SQL School™

Quality Training Assured

A Unit of Sequelgate Innovative Technologies Pvt. Ltd.

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SQL Server T-SQL Developer

Complete Practical & Real-timeTraining

SQL Server T-SQL Developer Training Highlights:

☐ Complete Practical	☐ Study Material & Practice Labs
☐ Real-time Scenarios	☐ Certification Support
☐ Job Support	☐ Interview Preparation
☐ Resume Preparation	☐ Placement Support
☐ 24x7 LIVE Server	☐ 100% Guaranteed Results

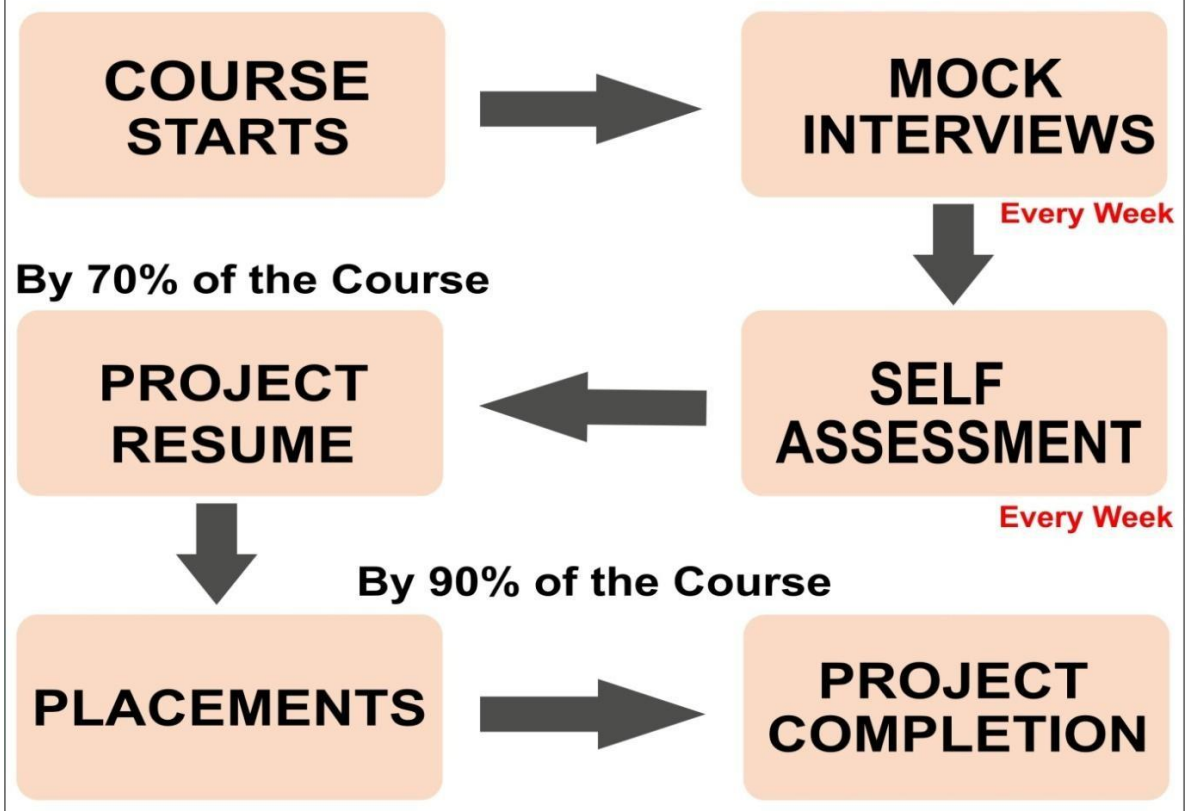
About Trainer: **Mr. Sai Phanindra Tholeti** is a Database Consultant, Microsoft Certified Trainer with more than 12 years of expertise for SQL Server, Business Intelligence (MSBI) and Data Warehouse. He is the chief trainer from SQL School rendering impeccable, highly interactive, friendly and highly technical Trainings exclusively on **Microsoft SQL Server & T-SQL Development** to our Corporate Clients: **Infosys, MindTree, ADP, Infotech, PrimeHealth.** Our **latest Invoices** & **Purchase Odrers** to these companies. available @ http://www.sqlschool.com/clients
Trainer Profile @ **http://www.linkedin.com/in/saiphanindra**

