

SQL School

Quality Training Assured

Complete Practical; Real-time Job Oriented Training

SQL Server T-SQL Training Plans

	PLAN A	PLAN B	PLAN C
Applicable For (Resume Plan)	SQL Dev 0 – 2 Yrs Exp	SQL Dev 2+ Yrs	SQL Dev 3+ Yrs
Course Curriculum	Chapters 1 to 20	Chapters 1 to 25	Chapters 1 to 30
Completely Practical, Real-time	✓	✓	✓
Mock Interviews, Case Studies	✓	✓	✓
SQL Basics and Query Writing	✓	✓	✓
SQL DB Design, Table Design	✓	✓	✓
Normal Forms, Joins and Queries	✓	✓	✓
Indexes Basics and Stored Procedures	✓	✓	✓
Excel Integration and Pivot Charts	✓	✓	✓
Advanced Stored Procedures, TVP	✓	✓	✓
CTE, XML, Triggers, PIVOT, Cursors	✓	✓	✓
Real-time Project [Banking]	✓	✓	✓
In-depth Query Tuning, Exec” Plans	X	✓	✓
Index Management & Partitions	X	✓	✓
Profiler, Perfmon, AM, DTA Tools	X	✓	✓
Locks, Deadlocks, Isolation Levels	X	✓	✓
MCSA Certification Exam - 70 761	X	✓	✓
Azure SQL Database (Cloud)	X	X	✓
Azure Storage, Database Migrations	X	X	✓
DTU, Stretch Databases, Elastic Queries	X	X	✓
Elastic Query Processing, Shard Maps	X	X	✓
Azure Tuning and Azure Search	X	X	✓
MCSA Certification Exam - 70 762	X	X	✓
TOTAL DURATION	4 Weeks	5 Weeks	6 Weeks

Trainer : Mr. Sai Phanindra T [15+ Yrs of Real-time Exp]. Profile @ [linkedin.com/in/saiphanindra](https://www.linkedin.com/in/saiphanindra)

SQL Server T-SQL Training

Course Plan

Training Module		Duration	Plan A	Plan B	Plan C
Module 1	SQL Server, T-SQL Programming, Project	4 W	✓	✓	✓
Module 2	Query (Perf) Tuning, MCSA - 70 761	1 W	X	✓	✓
Module 3	Azure SQL Development, MCSA - 70 762	1 W	X	X	✓
Total Duration			4 W	5 W	6 W

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

Applicable for T-SQL Plans A, B, C

Chapter 1: SQL SERVER 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; Database Engine Component and OLTP; BI Components, Data Science Components; ETL, MSBI and Power BI Components; Course Plan, Resume, Project; 24 x 7 Lab; Software Installation Pre-Requisites;

Chapter 2: SQL SERVER INSTALLATIONS

System Configuration Checker Tool; Versions and Editions of SQL Server; SQL Server Pre-requisites : S/W, H/W; SQL Server 2016 / 2017 Installation; SQL Server 2019 Installation; Instance Name; Instances : Types; Default Instance, Named Instances; Port Numbers; Service and Service Account; Authentication Modes and Logins; FileStream, Collation Properties;

Chapter 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 GUI; Data Insertion & Storage; SQL : Real-time Usage; DDL, DML, SELECT, DCL and TCL Statements; Data Storage, Inserts - Basic Level; SELECT; Table Data Retrieval;

Chapter 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; AND and OR; IN and NOT IN; Between, Not Between; LIKE and NOT LIKE; UPDATE Statement; DELETE & TRUNCATE; Logged and Non-Logged Operations; ADD, ALTER and DROP Statements;

Chapter 5: SQL BASICS - 3, T-SQL Introduction

Schemas : Group Tables in Database; Using Schemas for Table Creation; Using Schemas in Table Relations; Table Migrations across Schemas; Default Schema : "dbo"; Import and Export Wizard;

Bulk Operations; Excel File Imports / Exports; SQL Server Native Client; Executing SSIS Packages, Data Loads; Local and Global Temporary Tables; # & ## Prefix; Temporary Vs Permanent Tables;

Chapter 6: CONSTRAINTS & INDEXES BASICS

Constraints and Keys - Data Integrity; NULL, NOT NULL Property on Tables; UNIQUE KEY Constraint; PRIMARY KEY Constraint; FOREIGN KEY Constraint, References; CHECK Constraint; DEFAULT Constraint; Identity Property : Seed & Increment; Database Diagrams and ER Models; Relationships Verification and Links; Indexes : Basic Types and Creation; Index Sort Options, Search Advantages; Clustered and Non Clustered Indexes; Primary Key and Unique Key Indexes;

