



# SQL Server DBA Course

## Complete Practical & Real-time Training

**Mode:** Instructor Led - LIVE , Online Training

**Duration:** 6 Weeks, Weekly 5 Days

**Type:** 100% Practical. Theory Material provided in Advance.

### Training Highlights

- ✓ Complete Practical and Real-time Scenarios
- ✓ Study Material and Practice Labs
- ✓ Session wise notes & Doubts Clarifications
- ✓ Certification Material & Resume Preparation
- ✓ Videos for Missing Sessions & Doubts Clarifications
- ✓ 24x7 LIVE Server Access with TWO Databases
- ✓ Interview Preparation and Guidance
- ✓ Technical Support and Placements Assistance
- ✓ One Real-time Case Study and FAQs with Answers
- ✓ Mock Interview and Course Completion Certificate

**All Training Sessions are Completely Practical & Real-time**

SQL School (SequelGate Innovative Technologies Pvt. Ltd.), #302, Sai Manor Complex, SR Nagar, Hyderabad - 38, India. **CREDITS:** ISO Certified Learning Center. Microsoft Certified Learning Partner.

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# SQL SERVER DBA (SQL DBA) Training

All Our Training Sessions are COMPLETELY PRACTICAL & REALTIME with Hands-On Lab.

## Module 1 - SQL Server Fundamentals & T-SQL Queries

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| <p><b>Chapter 1: SQL Server Installation</b></p> <ul style="list-style-type: none"><li>• SQL Server 2012 Installation</li><li>• SQL Server 2014 Installation</li><li>• WMI Checks &amp; Configuration Tool</li><li>• Server Components and Purpose</li><li>• Firewall Options and Instance Rules</li><li>• Service Accounts, Purpose and Usage</li><li>• Authentication Modes &amp; Logins</li><li>• Instance Configuration Options</li><li>• Testing Multiple Installations</li><li>• Management Studio (SSMS) Tool Usage</li><li>• Shared Features and Client Components</li></ul> <p><b>Chapter 2: Database Design Concepts</b></p> <ul style="list-style-type: none"><li>• SQL Server Database Architecture</li><li>• Database Catalog and Storage Options</li><li>• Data Files : Purpose and Storage</li><li>• Filegroups : Purpose and Usage</li><li>• Log files : Purpose and Audits</li><li>• Use of Transaction Log Files</li><li>• Sizing and Placement - Data Files</li><li>• Sizing and Placement - Log Files</li><li>• Locations and Sizing Recommendations</li><li>• Filegrowth and MAXSIZE Options</li><li>• Scripting Database Structures</li><li>• Database ALTERs and Considerations</li><li>• Designing Very Large Databases (VLDB)</li><li>• Placement of Files and Filegroups</li><li>• DB Design Parameters and Limitations</li><li>• Design Recommendations from Codeplex</li></ul> <p><b>Chapter 3: Table Design and Queries</b></p> <ul style="list-style-type: none"><li>• Tables Design Concepts &amp; Normal Forms</li><li>• Table Creation Process and Options</li><li>• File Groups and Table Design</li><li>• Role of Schemas and Table Design</li><li>• DML, DDL and SELECT Operations</li><li>• Single Row and Multi-Row Inserts</li><li>• Table Aliases, Column Aliases &amp; Usage</li><li>• INSERT &amp; SELECT Variants in T-SQL</li><li>• Data Types and Column Usage</li></ul> | <p><b>Chapter 6: Indexes and Joins</b></p> <ul style="list-style-type: none"><li>• Indexes : Need, Types and Usage</li><li>• Index : Architecture &amp; Placement</li><li>• Index Pages : Design and References</li><li>• Query Optimizer and Query Executions</li><li>• Index SCAN and Index SEEK Plans</li><li>• Clustered &amp; Non Clustered Indexes</li><li>• SORT_IN_TEMPDB Options for Indexes</li><li>• FILLFACTOR and PAD_INDEX Options</li><li>• INCLUDED Column Indexes &amp; Types</li><li>• Using Indexes with Table Constraints</li><li>• Unique Indexes and Tuning Options</li><li>• Indexed Views, Query Plans and Tuning</li></ul> <p><b>Chapter 7: Stored Procedures and Joins</b></p> <ul style="list-style-type: none"><li>• Stored Procedures - Benefits</li><li>• Types of Stored Procedures</li><li>• Use of Variables and Parameters</li><li>• Using SPs for SQL Data Validations</li><li>• Using SPs for Data Reporting Operations</li><li>• Using SPs for Joined Data Sets</li><li>• System Stored Procedures and Usage</li><li>• Dynamic SQL Queries &amp; Usage</li><li>• RECOMPILE Options and Advantages</li><li>• Using SPs with Cursors - Querying</li><li>• Procedures with Temporary Tables</li></ul> <p><b>Chapter 8: Functions and Sub Queries</b></p> <ul style="list-style-type: none"><li>• Functions - Types and Benefits</li><li>• Scalar Value Functions &amp; Usage</li><li>• Inline Table Value Functions &amp; Usage</li><li>• Multi-line Functions - Scope, Usage</li><li>• CROSSAPPLY and CONVERT options</li><li>• SCHEMABINDING, ENCRYPTION Options</li><li>• Embedding Functions in Queries</li><li>• System Functions and Query Audits</li><li>• Date, Time and String Functions</li><li>• Aggregate and GROUPING Functions</li><li>• Date Functions and CONVERT() Styles</li><li>• Comparing CAST and CONVERT()</li><li>• Using CROSSAPPLY, ROLLUP, GROUP BY</li></ul> |
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- Row size Computation & NULLs
- Basic INSERT, UPDATE, DELETE
- Multi-Row Inserts and SELECT Statements
- SELECT Queries with Schema References
- Basic Data Types & NULL Value Compares
- Design Limitations & UPDATES
- Role of Log Files for DML Operations
- DELETE versus TRUNCATE Statements