We also provide Fast track Weekend, Custom Trainings

SQL Server & T-SQL Developer Training with Azure

Trainer : Mr Sai Phanindra (12+ Years Experience)

	PLAN A	PLAN B	PLAN C
Duration	3.5 weeks	4.5 weeks	6 weeks
Completely Real-time	✓	✓	✓
Resume, Job Support	✓	✓	✓
Real-time Project (Banking)	✓	✓	✓
Performance Tuning Classes	✗	✓	✓
MCSA Certification: 70-761	✗	✓	✓
MCSA Certification: 70-762	✗	✗	✓
Azure SQL Database DEV	✗	✗	✓
Total Course Fee	INR 4,000/-	INR 6,000/-	INR 10,000/-



MODULE 1: SQL Server &T-SQL Concept

Chapter 1: DATABASE BASICS, SQL BASICS and **INSTALLATION**

What is Data? What is Database? What is Microsoft SQL Server? Why SQL Server? Advantages - What is SQL? What is T-SQL? Why T-SQL? Versions and Editions of SQL Server, Hardware, Software Requirements SQL Server Installation. Step by Step Installation Guidance. Instance Configuration, Default and Named Instances. SSMS Tool Installation, LAB PLAN - 24x7 LIVE Server. Resume & Project Planning

Chapter 2: SSMS Tool, **DATABASE BASICS** and **SQL QUERIES**

Instance Configuration Steps and Connection Tests. SQL Server Management Studio (SSMS) Tool Installation and Verification. Browsing for Local / Network Servers. Default, Named Instances. Service, Collation, Authentication, FILSTREAM. System Databases: master, model, msdb, tempdb, resource. Database Creation, Table Creation, Data Insertion and Modification using SSMS GUI. Writing Basic SQL Queries: Creating Databases, Creating Tables, Inserting Data using Scripts. DDL and DML Statements. INSERT, UPDATE, DELETE. CREATE, ALTER, DROP. SET. SELECT

Chapter 3: SYSTEM DATABASES & **CLIENT - SERVER ARCHITECTURE**

Session IDs. Internal Execution of Queries: Client-Server Architecture & TDS Packet Sizing, Network Providers and Driver Programs. SQL Data Encryption Process & Client Statistics. SQL Engine - Query Compilation. SELECT Queries, WHERE, Operators: OR, AND, NOT, =, IN, NOT, BETWEEN, UNION & UNION ALL DELETE Versus TRUNCATE. CHAR Versus VARCHAR. Local and Global Temp Tables & Usage

Chapter 4: DETAILED DATABASE ARCHITECTURE

Database Design Architecture: Logical and Physical Database Design, Data Files - File Groups, Sizing, Pages and Extents. Log Files - Sizing, Placements and Pages, Virtual Log Files (VLFs). LSN and MINI LSN. WAL - Write Ahead Log & Checkpoints. Adding Files and Filegroups to SQL Databases. Creating Databases using T-SQL Commands & GUI Tools. Filegrowth and MaxSize Properties. Schemas and Table Creations. Routing Tables to Filegroups Advantages. ALTER & MODIFY. VLDB Scenarios Design in Real-World Projects. Columns Alias, Sub Queries with Schemas

Chapter 5: CONSTRAINTS

Constraints: NULL and NOT NULL Properties. Primary Key, Unique Key Constraints. Foreign Key Constraints and Table Relations. Cascaded Foreign Keys for UPDATES, DELETES. Check and Default Constraints, Schemas. Composite Keys, IDENTITY Columns: SEED, INCREMENT. Composite Keys, Self Referencing Keys. Data Types.

Chapter 6: NORMAL FORMS, **DATABASE DIAGRAMS**

Normal Forms - Relational Database (RDB) OLTP Modeling with Normal Forms. FIRST Normal Form, SECOND Normal Form - Functional Dependency (FD), THIRD Normal Form and BCNF. Multi Valued Dependency (MVD) Rules and Performance Factors. Data Redundancy and BCNF.Variables: Purpose, Types and Scope: BATCH. Local & Global Temporary Variables.

Chapter 7: VIEWS - TYPES & METADATA QUERIES

VIEWS - Benefits For Data Access, Defining Views on Tables. Views as Stored SELECT Statements, Data Access, SCHEMABINDING, ENCRYPTION - Advantages, Issues with Views For Data Validations - Solutions, Cascaded Views and WITH CHECK OPTION, Orphan Views - Real world Solutions for Row Level Data Security.

