Designing Microsoft SQL Server 2005 Server-Side Solutions

Course 2781: Three days; Instructor-Led

Introduction

This three-day instructor-led course provides students with the knowledge and skills to design server-side solutions for Microsoft SQL ServerT 2005. The course focuses on teaching database developers who work in enterprise environments to identify and place database technologies during design to achieve a suitable solution that meets the needs of an organization. Students will also learn to consider the solution from a system-wide view instead of from a single database or server perspective.

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.

At Course Completion

After attending this course, students will be able to:

- Select SQL Server services to support an organization's business needs.
- Design a security strategy for a SQL Server 2005 solution.
- Design a data modeling strategy.
- Design a transaction strategy for a SQL Server solution.
- Design a Notification Services solution.
- Design a Service Broker solution.
- Plan for source control, unit testing, and deployment to meet an organization's needs.
- Evaluate advanced query techniques.
- Evaluate advanced XML techniques.

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.
- Understand Transact-SQL syntax and programming logic.
- Understand XML. Specifically, they must be familiar with the syntax of XML, what elements and attributes are, and how to distinguish them.
- Understand security requirements. Specifically, must understand how unauthorized users can gain access to sensitive information and be able to plan strategies to prevent access.
- 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.
- Have some experience with a reporting 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.

In addition, it is recommended, but not required, that students have completed:

- Course 2778: Writing Queries Using Microsoft SQL Server 2005 Transact-SQL.
- Course 2779: Implementing a Microsoft SQL Server 2005 Database.
- Course 2780: Maintaining a Microsoft SQL Server 2005 Database.

Course Outline

Module 1: Selecting SQL Server Services to Support Business Needs

This module provides an overview of SQL Server 2005 architecture and the various considerations for choosing SQL Server services to include in a solution. The module also describes considerations for using the database enhancements in SQL Server 2005.

Lessons

- Overview of the Built-in SQL Server Services
- Evaluating When to Use the New SQL Server Services
- Evaluating the Use of Database Engine Enhancements

Lab 1: Selecting SQL Server Services to Support Business Needs

- Translating Business Requirements into SQL Server Services
- Analyzing the Needs of Real Organizations

After completing this module, students will be able to:

- Evaluate the use of the built-in SQL Server services.
- Evaluate the use of the new SQL Server services.
- Evaluate the use of database engine enhancements.

Module 2: Designing a Security Strategy

This module describes the considerations for designing a security strategy for the various components of a SQL Server 2005 solution. This includes considerations for choosing authentication and authorization strategy for a solution, as well as designing security for the solution components such as Notification Services and Service Broker. The module also teaches students the guidelines for designing objects to manage application access. The module provides students with the required knowledge to create an auditing strategy for a database solution. Finally, the module teaches students how to manage security for multiple development teams.

Lessons

- Overview of Authentication Modes and Authorization Strategies
- Designing a Security Strategy for Components of a SQL Server 2005 Solution
- Designing Objects to Manage Application Access
- Creating an Auditing Strategy
- Managing Multiple Development Teams Using the SQL Server 2005 Security Features

Lab 2: Designing a Security Strategy

- Evaluating the Security Tradeoffs of SQL Server Services
- Designing a Database to Enable Auditing
- Designing Objects to Manage Application Access
- Justifying Security Decisions

After completing this module, students will be able to:

- Select the authentication mode and authorization strategy for a SQL Server 2005 solution.
- Design a security strategy for components of a SQL Server 2005 solution.
- Design objects to manage application access.
- Create an auditing strategy.
- Manage multiple development teams by using the SQL Server 2005 security features.

Module 3: Designing a Data Modeling Strategy

In this module, students learn the various considerations and guidelines to define standards for storing XML data in a solution. The module also provides the knowledge required to design a database schema. The module provides information about the considerations for implementing OLTP and OLAP functionality, considerations for determining normalization levels, and considerations for creating indexes. Finally, the module covers the various considerations for designing a scale-out strategy for a solution.

Lessons

- Defining Standards for Storing XML Data in a Solution
- Designing a Database Solution Schema
- Designing a Scale-Out Strategy

Lab 3: Designing a Data Modeling Strategy

- Designing a Database Solution Schema
- Designing Integration of Multiple Data Stores

After completing this module, students will be able to:

- Define standards for storing XML data in a solution.
- Design a database solution schema.
- Design a scale-out strategy for a solution.