#### Chapter 4: Normalization, Keys and Constraints

- Normalization & Constraints Concepts
- Normal Forms in Table Design
- OLTP Database Model and BCNF
- NULL Property and Importance
- UNIQUE KEY Columns and Usage
- PRIMARY KEY - Usage & Limitations
- Use of FOREIGN KEY References
- CHECK and DEFAULT Constraints
- Composite Primary Keys & Use
- Identity Property & Duplicate Keys
- Identity Property with PRIMARY KEY
- Managing Keys and Constraints
- Recommendations & Naming Conventions

#### Chapter 5: Views and Joins - Queries

- Views in SQL Server and Usage
- SELECT Query Variants in Views
- WHERE, IN, EXISTS and BETWEEN
- SCHEMABINDING & ENCRYPTION Options
- Views with ALTER TABLE, TOP Clause
- Data Validations and Orphan Views
- Database Diagrams and Entity Relations
- Views for Enforcing Data Level Security
- Common System Views and DMVs - Audits
- Using JOINS with Cascaded Views
- Views on Multi Table Joined Queries

- Comparing HAVING & WHERE in SELECT

#### Chapter 9: Stored Procedures with Triggers & Cursors

- Triggers - Types and Usage
- Understanding Trigger Executions
- DML Triggers & Performance Impact
- INSERTED and DELETED Memory Tables
- FOR Triggers - Importance and Usage
- Instead Of Triggers - Importance
- BULK Operations with DML Triggers
- Using Triggers for Audit Operations
- Triggers for Data Sampling Operations
- Database Level Triggers - Usage
- Server Level Triggers - Usage
- Triggers for Updatable Views (Cascade)
- Cursor Variables - Types and Usage
- STATIC versus DYNAMIC Cursors
- SCROLL Versus FORWARD\_ONLY Cursors
- LOCAL, GLOBAL and KEYSSET Cursors
- Cursors For Dynamic SQL Queries
- Embedding Cursors in Stored Procedures
- Using Temporary Tables with Procedures
- Temp Tables versus Table Variables

