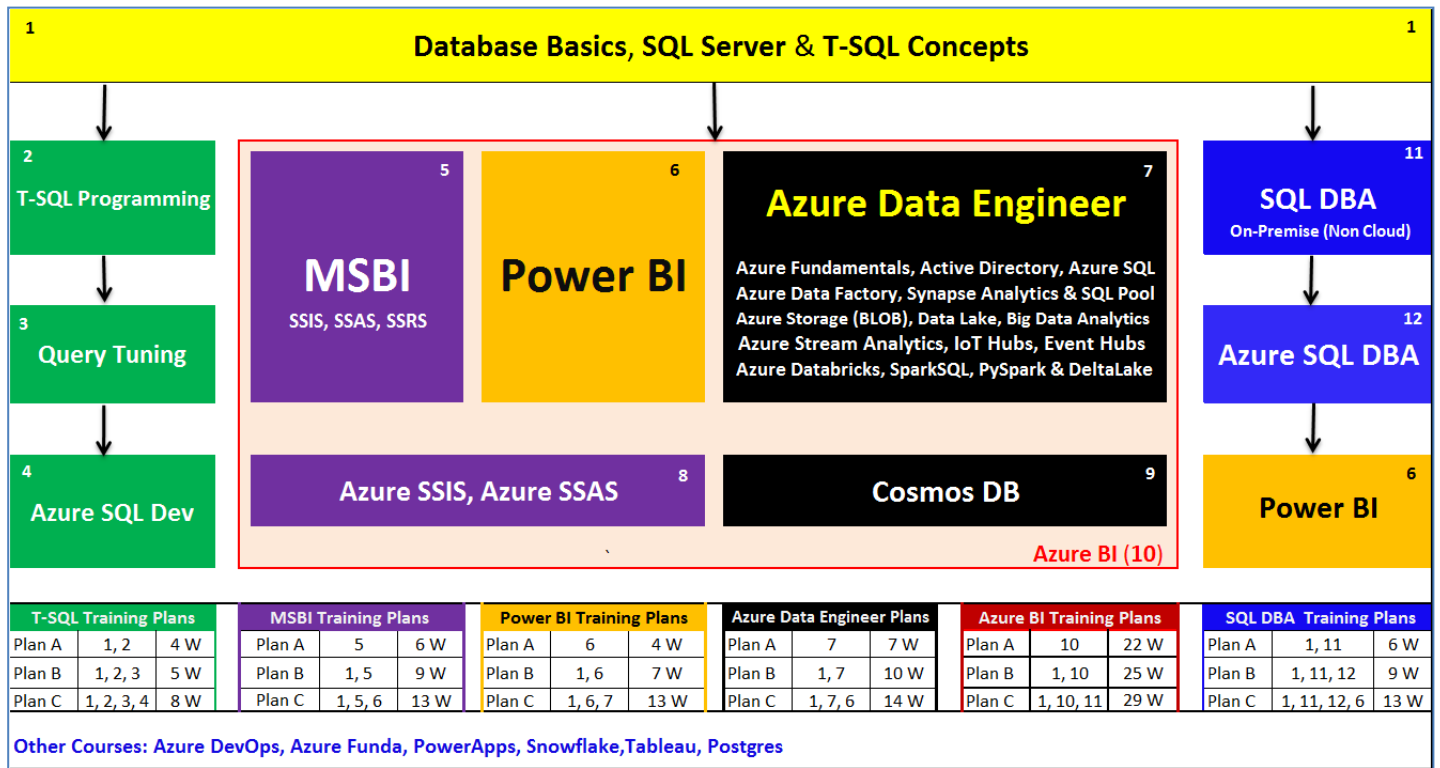
Azure SQL Server Level Tuning Options; Azure SQL Database Tuning Options; Automated Tuning and Peak-Loads; Force Plan, Create Index and Drop Index; Query Insight and Recommendations; IO Metrics, CPU & Query Statistics; Data File IO, Log File IO, Custom Reports; Query Audits with Query IDs, Dashboards; DTU Usage Reports and Elastic Queries; Query Recommendations, Query Costs; Azure Search Service and Pricing Tiers; Suggester and Analyzer Modes for Tuning; Retrievable, Facetable, Facetable Indexes; Change Tracking & Watermark Columns;

Ch 30: Real-time Project - 2

Azure SQL [PaaS] Implementation; Azure SQL DB Project Environment; Azure SQL Database Design; Azure SQL Queries & Reports; Azure T-SQL Programming; Cursors and CTEs in Azure SQL; SQL Server Versus Azure SQL DB; Azure SQL Database Deployments; Database Architecture Differences; T-SQL Data Types Differences; Database Objects Differences; Partitions and FTS Differences; Indexes & Tuning Differences; Maintenance Plans, SQL Agent;

Email : contact@sqlschool.com Skype: SQL School Training Institute Website: www.sqlschool.com	Call Us (India) : 24 x 7 +91 9666 44 0801
Trainer Contact: saiphanindrait@gmail.com +91 9030040801	Call Us (USA / Canada) : 24 x 7 +1 956.825.0401

Courses From SQL School:



Trainer Profile :

Register today for free demo at :

Website:

<http://linkedin.com/in/saiphaindra>

<https://sqlschool.com/Register.html>

<https://sqlschool.com/>