REAL-TIME CASE STUDY - 1 (SALES & RETAIL)

Chapter 7: JOINS and TSQL Queries : Level 1

JOINS - Table Comparisons; INNER JOINS For Matching Data; OUTER JOINS For (non) Match Data; Left Outer Joins; Right Outer Joins - Example Queries; FULL Outer Joins; One-way and Two Way Comparisons; "ON" Conditions; Join Unrelated Tables; NULL, IS NULL in Joins; CROSS JOIN and CROSS APPLY; Join Options: Merge, Loop and Hash Joins; Performance Advantages;

Chapter 8: GROUP BY, T-SQL Queries : Level 2

GROUP BY Queries and Aggregations; Group By Queries with Having Clause; Group By Queries with Where Clause; Using WHERE and HAVING in T-SQL; Rollup : Usage and T-SQL Queries; Cube : Usage and T-SQL Queries; UNION and UNION ALL Operator; EXISTS Operator, Query Conditions; Sub Queries; Joins with Group By Queries; Nested Sub Queries; UNION and UNION ALL; Nested Sub Queries with Group By, Joins; Comparing WHERE, HAVING Conditions;

Chapter 9: JOINS & T-SQL Queries : Level 3

GetDate, Year, Month, Day Functions; Date & Time Styles, Data Formatting; DateAdd and DateDiff Functions; Cast and, Convert Functions in Queries; String Functions: SubString, Reliccate; Len, Upper, Lower, Left and Right; LTrim, RTrim, CharIndex Functions; MERGE Statement - Comparing Tables; WHEN MATCHED and NOT MATCHED; Incremental Load with MERGE Statement; IIF() Function for Value Compares; CASE Statement : WHEN, ELSE, END; ROW_NUMBER() and RANK() Queries; Dense Rank and Partition By Queries;

Chapter 10: View, Procedure, Function Basics

Views : Types, Usage in Real-time; System Predefined Views and Audits; Listing Databases, Tables, Schemas; Functions : Types, Usage in Real-time; Scalar, Inline and Multi-Line Functions; System Predefined Functions, Audits; DBId, DBName, ObjectID, ObjectName; Variables & Parameters; User & System Predefined Procedures; Parameters; Sp_help, Sp_helpdb and sp_helptext; sp_pkeys, sp_rename and sp_help; When to use Which Database Objects;

Chapter 11: Triggers & Transactions

Triggers - Purpose, Real-world Usage; FOR/AFTER Triggers; INSTEAD OF Triggers; INSERTED, DELETED Memory Tables; DML Automations using Memory Tables; Read Only Tables using DML Triggers; Enable Triggers and Disable Triggers; Database Level, Server Level Triggers; Transactions & ACID Properties; Auto Commit; EXPLICIT & IMPLICIT; COMMIT and ROLLBACK; Open Transaction; Query Blocking Scenarios @ Real-time; NOLOCK and READPAST Lock Hints;

Chapter 12: ER MODELS, NORMAL FORMS

Normal Forms for Entity Relationships; First, Second, Third Normal Forms Usage; Boyce-Codd Normal Form: BNCF : Usage; 4 NF, EKNF, ETNF. Functional Dependency; Multi-Valued, Transitive Dependencies; Composite Keys and Composite Indexes; 1:1, 1:M, M:1, M:M Relationship Types; SQL Queries Access in Reporting Tools; Storing SQL Queries into Views; Creating Office Data Connection Files; Excel Pivot Reports and Reports; SQL Queries (Auto Generated) in BI Tools; FETCH OFFSET, NEXT ROWS; Data Refresh (Manual, Automated);

REAL-TIME CASE STUDY - 2 (Sales & Retail), EXCEL INTEGRATION

Chapter 13: STORED PROCEDURES - Level 2

Table Valued Parameters (TVP); READONLY Parameters - Stored Procs; OUTPUT Parameters - Stored Procedures; User Data Types & Real-time Use; Dynamic Data Insertions with SPs; Table Cloning, Inserts @ Table Variables; SQL Injection Attacks - Precautions; CTE : Common Table Expressions; Real-time Scenarios with CTEs; Recursive and Non-Recursive CTEs; CTEs for Avoiding Self Joins & Sub Queries; Recursive CTEs and ANCHOR Element; Termination Checks in Recursive CTEs; Loops with Recursive CTEs; Date, Time in CTEs; Disadvantages with CTEs;