#### Chapter 10: Stored Procedures with Transactions

- Understanding ACID Properties, Scope
- Explicit and Implicit Transactions
- Comparing Autocommit and Explicit
- Comparing Autocommit and Implicit
- Nesting Of Transactions - Benefits
- Savepoints and working with Batches
- Object Blocking Issues & Solutions
- Query Blocking Issues & Solutions
- Nested Transactions and Savepoints
- Lock Hints in Queries & Performance
- Query Blocking - Real-world Considerations

## Module 2 – Basic SQL DBA

### Chapter 11: Lock Issues & Deadlocks

- Understanding Locks & their Usage
- SP\_WHO2 and SP\_LOCK Outputs
- Lock Types, Lock Hints and Lock Escalations
- Avoiding WAITS on PAGE and TABLE
- Isolation Levels - Types and Usage
- READ COMMITTED and SERIALIZABLE
- READ UNCOMMITTED and REPEATABLE
- SNAPSHOT & READCOMMITTED SNAPSHOT
- Choosing Isolation Levels For OLTP
- Statement Locks & Transaction Locks
- TempDB Issues with Isolation Options
- Locking Hints to Avoid Blockings
- A DEADLOCK Scenario and DML Audits
- Deadlock Detection and Avoidance

### Chapter 12: Logins, Users & Roles

- Understanding Security Architecture
- SQL Server Security Authentication
- Server Level Security and Logins
- Database Level Security Users
- Schemas and User Mappings - Usage
- Server Level Roles and Usage
- Database Level Roles and Usage
- Testing Security Operations in SQL
- Simulating SQL Server Security Logins
- Login Errors and Password Resets
- GRANT, DENY & REVOKE Permissions
- Common Security Functions & Queries
- Scripting Procedures For Securables

### Chapter 13: Object Level Security & Proxies

- A Realtime Security Scenario
- Object Level Security & Levels
- Database Level Roles, Securables and Usage
- Schema Level Security and Ownership
- DB Certificates and Master Keys
- Data Level Security and Encryptions
- Testing Database Encryption Levels
- Basic Job Level Security & Options
- SQL Server Credentials & Scripting
- Proxies - Purpose, Usage and Options
- Using Server Credentials for Proxies
- Using Proxies for Job Level Sub Systems
- DMVs for Server Security Audits
- DMVs for Database Security Audits

### Chapter 17: Replication For HA/DR

- Replication Use & Importance
- Replication Architecture & Entities
- Articles, Publications, Subscriptions
- Deciding Distribution Components
- Distributor & Snapshot Paths
- Distribution DB Configurations
- Articles, Filters and Publications
- Article Dependencies & Encryption
- Working of Snapshot Replication
- Working of Transactional Replication
- PUSH and PULL Subscription Options
- Replication Monitor - Usage & Options
- Testing Replication Components
- Replication Jobs and Verification

### Chapter 18: Replication Tuning & Issues

- Working of Merge Replication & Agents
- Replication Conflicts and ROWGUIDCOL
- Tuning Merge Agent and Security
- Domain Accounts For Replication
- Limitations with Merge Replication
- Peer-Peer Replication with Pull Distributors
- Peer-Peer Replication and Conflicts
- Adding New Peer Nodes in P2P Replication
- Replication Initialization with Backups
- Replication Errors, Conflicts and Solutions
- Replication Event Watchers and Data Audits
- Article and Filter Management Options
- Replication for HA & DR Procedures

