

## SQL Server® Server-Side Programming with .NET and XML: Hands-On - 4 Days

*Course 133 Overview*

- You Will Learn How To**
- Develop server-side database programs for SQL Server databases
  - Retrieve XML data with XQuery
  - Build scalable message-based applications with Service Broker
  - Access data using LINQ
  - Create functions and stored procedures in .NET CLR
  - Persist objects in the database with ADO.NET Entity Framework
- Course Benefits** SQL Server 2005 and 2008 offer development features that fully support the requirements of small- and large-scale organizations. Developers can use .NET CLR and XML features together with Transact-SQL to build flexible, scalable and robust applications that meet today's business demands. This course provides experience creating database applications in .NET and XML.
- Who Should Attend** Developers and programmers working with or moving to SQL Server 2005 or 2008. Basic Transact-SQL programming experience at the level of Course 532, "SQL Server Transact-SQL Programming," and basic .NET programming experience are assumed.
- Hands-On Training** During this course, you perform extensive hands-on exercises that provide in-depth experience. Exercises include:
- Extracting data from an XML column using XQuery
  - Developing stored procedures in .NET
  - Extending SQL Server by adding new .NET user-defined data types
  - Creating a message-based application using Service Broker
  - Persisting .NET objects in the database using an ADO.NET Entity Data Model

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## Course 133 Outline

### SQL Server Architecture

- SQL Server edition overview
- SQL Server Management Studio

### Working with XML

#### Storing XML data

- Creating and managing XML SCHEMA COLLECTIONS
- Defining untyped and typed XML columns
- Converting query results for storage in an XML variable
- Loading XML from the file system into a variable

#### Leveraging XQuery capabilities

- Filtering rows based on XML elements
- Extracting data from an XML column
- Retrieving XML attributes from database columns

#### Producing XML data

- Extending queries with FOR XML PATH
- Using PATH, TYPE and subqueries to create nested XML
- Controlling XML elements and attributes with column aliases

#### Receiving XML data

- Converting XML data to a relational form using OPENXML
- Using XPATH at row and column level to transform complex XML structures

#### Encrypting data

- Creating a MASTER KEY
- Encrypting and decrypting with a pass phrase
- Contrasting asymmetric and symmetric keys
- Utilizing a certificate to encrypt data

### Creating Applications with Service Broker

#### Designing asynchronous messaging systems

- Improving scalability with queuing
- Taking advantage of reliable message delivery
- Offload processing to multiple back-end servers

#### Sending and receiving messages

- Defining contracts to control conversations

- Handling message order and unique delivery with conversation group locks

#### Controlling message delivery

- Associating message types with XML schema collections
- Starting conversations with BEGIN DIALOG
- Ensuring messages are safe using encryption
- Designing an effective error-handling strategy

#### Integrating .NET with SQL Server

##### Incorporating CLR

- Contrasting Transact-SQL with the rich .NET programming model
- Improving code safety and security using .NET

##### Developing procedural code in .NET

- Writing stored procedures in a .NET language
- Loading and unloading assemblies
- Carrying out a refresh on an existing assembly
- Improving code level security using the PERMISSION\_SET clause
- Controlling assembly deployment using the TRUSTWORTHY database option

##### Defining scalar- and table-valued functions

- Converting a .NET expression into a function
- Invoking a CLR function from a Transact-SQL SELECT statement
- Taking advantage of asynchronous data access using .NET table-valued functions

##### Creating CLR routines with Visual Studio

- Developing stored procedures and functions with templates
- Deploying assemblies directly to SQL Server
- Stepping through CLR code in the debugger

##### Extending SQL Server with .NET

- Developing aggregates for enhanced functionality
- Augmenting SQL Server with .NET user-defined data types

- Adding custom methods to extend user-defined data types
- Contrasting .NET data types and the XML data type for storing complex data structures

#### Managing Data from .NET Code

##### Retrieving and storing data

- Taking advantage of the SqlContext object
- Accessing data in memory collections using LINQ to Object
- Assessing the performance implications of LINQ

##### Working with entities

- Retrieving entities using LINQ to Entity
- Developing queries in Entity SQL
- Persisting .NET objects in the database with an ADO.NET Entity Data Model
- Creating a WCF Data Services server
- Building a WCF Data Services client