

Data Modeling Essentials

3 Days (SQL-DMES-201-EN)

Description

Our Data Modeling Essentials Seminar is a high-end course, intended for SQL Server and other RDBMS professionals with at least one year of experience in database design and development. This course was developed entirely by our mentors and is delivered exclusively by Solid Quality Mentors. The seminar covers all modern database models and techniques. All aspects are covered in depth, with some genuine design solutions. This course is available for private onsite classes as well as public classes.

Target Audience

This course is intended for OLTP and BI application developers. Database Administrators can gain a lot from the course as well.

Prerequisites

Before attending this course, it is recommended that students have the following skills:

- Experience with SQL Server 2000 client tools
- Basic database development skills, including working knowledge of Transact-SQL

SQL Course Objectives

Upon completion of this course, the student will be able to:

- Understand relational model
- Create normalized relational schema
- Create relational schema with Entity-Relationship (ER) approach
- Use Object-Role Modeling (ORM) to create relational schema
- Design constraints on the relational schema
- Create super- and sub-types
- Understand Star Schema and create dimensional models for data warehouses
- Deal with advanced dimensional modeling problems
- Design Operational Data Store (ODS) with current data merged from multiple

Sources

- Prepare data for Data Mining
- Understand object-Oriented Programming (OOP) concepts and Unified Modeling

Language (UML)

- Use UML for data modeling
- Understand relationship between relational and object worlds

Course Summary Outline

Module 00: Introduction

- Introduction

Module 01: Relational Design Part 1: Normalization

- Relations and Domains
- Data Integrity
- Normalization
- 1st Normal Form
- 2nd and 3rd Normal Forms
- Boyce-Codd Normal Form
- 4th and 5th Normal Forms

Module 02: Relational Design Part 2: ER Approach, Super- / Sub-types

- ER Approach
- Entities
- Relationships
- Attributes
- ER Diagrams
- Modeling Approach
- Super- and Sub-types
- Missing Information
- Naming Conventions

Module 03: Relational Design Part 3: More on Constraints

- Primary Keys
- Business Rules
- Referential Integrity
- Lookup Tables
- The Design Process

Module 04: Object-Role Modeling (ORM)

- Introduction to ORM
- ORM Basic Diagrams
- ORM Modeling
- Conceptual Schema Design Procedure
- Advanced Constraints
- Ring Constraints
- Constraints Not Yet Supported
- Relational Mapping

Module 05: Multidimensional (DW, OLAP) Design

- Introduction
- Business View and Conceptual Schema
- Star Schema
- Data Warehouse and Other Terms
- OLAP Cubes
- Advanced Problems
- Unified Dimensional Model

Module 06: Data Mining Design, Data Preparation and Overview

- Introduction to Data Mining
- Example algorithm: Decision Trees
- Preparing the data
- Cases and Variables
- Ways to Measure Data Values
- Derived Variables
- Missing Values and Outliers
- Time Series
- Different Data Sets
- Overview of the Data
- Statistics
- Information Theory
- Distribution, Confidence and Sample Size

Module 07: Operational Data Store (ODS) for CRM Applications and Corporate Information Factory (CIF)

- The Merging Problem
- Operational Data Store
- Corporate Information Factory

Module 08: Object-Oriented Programming (OOP) Concepts and Unified Modeling Language (UML)

- Object-Orientation Concepts
- Introduction to UML
- UML Diagrams
- Objects and Classes
- Associations
- Inheritance
- Delegations
- Aggregations
- Interfaces
- Design Patterns

Module 09: Object-Relational Database Design Fundamentals

- Foreword
- Logical Differences
- Domains and Classes
- Relvars and Classes
- Domain-Key Normal Form
- XML Data Type
- From Collections to Tables
- Using UML for Database Modeling
- UML Relational Mapping Procedure

Module 10: Miscellaneous Reflections

- Foreword
- A Short Comment on SQL/3 Standard
- Does XML (XSD) Need Modeling?
- Handling Temporal Data
- Is Star Schema Really Denormalized?