### Chapter 19: Log Shipping for DR

- Log Shipping Architecture and Jobs
- Choosing Primary, Standby Servers
- Log Shipping Monitor Configuration
- NORECOVERY Configuration and Usage
- STANDBY Mode Configuration and Usage
- Log Shipping Jobs and Schedules
- Backup Jobs and Possible Failures
- Copy & Restore Jobs with Secondary
- Log Shipping Monitor and Status Reports
- Manual Fail-over Process - Options
- Log Shipping Topology - Limitations
- Versioning Issues and Data Traffic
- Log Shipping for DR Procedures

- Useful Security Audit Queries (DMVs)

#### Chapter 14: Backups with T-SQL Scripts

- Backups Concept and Mechanism
- Backups Usage and Limitations
- Data Backups - Syntax and Types
- Log Backup Mechanism and Use
- CHECKPOINT and TRUNCATE Options
- Tuning Database Backup Operations
- File Backups and Filegroup Backups
- COMPRESSION, CHECKSUM and STATS
- Partial Backups with Filegroups
- Remote Backups and Security Options
- Backup Jobs and SQL Agent Service
- Scheduling Backups & Strategies
- MSDB History Tables and Audits
- Important Queries for Backup Audits

#### Chapter 15: Backups and Restores

- Backup Verification Procedures
- Recovery Paths and FILELIST Options
- Database Restores & RECOVERY Options
- File Restores and Filegroup Restores
- FILELISTONLY and VERIFYONLY Options
- MOVE and REPLACE Options For Restores
- PARTIAL and Piecemeal Restores
- Tail Log Backups and REDO Phase Options
- Compressed Tail Log Restores and REPLACE
- Restores for Partial Online Databases
- Choosing Right Backups for Restores

#### Chapter 16: Backups, Restores and Recovery

- Backup Mirrors and Restore Options
- Backup Splits and Restore Options
- Media Set, Media Family and Options
- FORMAT, NOFORMAT, INIT and NOINIT
- SQL 2012 Backups to SQL 2014 Restores
- Partial Backups and STATS Options
- CHECKSUM and CONTINUE\_ON\_ERROR
- Compatibility, Recovery Model Options
- Working with Recovery Models & Backups
- Backups using UI and SSMS Tool
- COPY\_ONLY Backups and Importance
- Point-In-Time Restores & Recovery
- Overwrite Options for DB Restores
- Backup Devices Creation & Usage
- Backup Devices Uses and Limitations

#### Chapter 20: DB Mirroring for Disaster Recovery

- DB Mirroring Architecture & Use
- Mirroring Configuration Scenarios
- Backups & Restores for Mirrors
- TCP Endpoints & Network Security
- Heartbeat and Polling Concepts in DM
- Working with Service Accounts & Use
- Automatic Fail-Over Procedures
- Manual Fail-over Options & Scenarios
- PARTNER OFFLINE Conditions & Options
- DB Mirror Monitors and Commit Loads
- Real-World Considerations & DR Options
- DR & HA with DB Mirroring Advantages

#### Chapter 21: Database Audits and Queries

- Query Resources - CPU, IO and Memory
- Audits - Activity Monitor Usage
- Audits - SQL Server Profiler Tool Usage
- Database Health Check & DBCC
- Log Space Usage Audits with DMVs/DMFs
- Tempdb Usage Audits with DMVs/DMFs
- Memory Usage and Disk Usage Audits
- Considerations Using SQL Profiler
- Locking Templates and Deadlock XDL Files
- Deadlock Graphs with SQL Profiler
- Audit Long Running Queries with DMV/DMF
- Audit Frequent Running Queries
- Query Audits and DMVs / DMFs, Joins
- Audits for Storage Allocation Issues

#### Chapter 22: Data Exports (SSIS) and DB Mail

- Import & Export Operations
- OLE-DB, SQLNCLI and Jet Drivers
- Choosing correct Data Providers
- Scheduling SSIS Packages using Jobs
- Proxies and Reading Job History
- Database Scripting and DB Encryption
- Database Cloning Process and Options
- Configuring Linked Servers - Custom
- SQL Server Agent - Alert Properties
- Database (DB) Mail Configurations
- Securing DB Profiles : SMTP Accounts
- DB Mail Profiles and Public Tokens
- Alert System Configurations in SQL Agent
- Creating Operators and Emails
- Warnings and Emails with DB Mail
- Testing Job Failures and Notifications
- Job Activity Monitor and History Deletes