Chapter 8: JOIN - TYPES &SUB QUERIES

JOINS - Purpose and Types, JOIN - Types, Queries, CROSS JOIN in detail. Examples and Conditions @ WHERE, INNER JOIN in detail. Examples with WHERE and ON, Comparing INNER JOIN with CROSS JOIN for Conditions, OUTER JOINS in detail. LEFT, RIGHT and FULL Joins, SELF JOINS with INNER / OUTER Joins. JOINS with more than two tables. Nested Sub Queries, Group By, Grouping, Rollup, Cube.

Chapter 9: FUNCTIONS & QUERIES, NESTED QUERIES

Functions - Types, Scalar Value, Inline / Multiline Table Value Returning Functions, WHILE Loops, Variables, Parameters. Row Number, Dense Rank & OVER, ORDER BY, ROLLUP, CUBE. Important System Functions – OBJECT_ID, OBJECT_NAME, DB_ID, DB_NAME. Date, Time Functions, GETDATE(), DATEDIFF, DATEADD, CASE, ISNULL, COALESCE, CAST, CONVERT, IIF, REPLACE, Sub String, CHARINDEX, SOUNDEX

Chapter 10: STORED PROCEDURES - LEVEL 1

Stored Procedures - Purpose, Syntax, Types. Compilation and Recompilation with Query Optimization (QO), Variables - Usage and Data Types in Stored Procedures, Parameters - Data Types in Stored Procedures, Stored Procedures for Validations. Stored Procedures for Data Reporting. System Stored Procedures For Metadata. IF.. ELSE, IF .. ELSE IF, IIF Conditions. PRINT Versus SELECT Statements.

Chapter 11: STORED PROCEDURES - LEVEL 2

Dynamic SQL Queries, Using NVARCHAR Data Type and Error Handling in T-SQL: TRY, CATCH, THROW. Dynamic Parameters and Variables. Default Parameter Values, Batch Executions with Stored Procedures. OUTPUT Parameters & sysname data type in Real-time. MERGE Statement with Stored Procedures. Storing BLOB Data with Stored Procedures. OPENROWSET and BULKCOLUMN with Sub Queries.

Chapter 12: TRIGGERS

Triggers - Purpose and Types. DML Triggers - Events, Types. FOR / AFTER Triggers Usage and Importance, INSTEAD OF Triggers. INSERTED and DELETED Memory Tables with DML Triggers, Triggers for Disabling Table and View DML Operations. DML Audits, Database Level & Server Level Triggers, Triggers for Bulk Operations.

Chapter 13: TRANSACTIONS & STORED PROCEDURES – LEVEL 3

Transaction Types and ACID Properties. Atomic Property, EXPLICIT, IMPLICIT Transactions. @@TRANCOUNT & Query Blocking Scenarios. IMPLICIT Transactions, AUTOCOMMIT Transactions - Advantages, Nested Transactions and COMMIT / ROLLBACK, Save Points and Explicit Transactions. Lock Hints: NOLOCK, READPAST

Chapter 14: INDEXES (QUERY TUNING)

Clustered Indexes & Non-Clustered Indexes - Architecture. Column Store Indexes, Included Column Indexes, Indexed Views, Online / Filtered Indexes with TEMPDB - Query Tuning. Table Scan, Index Scan, Index Seek. Indexes @ PK, UQ Constraints. Indexed Views (Materialized Views) for Query Tuning and Real-time Considerations.

Chapter 15: SQL SERVER ARCHITECTURE

SQL Server Architecture - Protocols : TCP / IP, Named Pipes, Shared Memory, SQL Native Client (SNAC) and OLE DB Drivers / Providers, Query Processing and Query Optimizer (QO) Components, Database Engine, Storage Engine, MDAC, SQL Server Engine, SQL & Database Manager, Buffer Manager. Write Ahead Log (WAL), Lazy Writer, SQLOS & CLR Components. MDAC & XMLA Components for Client - Server Communication. CHECKPOINT, LAZY WRITER, WAL Threads. SQL CMD Tool Usage.

