KOENIG SOLUTIONS · COURSE OUTLINE

Advance SQL Database Training

Learn to secure, tune, automate and manage SQL Server and Azure SQL databases, from indexing to DevOps deployment.

8 MODULES

32 TOPICS

COURSE OVERVIEW

This course covers SQL Server architecture and components, followed by security measures such as authentication, authorization, data masking and secure coding. It addresses automating SQL Server management with SQL Server Agent and data vault modelling, then moves into performance tuning through indexing, query store, partitioning and execution plan analysis. Advanced optimization topics include locking, memory management, parallelism and statistics, before extending into Azure SQL deployment, monitoring and backup, Azure Data Factory migration of SSIS packages, and project management using Azure DevOps.

WHO THIS COURSE IS FOR

- **Database Administrators**
- **SQL Developers**
- **Data Engineers**
- **Azure Database Administrators**
- **DevOps Engineers**

LEARNING OBJECTIVES

- Describe SQL Server components and the SQL OS
- Configure authentication and authorization for database connections
- Apply data masking and classification to protect data
- Implement secure coding practices such as parameterized queries
- Automate SQL Server management using SQL Server Agent
- Analyse query execution plans to identify performance issues
- Apply indexing and partitioning strategies for performance tuning
- Deploy and monitor Azure SQL resources and SSIS packages in ADF

COURSE SYLLABUS

8 Modules, 32 Topics

01

SQL Server Architecture

TOPICS

SQL Server Components and SQL OS

02

SQL Server Security and Data Security and Compliance

TOPICS

- Authenticating Connections to SQL Server
- Authorizing Logins to Connect to Databases
- Protecting Data with Masking and Data Classification
- Writing Secure Code (Stored procedure, Parameterized Queries)

03

Automating SQL Server Management

TOPICS

- Automating SQL Server Management
- Working with SQL Server Agent
- Database Design and Modelling Data Vault (The Hub, The Link, The Satellite)

04

SQL Performance Tuning

TOPICS

- Index Creation Approach (Clustered, Non-Clustered, Column Store using include and covering, Fill Factor)
- Query Store
- Partitioning (Range Partitioning)
- Understanding Query Execution Plan (Estimated, Actual and Live Query Statistics)
- Table Scan, Index Scan, Index Seek, Key, Lookup
- Nested Loop, Merge Join, Sort, Aggregation
- Reading tool Tip and execution plan

05

Advanced Optimization Approaches

TOPICS

- Scheduling, and Waits, Deadlocks, Deadlock Priority, Locking
- Memory and Resource Management
- Query Memory Grant
- Max Degree of Parallelism (MAXDOP)
- In Memory Table
- Manual Statistics update and Histogram

06

Azure SQL Management and Understanding of Overall Azure SQL Services with Demo

TOPICS

- Plan and Implement Data Platform Resources Deployment (Practical Deployment)
- Monitor and Optimize Operational Resources
- ARM Template Deployment (Using Windows PowerShell, Azure porta using custom deployment)
- Automated Backup, Backup to URL and Geo-Replica

07

Azure Data Factory and Migration SSIS Package to Azure Data Factory

TOPICS

Deploying SSIS Packages in Azure Data Factory · Using the SSIS Integration Runtime in ADF · Configuring and Running SSIS Packages in ADF · Monitoring SSIS Package Execution in ADF

08

Project Management

TOPICS

Azure DevOps - SQL Database Projects · Repos - branching strategy, Pipeline - CI/CD · Test Plans, Artifacts, GIT

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

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