## Module 3 – Advanced SQL DBA

### Chapter 23: Understanding Real-time Scenario

- An Online Book Sales Project
- DBA Challenges in Real-time
- SLA and OLA Process in Real-time
- Need for Documentations & References
- Downtime & Maintenance Notifications
- Using SQL Browser Service for TCP/IP
- Configuration Manager Tool - Usage
- SQL Server Log-On Accounts and Usage
- Resource Governor & Performance
- Workload Groups and Tuning Policies
- RECONFIGURE Options and Performance
- Routine DBA Activities - Checklist
- Database Maintenance Activities

### Chapter 24: Partitions & Query Tuning

- Big Data - Performance Considerations
- Table Partitions and Tuning Options
- Partition Functions and Usage
- Partition Schemes and Reusability
- Deciding Partition Ranges & Functions
- Partitioned Data For Complex Queries
- Partitioning Un-partitioned Structures
- Aligned Partitions and Performance
- Fill Factor Options and Index Tuning
- Partitions for Query Tuning Operations
- Statistics with Table & Index Partitions
- Data Compression Types and Options
- Managing Partitions and Tuning Options
- Statistics Role in Query Tuning Process

### Chapter 25: Full Text Indexes & Tuning

- LIKE Operator - Limitations & Wild-cards
- Full Text Search Configuration
- Full Text Search Service and Options
- Database Catalogs (FTC) and Storage
- Full Text Indexes for Tuning Options
- Full Text Columns and Primary Index
- Full Text Index and Searching Queries
- CONTAINS() and FREETEXT() Functions
- Manual Data Populations and Index Loads
- CHANGE\_TRACKING options & Limitations
- Securing FT Catalogs and FT Indexes
- Performance Advantages with FT Indexes

### Chapter 28: Alerts, Issues & Troubleshooting

- LOG File Space Issues and Solutions
- TEMPDB Space Issues with Solutions
- MEMORY Management Issues - Solutions
- OS Level Memory Clerks and Monitoring
- Memory Leaks, Hits and Solutions
- Logical and Physical Memory Architecture
- Procedure Cache Issues and Solutions
- DB State Events, Issues and Solutions
- Network Usage, Monitoring & Optimization
- Performance Monitor (PERFMON) Counters
- Replication Threshold Values & Agents
- Database Options and Downtime
- Database States Alerts and DB Events
- DBCC Commands and Database Repairs
- Rebuild Operations and Considerations
- Important DMVs and DMFs for Audits

### Chapter 29: SP & Server Upgrades

- Establishing Downtime For Maintenance
- Precautions for Maintenance Activities
- Service Packs and Patch/hotfix Activities
- Verifications, SmokeTest and Rollbacks
- Upgrade Advisor Tool - Analysis Reports
- Upgrade Advisor Issues and Warnings
- Server Upgrades and Precautions
- Planning for Maintenance Activities
- Rebuilding System Databases & Objects
- Pre Database Maintenance Activities
- Post Database Maintenance Activities
- Real-world Management Considerations

### Chapter 30: Introduction to SQL Clusters

- Understanding SQL Clustering Need
- SQL Server Clustering Architecture
- Understanding Ping Tests and Heartbeat
- Windows and SQL Server Licensing
- Windows Server Installation Options
- SP Installation and Quorum Options
- Installing Windows MSCS Service
- Verifying SQL Cluster Installation
- SQL Server Cluster PING and RAID Tests
- Verifying Cluster Configurations
- Software RAID Configuration and Issues

