

DBA SQL Server- 260 hours

Course description

The DBA SQL Server program is designed to train professional Database Administrators to manage, maintain, and operate mission-critical organizational data platforms. Throughout the course, participants gain in-depth knowledge of SQL Server administration, including SQL and T-SQL, database design principles, performance tuning, security, high availability, and disaster recovery. The program also exposes students to complementary technologies in Big Data and cloud environments, including SQL Server on cloud platforms (Azure), data warehousing concepts, NoSQL technologies, and modern data platform architectures. The course emphasizes hands-on practice, real-world simulations, continuous project work, and a comprehensive capstone project that mirrors real production environments

What Participants Gain?

By the end of the course, participants will understand how modern Generative AI architectures such as Transformers and Diffusion models operate and how embeddings enable semantic search and retrieval. They will be able to work with Hugging Face models, understand the internal mechanics of LLMs, and design LLM-based applications using LangChain and LlamaIndex. Participants will build Retrieval-Augmented Generation (RAG) solutions, apply prompt engineering and fine-tuning strategies, design agentic AI workflows, automate analytical and business processes, and evaluate model performance in real-world, business-driven scenarios. Graduates will be equipped to architect and deliver production-ready AI solutions and act as innovation leaders within their organizations.

Target Audience

- Graduates of development, data, or BI tracks seeking to specialize in database administration
- Developers and BI professionals working with SQL Server who want deeper expertise in infrastructure, performance, and security
- IT and infrastructure professionals aiming to transition into DBA and Data Platform roles
- Technology professionals interested in reskilling into database administration
- Candidates with strong analytical orientation looking to enter the Data Platform domain

Prerequisites

- Basic familiarity with SQL and relational databases
- Technical orientation and comfort working in computing environments
- Technical English proficiency

Course Contents:

Basic SQL Language

- Setting up development environment
 - Introducing SQL server Management Studio
- Querying Data Using T-SQL Language
 - Basic Concepts of Databases
 - SQL Server Data Types
 - Retrieving Data: SELECT Statement
 - Filtering Data: WHERE, Logical Operators and Expressions
 - Organizing Retrieved Data: ORDER BY, GROUP BY, TOP
 - Using System Supplied Scalar Functions
 - Multiple Table Access: JOINS
 - Using Simple Sub-Queries
 - Updating Data Using DML Statements: UPDATE, INSERT, DELETE

Database Design

- Database Design
 - Working with Data Types
 - Designing and Implementing Tables
 - Ensuring Data Integrity through Constraints
- Table Structures and Indexing
 - Planning for Indexing
 - Implementing Table Structures
 - Reading Execution Plans
 - Improving Performance through Non-Clustered Indexes
 - Execution Plans, Query Store, Optimizing Indexes
 - Advanced Table Designs, Partitioning Data, Compressing, Temporal Tables.
 - Columnstore Indexes, Using In-Memory Tables.

T-SQL Programming

- T-SQL Programming
 - Advanced Query and Code Writing
 - Basic T-SQL Programming
 - Variables, Loops, IF Function
 - Temp tables and table variables
 - Using Cursors
 - Working with Subqueries (Derived Tables, Correlated query, EXISTS, CTE)
 - Ranking Functions
 - MERGE Statement and OUTPUT Clause
- Code Objects and Transaction
 - Designing and Implementing Views
 - Designing and Implementing Stored Procedures
 - Merging Data and Passing Tables
 - Designing and Implementing User-Defined Functions
 - Creating Highly Concurrent Applications - Transactions
 - Error Handling

- Responding to Data Manipulation via Triggers
- **Data Integration**
 - Working with semi-structured data (XML, JSON) and moving data (BCP, Export/Import etc)

Administering Microsoft SQL Server Databases.

- **Setup and Design**
 - Setting up and Configuring SQL Server Infrastructure
 - Working with Databases
- **Disaster Recovery**
 - SQL Server Recovery Models
 - Backup and Restore
- **Database Security**
 - Authenticating and Authorizing Users
 - Server and Database Roles
 - Authorizing Users to Access Resources
 - Partially Contained Databases
 - Protecting Data with Encryption and Auditing
- **Automating Maintenance**
 - Automating Management using Jobs
 - Configuring Security for SQL Server Agent
 - Alerts and Notifications
 - Performing Ongoing Database Maintenance
- **Monitoring and Troubleshooting**
 - Tracing Access to SQL Server SQL Server Profiler and Extended Events
 - Management and Troubleshooting
 - Managing SQL Server Using PowerShell
 - Tracing Access to SQL Server with Extended Events

Advanced Extra Topics 5Part

- **Performance Tuning Workshop - Simulating, Monitoring and Optimizing Activity**
 - Reviewing Monitoring Tools
 - Setting up Simulating Environment
 - Configuring Monitoring Tools
 - Generating Database Activity
 - Viewing and Exploring Monitoring Findings
 - Discussing Performance Issues
 - Applying Optimizations
- **Replication**
 - Distributing and Synchronizing Data
 - Replication Components
 - Replication Mechanism
 - Implementing Replication
- **High Availability Architectures**
 - Database Mirroring
 - Log Shipping
 - SQL Server Failover Clustering
 - Always On

Internship Project