REAL-TIME PROJECT IMPLEMENTATION

- Phase 1: Understanding Project Requirement - Banking
- Phase 1: Database Design with FileGroups, Schemas
- Phase 1: Table Design with FileGroups, Schemas
- Phase 1: Defining Constraints, Relations, Synonyms
- Phase 1: Design Data Structures for Optimal Performance

- Phase 2: Views for Data Inserts, Joined Queries
- Phase 2: Common Reporting Functions, User Access
- Phase 2: RANK, ROW_NUMBER, DENSE_RANK, PIVOT
- Phase 2: INSERTS with PIVOT, Calculations, Sub Queries
- Phase 2: Implement Indexes and Column Store Options

- Phase 3: End-to-End Implementation - Data Validations
- Phase 3: Stored Procedures for Dynamic Data Inserts
- Phase 3: Updatable Views and Triggers for DML, Indexes
- Phase 3: DML Operations with PIVOT and Pagination
- Phase 3: Triggers with Transactions, Event Handling, Debugging
- Phase 3: Error Handling Techniques and RAISEERROR Options
- Phase 3: ADVANCED, COMPLEX Stored Procedures in T-SQL
- Phase 3: DB Documentation Tools, Deployment Options

- Reading Log Files and Data Audits & 3rd Party Tools
- Transaction Audits and Offline Query Logs for SQL DEV
- Import & Export Operations in SQL Server (SSIS)
- Bulk Operations and Bulk Loads. Database Scripting Options
- Creating and Using Data Sheets **- Project Documentation**

MODULE 2: APPLICABLE FOR PLAN B:

Chapter 16: Performance Tuning – I

Identifying Long Running Queries & Activity Monitor, Important Dynamic Management Objects (DMV, DMF). Query Statistics and Cache Plans / Execution Plans, CROSSAPPLY, Avoiding Self Joins, Avoiding Sub Queries and Conditions: Real-world Scenarios. Common Table Expressions (CTE), In-Memory. Stored Procedures for Parameterized CTE Sub Queries. RECURSIVE CTEs & Performance. Join Options For Query Tuning: HASH JOIN, LOOP JOIN, MERGE JOIN,RAID Levels.

Chapter 17: Performance Tuning – 2

Big Data – Query Tuning Considerations, Table Partitions For Performance Tuning Partition Functions and Partition Schemes, Partition Ranges, Values and Sort Orders Partitioning Un-partitioned Tables using Indexes, Aligned / Indexed Partitioning and Performance, Data Compression Types - ROW Level, PAGE Level, Partition Numbers and Filtered Compression Concepts, Managing Partitions and Query Tuning Options. STATISTICS. Index Statistics - LIVE Query Statistics. SAMPLE and FULLSCAN.

Chapter 18: Performance Tuning – 3

LIKE Operator - Limitations. Using Wild-cards, Full Text Search (FTS) Configuration Options, Full Text Search Service Activation - DB Level, Filter Daemon Launcher Service - Purpose, Settings, Database Catalogs (FTC) and Storage Locations. Full Text (FT) Indexes for Query Tuning, Full Text Columns and Primary Key Index. Full Text Index For Searching Queries. Issues, Full Population and Incremental Population CONTAINS() and FREETEXT() Functions, Token Search, Inflectional Forms, Operators Data Populations in FTS, Performance Tuning with FT Indexes. Performance Impact.

Chapter 19: Performance Tuning – 4

Index Internals and Execution Plans, Understanding Execution Plans, Statistics, Cost Index Fragmentation – Performance, Scans. FillFactor & Pad Index Options, Index Rebuilds (Online/Offline), Tuning Options, Index Reorganization Advantages. Page, Row Compressions with Indexes Database Tuning Advisor (DTA) – Usage with SQL Profiler. Creating Trace Tables & Workload Files. Profiler Filters and Templates. Tuning & Stored Procedure Templates.

Chapter 20: Performance Tuning – 5

Memory Optimized Tables – Configuration and Usage. Memory Optimized Filegroups Creation & Database Settings, MEMORY_OPTIMIZED_ELEVATE_SNAPSHOT Options, Nonclustered Primary Key Columns with Optimization Settings with Indexes and Real-world considerations. Degree Of Parallelism (DOP) Temporal Tables and SYSTEM_VERSIONING, Temporal Tables For DML Audits, Performance Impact. OPENROWSET with Temporal Tables. PERFMON Counters. Query Tuning Checklist For SQL Developers.

