

# SQL Server DBA 2016



## Module :1

### Architecture and Components of SQL Server

- Basics of RDBMS
- Introduction to SQL OS
- SQL Server Memory Management
- SQL Server Disk IO
- SQL Server Task Scheduling
- SQL Server Page Architecture
- SQL Server Data File Architecture
- SQL Server Log File Architecture
- Query Compilation & Execution

## Module 2:

### Installation & Configuration

- Installation of SQL Server 2016
- Post Installation Configurations
- Upgradation to SQL Server 2016
- Applying Patches
- Unattended Installations
- Trouble shooting Installations
- SQL 2016 Vs Older versions

## Module 3:

### Database Design & Configuration

- Designing Databases
- Handling Space Issues
- Controlling Database Growth
- Capacity Planning
- Shrinking log files
- Moving files from one Drive to another
- Database level Configurations
- SQL 2016 Vs Older versions

## Module 4:

### Backup & Recovery

- Designing a Backup Strategy
- Recovery Models
- Backup Types
- Backup Options
- Managed Backups
- Backup Encryption
- Compressed Backups
- Backups in SQL Azure
- Backup History
- Planning for a Restoration
- Pre Restorations
- Post Restorations
- Restore History
- Restoration Scenarios
- Phases of Restoration
- Troubleshooting Backups & Restoration

## Module 5:

### Automation & Monitoring

- Automating Administrative Tasks
- About SQL server Agent
- Creating Jobs, Alerts and Operators
- Scheduling the Jobs
- Working with Job Activity Monitor
- Resolving Job Failures
- Configuring Alert system in SQL server Agent
- Monitoring SQL Server
- The Goal of Monitoring
- Choosing the Appropriate Monitoring Tools
- Monitoring health status
- Best Practices on Monitoring

## Module 6:

### Security

- Security Principles & Authentications
- Pre-Defined Server and Database Roles
- User-defined server roles& DB Roles
- User Mapping & Fixing Orphaned Users
- Controlling Object level Permissions
- Creating Schemas credentials
- Implementing contained databases
- Role permissions for SSIS and SQL Server Agent
- Implementing Transparent Database Encryption
- Implementing Change Data Capture
- Best Practices on security

## Module 7:

### Migration &Upgradation :

- Migration Scenarios
- Migration Procedure & planning
- Deployments, Launches & Go live
- Database Refreshes
- EOL migrations
- Consolidation
- Migration between SQL &Other RDBMS
- Migration of Tables,SP's & other objects inside the DB

### Upgradation :

- Upgradation path from Older versions to 2016
- Planning for Upgradation
- Different Approaches for Upgrade
- Upgrading a Standalone Systems
- Upgrading a HA Systems

## Module 8:

### High Availability

#### Designing a Better HA solution

#### Logshipping

- Internals,
- Prerequisites,
- Configuration,
- Maintenance & Troubleshooting

#### Database Mirroring

- Internals,
- Prerequisites,
- Configuration,
- Maintenance & Troubleshooting

#### Clustering

- Internals of Clustering
- Installation of 2 node cluster
- Patching a Cluster
- Adding Disk to the Cluster
- Adding hardware Resources to Cluster
- Trouble shooting cluster Issues

#### Always ON

- HADR Internals & advantages
- Setting up HADR
- Adding a DB to the AG
- Patching in Always on
- Adding Replica in AG
- Setting up Listener & read-only Replicas in AG
- Troubleshooting & maintenance

## Module 9:

### Performance Tuning:

#### Locking, Blocking & Deadlocks

- SQL Server waits & Queues
- SQL Server Isolation levels
- Troubleshooting Blockings
- Troubleshooting Dead locks

- Tuning & fixing Queries involved in Blockings & dead locks

### Performance Monitoring tools

- SQL Server Built in tools
- SQL Server DMVs
- Extended Events in SQL Server
- Monitoring with performance counters
- PSS Diag& SQL Diag
- Idera Diagnostic manager
- Overview of SQL Nexus
- SQL Server Tuning methods

### Query Tuning & Optimization

- Query Compilation & executions
- Query Optimizations
- Understanding Execution plans
- Query Tuning Hints & plan Guides
- Query Tuning Troubleshooting
- Overview of Query Store
- Query Store Internals
- Live Statistics

### 1Indexes & Statistics

- SQL Server Index Architecture
- SQL Server index Utilizations
- Identifying Missing Indexes
- SQL Server Index Maintenance
- SQL Server Statistics
- SQL Server Statistics Maintenance

## Module 10:

### SQL Server in Azure

- Azure Fundamentals
- Best Practices for SQL Server on Azure
- Azure SQL Database Fundamentals
- Backup & Restore on SQL Azure
- Monitoring an Azure SQL Database

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