

# Designing Microsoft SQL Server 2005 Databases

Course 2782: Two days; Instructor-Led

## Introduction

This two-day instructor-led course provides students with the knowledge and skills to design databases for Microsoft SQL Server 2005 using business requirements to guide their decisions (beyond structured third normal form [3NF] modeling techniques). Students will also learn to incorporate security requirements throughout their design.

## Audience

This course is intended for current professional database developers who have three or more years of on-the-job experience developing SQL Server database solutions in an enterprise environment.

## Objectives

After completing this course, students will be able to:

- Approach database design from a systematic perspective, gather database requirements, and formulate a conceptual design.
- Analyze and evaluate a logical database design.
- Apply best practices for creating a physical database design.
- Apply best practices when designing for database scalability.
- Design a database access strategy.
- Use best practices to model database dependencies.

## Prerequisites

Before attending this course, students must:

- Have experience reading user requirements and business-need documents. For example, development project vision/mission statements or business analysis reports.
- Have experience reading and drawing business process flow charts.
- Have experience reading and drawing entity relationship (ER) diagrams.
- Understand Transact-SQL syntax and programming logic.
- Be able to design a database to 3NF and know the tradeoffs when backing out of the fully normalized design (denormalization) and designing for performance and business requirements in addition to being familiar with design models, such as Star and Snowflake schemas.
- Have basic monitoring and troubleshooting skills.
- Have basic knowledge of the operating system and platform. That is, how the operating system integrates with the database, what the platform or operating system can do, and how interaction between the operating system and the database works.
- Have basic knowledge of application architecture. That is, how applications can be designed in three layers, what applications can do, how interaction between the application and the database works, and how the interaction between the database and the platform or operating system works.

- Know how to use a data modeling tool.
- Be familiar with SQL Server 2005 features, tools, and technologies.
- Have a Microsoft Certified Technology Specialist: Microsoft SQL Server 2005 credential, or equivalent experience.

## **Course Outline**

### **Module 1: Approaching Database Design Systematically**

This module explains how to acquire the skills to approach database design with a systematic perspective. A systematic approach involves formulating your database design process, following guidelines on how to gather and document database requirements, and following best practices when formulating a conceptual design.

### **Module 2: Modeling a Database at the Logical Level**

This module explains the best practices followed when you build a new logical database model. You will also learn the guidelines for normalization when designing an OLTP model and when designing a data warehouse database. Finally, you will learn to evaluate the existing logical model of a database.

### **Module 3: Modeling a Database at the Physical Level**

This module explains the guidelines to be followed when designing physical database objects and constraints. The module also covers the best practices for designing database security and for designing database and server options. Finally, this module covers the best practices for evaluating the physical model.

### **Module 4: Designing for Database Performance**

This module explains the best practices to be followed for designing indexes. The module also covers the guidelines for planning table optimization, and choosing additional optimization techniques.

### **Module 5: Designing a Database Access Strategy**

This module explains the best practices to be followed when designing for secure data access. The module also covers the guidelines for designing user-defined functions. Finally, this module explains the best practices for designing stored procedures.

### **Module 6: Modeling Database Dependencies**

This module explains guidelines for modeling local database dependencies. This module also covers the guidelines for modeling remote database dependencies.