### Chapter 26: Index Management & Tuning

- Index Internals and Execution Plans
- Index Fragmentation - Issues & Solutions
- SAMPLED & DETAILED Query Scans
- Index Rebuilds & Tuning Options
- Table Rebuild Options with Indexes
- Index Reorganization Process and Uses
- Page and Row Compressions with Indexes
- FILLFACTOR and PADINDEX Index Options
- Filtered Indexes, Online Indexes, Views
- Understanding Workload Files in Profiler
- Understanding Workload Tables in Profiler
- Understanding Tuning and Lock Templates
- Index Selectivity Options and Statistics
- Database Tuning Advisor (DTA) - Usage
- Understanding PDS Options with Indexes
- Choosing Correct Option (PDS) for Tuning
- Filtered Indexes and Sizing Options
- Analyzing Work Load Tables and Scans
- Statistics Role in Query Tuning Process
- Understanding Statistics and Query Tuning

### Chapter 27: Database Maintenance Plans

- Database Maintenance Plans (SSIS)
- DB Maintenance Strategies & Schedules
- MSDB History Management Options
- Backup Files and Space Management
- Reorganizing Indexes with DB Maint. Plans
- Modifying SSIS DB Maintenance Plans
- Scheduling and Maintaining SSIS Plans
- Log File Issues and Shrinking Operations
- SQL DB Engine Properties & Guidelines
- Service Configuration Properties
- Distributed Transactions & Connections
- Query Governor Usage and DOP Options
- Policy Based Management (PBM) & Facets
- Database Properties & Conditions
- Scheduling Policies & Event Management
- Considerations for Policy Management
- Query Facet Conditions for Scheduled Policies

### Chapter 31: Active Directory and DTC

- Need for Centralized Authentication
- Domain Controller (DC) Configuration
- Active Directory Settings and Usage
- DCPROMO Settings for Active Directory
- Working with Active Directory (AD) Edits
- Network Configurations and Usage
- PING Configurations and DTC Options
- QUORUM settings and SAN Options

### Chapter 32: SQL Cluster Configuration

- SQL Server Cluster Installation (VM)
- Add Nodes to SQL Server Cluster
- SQL Group and AD Syncup Operations
- SAN System for Shared Data Storage
- MS DTC Configurations (Local/Remote)
- Smoke Test Procedures in Real-time
- Fail-Over Disk & RAID Implementation

### Chapter 33: HA / DR in Clusters and AAG Solutions

- Connection Issues and Drains
- Security Issues with Solutions
- Storage Issues with Solutions
- Installing Updates in SQL Clusters
- QUORUM Checks, Storage Issues
- SQL Server Cluster Utilities & Usage
- Always-On Availability Groups (AAG)
- Practical Challenges For HA and AAG

### Chapter 34: SQL Server Cluster Management

- Real-World Considerations For AAG
- SQL Server Cluster and AAG Limitations
- SQL Clusters For High Availability
- Active-Active Cluster Configurations
- Active-Passive Cluster Configurations
- Cluster Working and Operative Modes
- Configuration Settings - Monitors
- SQL Server Cluster Node Updates
- Cluster Configurations and Planning
- AAG Issues and Real-world Challenges

### Pre-requisites for this Course:

This is a starter course, **no pre-requisites** required. Course includes free orientation video for starters.

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Course includes Study Material, Interview & Certification guidance along with one Real-time Case Study.

**About Trainer:**

**Mr. Sai Phanindra Tholeti** is a Database Consultant working for his own company - *SequelGate Innovative Technologies Pvt. Ltd.* With more than 8 years of expertise and passion for SQL Server, Administration (SQL DBA) and Business Intelligence (MSBI) - Mr. Sai provides Data Hosting, Business Consulting and Technical Support Services for Corporate Clients. All his training sessions are completely **practical, real-time** and highly **interactive**.

Complete profile of the trainer available @ <http://www.linkedin.com/in/saiphanindra>

**For Free Demo / Further Clarifications, please reach us.**

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**Why Choose Us?**

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