Chapter 14: STORED PROCEDURES - Level 3

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; Cursors in SProcs; ForwardOnly, Scroll & Local Cursors; Static, Dynamic & Global Cursors; Keyset Cursors and @@FetchStatus; Nested Stored Procedures; Formatting and WHILE Loops; Temporary Tables for Formatting;

Chapter 15: XML, BLOB, FUNCTIONS - Level 2

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 in T-SQL; Data Type Conversions; Composite Keys , Computed Columns; Self Referencing Keys, Self Joins; Adding Keys to Existing Tables; XML AUTO, XML RAW and XML PATH; BULK INSERT, BULK COLUMN & JSON; OPENROWSET; JSON, PIVOT and UNPIVOT Functions;

Chapter 16: SQL SERVER & DATABASE ARCHITECTURE

Server Architecture and Protocols; Database Engine and Query Processor; Parser, Optimizer, SQL & DB Manager; Storage Engine Components, SQL OS; File Manager and Database Files; Transaction Services, Buffer Manager; Lock Manager, IO Manager, MDAC; CLR, WAL, Lazy Writer, Checkpoint; Database Architecture - Data Files; Database Architecture - Log Files; Primary (mdf), Secondary Files (ndf); Filegroups Usage, ReadOnly Filegroups; Database Files : Size and Location; Pages, Extents. Uniform, Mixed Extents; Transaction Log File [LDF], LSN, VLF;

Chapters 17 - 20: REAL-TIME PROJECT (BANKING) [Includes 2000 Lines of Code]

Phase 1: DATABASE DESIGN

End to End Project Work Flow; Naming Conventions in Real-time; Implementing Normal Forms (OLTP); Computed Columns; SQL_Variant, Bit, sysname; Email & Phone Number Validations;

Phase 2: QUERY DESIGN

Joining Tables for Reports; Views with JOIN Options; Implementing Indexed Views; Using PIVOT Tables in Queries; PIVOT and UNPIVOT in T-SQL Queries; Dynamic Conditions in Queries;

Phase 3: PROGRAMMING

Event Handling , Error Handling; Stored Procedures with Transactions; Error Handling, Event Handling; Transaction Nesting, Save Points; Stored Procedures with Tables, Views and Functions; Automating DML with Triggers; Project Deployments, Project FAQs;

Module 2: Performance Tuning & MCSA - 70 761

Applicable for T-SQL Plans B, C

Chapter 21: Tuning 1 - AUDITS, INDEXES FOR TUNING

Audit Long Running Queries @ DMVs and DMFs; Activity Monitor and Query Statistics; Logical I/O, Physical I/O, Database I/O, Wait Time; Recent Expensive Queries, Active Expensive Queries; Plan Handle & Execution Time; Server Dashboards; Query Store - Settings and Advantages. Options; Indexes: Architecture; B Tree Structure, IAM [Root]; Clustered & Non Clustered; Included, Column store, Online; Filtered, Covering, Indexed Views; Fill Factor & Pad Index;

Chapter 22: Tuning 2 - PARTITIONS, INDEX MANAGEMENT

PARTITIONS Mechanism : Advantages, Performance; Partition Functions and Partition Schemes ; Partitioning Un-partitioned Tables; Partition Compression: ROW, PAGE; Statistics : Auto Creation & Updates; Index Management : Internal, External Fragmentation; Fragmentation Audits : DMFs and Thresholds; Index Reorganization and Index Rebuild Options; Database Maintenance Plans (DMP) For Index Reorg; Page Count, Last Used. Fast, Sampled / Detailed Scan; Statistics & Index Management : Degree Of Parallelism; Resumable Indexes: ONLINE, RESUME;

Chapter 23: QUERY TUNING 3 - TUNING TOOLS, LOCKS, ISOLATION LEVELS

Tuning Tools; SQL Profiler - Tuning Template; DTA Tool; Perfmon Counters; Index Scan, Index Seek, Tables Scan, Spooling; Query Costs : IO, CPU Cost, SubTree Cost, Operator Cost; NUMA Nodes, IO Affinity; Parameter Sniffing; Execution Plan; Shared (S), Intent Shared (IS); Exclusive (X), Intent Exclusive (IX); Update (U), Metadata Lock (MD); Schema Lock; SP_WHO2, SP_LOCK, sysprocesses; Isolation Levels - Read Committed, Read Uncommitted; Serializable, Snapshot, Repeatable Read; Read Committed Snapshot; Deadlock Simulation, Prevention & Avoidance;