MODULE 3: Azure SQL Database

DAY 1: AZURE CLOUD INTRO

Introduction to Cloud. Need for Cloud, Advantages, Cloud Architecture Basics - IaaS, PaaS and SaaS, Operational Advantages of Cloud, Cloud Providers, Advantages of Microsoft Cloud - Azure Platform, Service Models, Private & Public Clouds, SQL Databases in Microsoft Azure and Advantages, Azure SQL & Databases - Need, Importance, Azure Sources - Types, Microsoft Market Place, Azure SQL Database, Azure SQL Data Warehouse, Azure Analysis Services, BLOB and TABLE Storage, Azure Cosmos DB, Data Lake, DH Insight, Spark, Virtual Machines and Apps, Programs in Azure, Azure SQL Variants and Service Tiers, Advantages of Azure SQL Databases & Tools, Comparing Azure with AWS and Google Cloud

DAY 2: AZURE CLOUD CONFIGURATIONS

Azure Cloud Subscription, Azure Portal Options, Azure Resources, Marketplace and Dashboards, Azure SQL Database Architecture Components - in detail, Price Tiers: Basic, Standard, Premium, PremiumRS, Isolated Price Trier - Advantages, Performance, Creating SQL Servers in Azure and in Virtual Machines, Elastic Pools and Configuration Options - Advantages, DTU : Data Transaction Units : Architecture, Pools, eDTUs and Elastic Pool, per Database Settings, EDTU Cost, eDTU max/min Limits and Performance, Resource Groups and Resource Pools in Azure SQL, Azure SQL Databases : Technical Features, Benefits, Built-In Intelligence and Scalability, Tools For Usage, OSM Workspace - Operations

DAY 3: AZURE SQL DATABASE CONFIGURATION

Creating Azure SQL Server Instances, Creating Azure SQL Databases, Price Tiers, SQL Database – Cloud Database as a Service, Subscription Options and Database Sources, Elastic Pools & Tier Selection - Recommendations, Database Name Identifiers, Naming rules & restrictions, Server Names - Locations, Admin Users, Passwords, S1/S2/S3 DTU bands and Performance, Storage, Add-On Storage Options. Database Provisioning, Firewall Rules, IP Configuration Ranges, Azure Dashboard - Metrics, Notification Options, Azure SQL Database Collation, Connection Options, Tools, SQL Server Management Studio (SSMS) & Visual Studio, SQL Server Data Explorer Tool in Azure Cloud,.NET, PHP, Node.js, Java, Ruby, Python, Creating Azure SQL Databases in SSMS Tool, T-SQL Scripts for Azure SQL Database

DAY 4: DEVELOP AZURE SQL DATABASE

Executing T-SQL Scripts in Azure, Creating Tables and Defining Constraints, Cascades, Constraint Rules and Index Rules, Clustered Indexes in Azure SQL Database Tables, Programming Objects: Stored Procedures in Cloud, Automated Recompilations, Complex Stored Procedures, Triggers and Memory Tables Architecture in Cloud, CTE : Common Table Expressions, User Defined Functions and Views for Data Reporting, Differences between On-Premise and Cloud SQL Databases, Executing T-SQL Scripts in Azure SQL Database, Linked Servers with On-Premise and Cloud, SSMS "Generate Script", Advanced Options, Azure SQL Database JSON Features, Data Imports, Azure SQL Database In-Memory Tables - Advantages, Temporal Tables, In-Memory OLTP Tables with Azure SQL DB, Excel Reporting Options from Azure SQL Database, BLOB Data Storage

DAY 5: AZURE SQL DATABASE MIGRATIONS Database Scripting Wizard in SSMS, Scripting On-Premise Databases in T-SQL, Data Migration Assistant (DMA) Tool, Schema Generation and Compatability Issues, Generating Data Scripts, Assessment, Schema Options, Prepare and Deploy Fixes. Database Snapshots, Resolving Database Migration Compatibility Issues, Partially Supported and Unsupported Functions, non SQL Server Database Migrations : MS Access, Oracle, SQL Server Migration Assistant (SSMA) Tool, In-Memory Tables
DAY 6: INTEGRATING with AZURE SQL DATABASE Azure SQL Database Tables, Views in Excel, Excel Pivot Tables and Chart Reports with Azure SQL DB, Azure & Excel ODC Connections. Pivot Reports, ADO.NET, JDBC and ODBC Connections. Data Mashups, Connection Drivers in Azure Cloud - Options, Azure Portal Email Configurations, Triggers, Azure SQL Database Query Batching - Advantages, Azure Cloud Shell - Concepts, Architecture, Azure Power Shell - Install and Configure, Installing and Scripting with Power Shell, PowerShellGet and Version Paths, Cloud Shell to run the Azure Power Shell, Linux Virtual Machines with Power Shell

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