

Develop AI-enabled database solutions (DP-800T00)

Duration: 3 Days

Audience: Professionnel TI

Who is this training for?

The audience for this course is data professionals who want to learn about designing and developing AI enabled database solutions across Microsoft SQL platforms, including:

- SQL Developers
- Database Administrators
- Data Engineers
- Data Analysts

These professionals integrate AI capabilities into modern, highly scalable enterprise data solutions.

Training objectives

By the end of this course, learners will be able to design, secure, optimize, and deploy database solutions across Microsoft SQL platforms while integrating AI capabilities such as vector search and embeddings to support modern, scalable data applications.

Summary

This course provides students with the knowledge and skills required to design and develop AI enabled database solutions on Microsoft SQL platforms, including SQL Server, Azure SQL, and SQL databases in Microsoft Fabric. It is intended for professionals who build modern data solutions that integrate structured and semi structured data and incorporate AI capabilities into scalable enterprise applications.

It is also valuable for individuals who develop applications that rely on SQL based data services enhanced with vector search, embeddings, and other AI driven capabilities.

Course outline

Design and implement database objects using SQL

- Understand SQL Server–based platform options
- Create efficient tablesOptimize using indexes
- Use specialized table types
- Ensure data integrity with constraints
- Manage JSON columns and their indexesPartition tables for scalability
- Exercise – Create and maintain database objects

Implement programmable objects using SQL

- Create views
- Create stored procedures
- Create scalar functions
- Create table valued functions
- Create triggers
- Choose when to use each option
- Exercise – Implement programmable objects in SQL Server

Write advanced TSQL code

- Organize queries using common table expressions (CTEs)
- Apply window functions for analytics
- Process JSON data using built in functions
- Perform pattern matching with regular expressions
- Find approximate matches using fuzzy matching functions
- Traverse relationships using graph queries
- Compare rows using correlated subqueries
- Handle errors using TRY...CATCH
- Exercise – Working with JSON functions

Implement SQL solutions using AI-assisted tools

- Describe AI-assisted development tools available for Microsoft SQL platforms
- Interpret the security impact of using AI-assisted tools
- Enable GitHub Copilot and Fabric Copilot
- Configure the model and Model Context Protocol (MCP) options in a GitHub Copilot or Fabric Copilot chat session
- Create and configure GitHub Copilot instruction files
- Connect to MCP server endpoints, including Microsoft SQL Server and Fabric Lakehouse
- Exercise – Configure AI-assisted tools for database development

Implement data security and compliance with SQL

- Protect data using encryption
- Configure dynamic data masking
- Implement row-level security (RLS)
- Manage permissions and secure access
- Implement auditing
- Configure secure access to AI services
- Secure data API endpoints
- Exercise – Implement security features

Optimize database performance

- Recommend database configurations
- Preserve data integrity using transaction isolation levels and concurrency controls
- Evaluate query performance using execution plans and DMVs
- Monitor and optimize queries using Query Store and Query Performance Insight
- Identify and resolve blocking and deadlocks
- Exercise – Optimize query performance

Implement CI/CD using SQL Database projects

- Create, build, and validate SQL Database projects
- Configure source control and manage reference data
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Manage branches, pull requests, and conflict resolution

- Detect and resolve schema drift
- Implement CI/CD pipelines
- Design and implement a testing strategy
- Exercise – Implement CI/CD using SQL Database projects

Integrate SQL solutions with Azure services

- Create configuration files for Data API Builder
- Define entities for REST and GraphQL
- Expose database objects, stored procedures, and views
- Explore deployment options for Data API Builder
- Recommend Azure Monitor configurations
- Manage changes using event driven models
- Exercise – Configure Data API Builder for a product catalog

Design and implement models and embeddings with SQL

- Understand and evaluate models for SQL database workloads
- Create and manage external models in SQL
- Design embeddings for SQL workloadsGenerate and maintain embeddings for SQL workloads
- Exercise – Generate and update embeddings in Azure SQL Database

Design and implement intelligent search with SQL

- Choose an intelligent search approachImplement full text search
- Prepare SQL for vector search
- Implement vector search query patternsImplement hybrid search and result ranking
- Exercise – Implement intelligent search using full text, vector, and hybrid queries

Design and implement RAG with SQL

- Identify RAG use cases and architecture

- Prepare retrieval context for augmentation
- Enrich prompts with database context
- Generate and process RAG responses
- Exercise – Implement a RAG solution

Approach and methodology

Instructor-led training by a Microsoft Certified Trainer (MCT)

Prerequisites

Familiarity with Microsoft SQL platforms, such as:

- SQL Server
- Azure SQL Database
- SQL databases in Microsoft Fabric

Basic knowledge of data solution development