Chapter 24: Tuning 4 - LOCKS, MEMORY TABLES, TEMPORAL TABLES

Full Text Search (FTS) - Architecture, Tuning; Stop Words, Stemmer and Thesaurus; Indexer Program, Query Processor & FT Query Compilation; DB Catalogs (FTC) and FDHost.exe. Daemon Threads; Filter Daemon Host; CONTAINS() Queries and FREETEXT() Queries; Resumable Indexes, ONLINE, RESUME, PAUSE, MAX_DURATION; In-Memory Tables : Creation and Practical Usage for Tuning; Memory Snapshots; FileStream Files and Memory Snapshot Filegroups for MOT; MEMORY_OPTIMIZED_ELEVATE_TO_SNAPSHOT; Temporal Tables : for DML Audits, System

Versioning; Temporal Tables : Data Audits, Timestamps; Statistics : Auto Creation and Updates;

Chapter 25: MCSA 70-761 Exam Guidance + Material

Module 3: Azure SQL Database Development & MCSA - 70 762

Applicable for T-SQL Plan C

Chapter 26: AZURE CLOUD INTRO, CONFIGURATION

Cloud Architecture Basics - IaaS, PaaS and SaaS; Advantages of Microsoft Cloud - Azure Platform; Azure Products and Azure Services - Marketplace; SQL Database Implementations in Azure Platform; Logical Servers, Virtual Machines, Managed Instance; Installing SSMS and Azure Data Studio (ADS) Tools; Azure Account and Free Subscriptions; Azure SQL Server (Logical Server); Firewall Settings; IP for Remote Access; Password Resets; Pricing Tiers, Access from SSMS Tool;

Chapter 27: DTU, ELASTIC QUERIES, DATABASE MIGRATIONS

DTU : Data Transaction Unit, Resource Allocations; Basic, Standard & Premium Plans For SQL DB; vCore Based Purchasing : Gen 4 and Gen 5 Types; General Purpose & Business Critical Plans; Compute Tier : Provisioned and Serverless; Bounding Box Model, Elastic Pools & Queries; eDTUs and Elastic Pool, per DB Settings; Azure Storage : Creation & Containers; LRS, GRS and RA-GRS Azure Storage Accounts; Storage Containers, Storage Explorer Tool Usage; Data Migration Assistant (DMA), Assessment; Migrations To Azure SQL; DB Exports and Imports with bacpac; Migration Scopes : Schema, Data, Schema & Data; Schema Generation & Compatibility.

Chapter 28: AZURE SQL DATABASE TUNING

Azure SQL Server Level Tuning Options; Azure SQL Database Level Tuning; Automated Tuning; Force Plan, Create Index and Drop Index; Query Performance Insight, Recommendations; IO Metrics, CPU Metrics & Query Statistics; Data File IO, Log File IO, Custom Reports; Recommendations; Azure Search Service; Suggester and Analyzer; Retrievable, Facetable, Filterable Indexes; Facetable; Change Tracking Options, Watermark Columns;