Module 4: Designing a Transaction Strategy for a SQL Server 2005 Solution

This module describes considerations and guidelines for defining a transaction strategy for a solution. It also shows how to define data behavior requirements and specify isolation levels for data stores.

Lessons

- Defining Data Behavior Requirements
- Defining Isolation Levels
- Designing a Resilient Transaction Strategy

Lab 4: Designing a Transaction Strategy for a SQL Server 2005 Solution

- Determining the Database Isolation Level
- Determining the Order of Object Access
- Designing Transactions
- Justifying a Transaction Strategy

After completing this module, students will be able to:

- Define data behavior requirements.
- Define isolation levels for a data store.
- Design a resilient transaction strategy.

Module 5: Designing a Notification Services Solution

This module describes the guidelines and processes for designing a Notification Services solution as part of an overall SQL Server 2005 solution. It shows how to define event data and how to store this data, how to design a subscription strategy for a Notification Services solution, how to design a notification strategy, and how to design a notification delivery strategy.

Lessons

- Defining Event Data
- Designing a Subscription Strategy
- Designing a Notification Strategy
- Designing a Notification Delivery Strategy

Lab 5: Designing a Notification Services Solution

- Defining Event Data
- Designing a Subscription Strategy
- Designing a Notification Strategy
- Executing a Notification Services Solution

After completing this module, students will be able to:

- Define and store event data.
- Design a subscription strategy for a Notification Services solution.
- Design a notification strategy.
- Design a notification delivery strategy.

Module 6: Designing a Service Broker Solution

This module describes the guidelines and processes for designing a Service Broker solution as part of an overall SQL Server 2005 solution. It covers tasks such as designing the Service Broker solution architecture, designing the Service Broker data flow, and designing Service Broker solution availability.

Lessons

- Designing a Service Broker Solution Architecture
- Designing Service Broker Data Flow
- Designing Service Broker Solution Availability

Lab 6: Designing a Service Broker Solution

- Designing a Service Broker Solution Architecture
- Designing a Subscription Strategy
- Executing a Service Broker Solution

After completing this module, students will be able to:

- Design a Service Broker solution architecture.
- Design the Service Broker data flow.
- Design the Service Broker solution availability.

Module 7: Planning for Source Control, Unit Testing, and Deployment

This module teaches the guidelines and considerations for planning for source control, unit testing, and deployment, during the design of a SQL Server 2005 solution. Design tasks covered include designing a source control strategy, designing a unit testing plan, creating a performance baseline and benchmarking strategy, and designing a deployment strategy.

Lessons

- Designing a Source Control Strategy
- Designing a Unit Test Plan
- Creating a Performance Baseline and Benchmarking Strategy
- Designing a Deployment Strategy

Lab 7: Planning for Source Control, Unit Testing, and Deployment

- Designing a Source Control Strategy
- Designing a Unit Testing Plan
- Designing a Deployment Strategy
- Justifying Source Control, Unit Test, and Deployment Strategies

After completing this module, students will be able to:

- Design a source control strategy.
- Design a unit test plan.
- Create a performance baseline and benchmarking strategy.
- Design a deployment strategy.

Module 8: Evaluating Advanced Query and XML Techniques

This module teaches students how to evaluate queries using the advanced query and XML techniques, which students might require when designing a SQL Server 2005 solution. Query tasks include evaluating common table expressions, pivot queries, and ranking techniques. XML tasks include defining standards for storing XML data, evaluating the use of XQuery, and creating a strategy for converting data between XML and relational formats.

Lessons

- Evaluating Common Table Expressions
- Evaluating Pivot Queries
- Evaluating Ranking Queries
- Overview of XQuery
- Overview of Strategies for Converting Data Between XML and Relational Formats

Lab 8: Evaluating Advanced Query Techniques

- Evaluating Common Table Expressions
- Evaluating Pivot Queries
- Evaluating Ranking Queries
- Evaluating Techniques for Converting XML into Relational Data

After completing this module, students will be able to:

- Evaluate the use of Common Table Expressions.
- Evaluate the use of pivot queries.
- Evaluate the use of ranking queries.
- Evaluate the use of XQuery.
- Evaluate strategies for converting data between XML and relational formats.