Chapter 29: XEL GRAPHS, STRETCH DATABASES

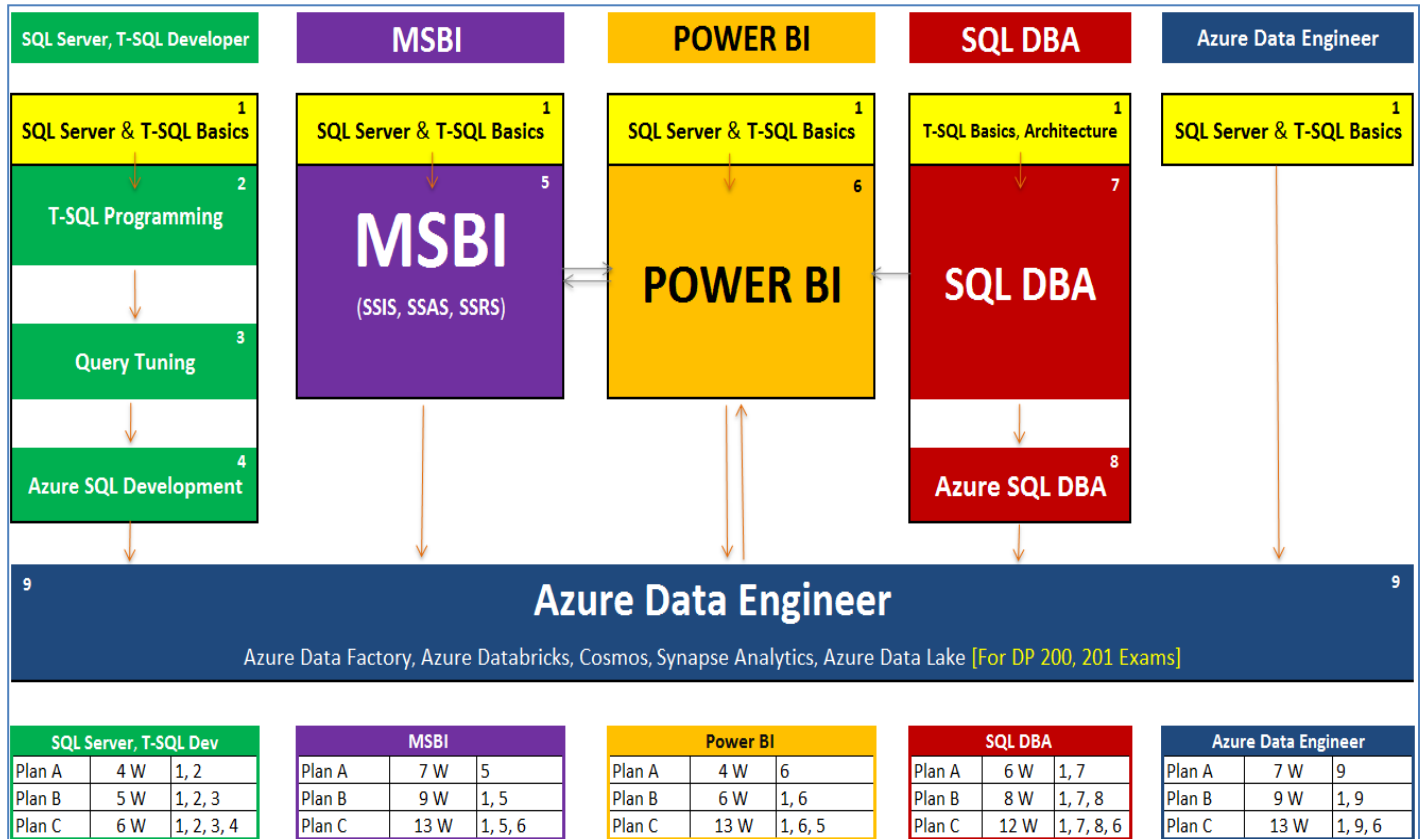
SQL Traces : Creation; SQL Traces : Event Class, Category, Filter, Conditions; Extended Events Package, Target, Action, Session; TSQL and SP Debug Events; XE Objects : Catalog & Dynamic Management Views; XE Profiler - Event Profiling; Stretch Databases in Azure SQL Databases; Stretch Databases; Performance Levels and DSU Pricing; Data Storage and Snapshots; Hybrid Cloud Settings; Remote Data Archive; Database Master Key [DMK], Cold Data Migration;

Chapter 30: MCSA 70-762 Exam Guidance + Material

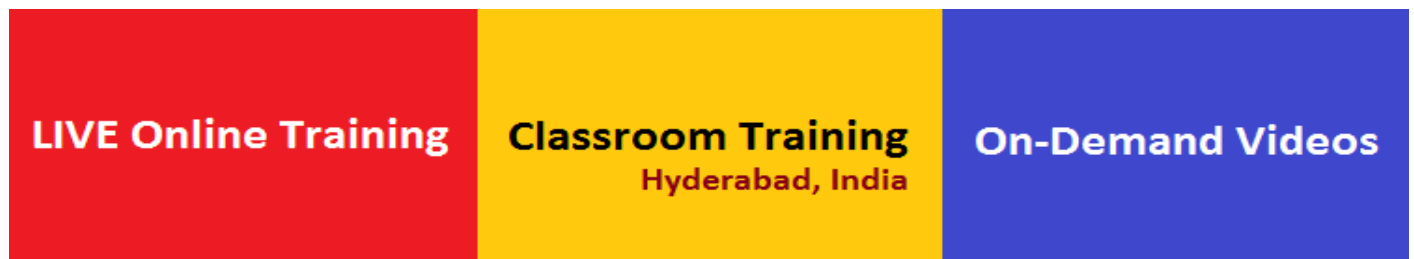
Resume Preparation, Mock Interviews (2)

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