Developing SQL Data Models

Course 20768B: 2 days; Instructor-Led

Introduction

The focus of this 2-day instructor-led course is on creating managed enterprise BI solutions. It describes how to implement both multidimensional and tabular data models and how to create cubes, dimensions, measures, and measure groups. This course helps you prepare for the Exam 70-768.

At Course Completion

After completing this course, students will be able to:

- Describe the components, architecture, and nature of a BI solution
- Create a multidimensional database with analysis services
- Implement dimensions in a cube
- Implement measures and measure groups in a cube
- Use MDX syntax
- Customize a cube
- Implement a tabular database
- Use DAX to query a tabular model
- Use data mining for predictive analysis

Audience

The primary audience for this course are database professionals who need to fulfil BI Developer role to create enterprise BI solutions. Primary responsibilities will include:

- Implementing multidimensional databases by using SQL Server Analysis Services
- Creating tabular semantic data models for analysis by using SQL Server Analysis Services

Prerequisites

This course requires that you meet the following prerequisites:

- Experience of querying data using Transact-SQL

Course Outline

Module 1: Introduction to Business Intelligence and Data Modeling

This module introduces key BI concepts and the Microsoft BI product suite.

Lessons

- Introduction to Business Intelligence
- The Microsoft business intelligence platform

Lab : Exploring a BI Solution

- Exploring a Data Warehouse
- Exploring a data model

After completing this module, you will be able to:

- Describe BI scenarios, trends, and project roles.
- Describe the products that make up the Microsoft BI platform.

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Module 2: Creating Multidimensional Databases
This module describes the steps required to create a multidimensional database with analysis services.

Lessons

- Introduction to multidimensional analysis
- Creating data sources and data source views
- Creating a cube
- Overview of cube security

Lab : Creating a multidimensional database

- Creating a Data Source
- Creating and Modifying a data Source View
- Creating and Modifying a Cube

After completing this module, you will be able to:

- Describe considerations for a multidimensional database.
- Create data sources and data source views.
- Create a cube
- Implement security in a multidimensional database.
- Configure SSAS to meet requirements including memory limits, NUMA and disk layout.
- Monitor SSAS performance.

Module 3: Working with Cubes and Dimensions
This module describes how to implement dimensions in a cube.

Lessons

- Configuring Dimensions
- Defining Attribute Hierarchies
- Sorting and Grouping Attributes
- Slowly Changing Dimensions

Lab : Working with Cubes and Dimensions

- Configuring Dimensions
- Defining Relationships and Hierarchies
- Sorting and Grouping Dimension Attributes

After completing this module, you will be able to:

- Configure dimensions.
- Define attribute hierarchies.
- Implement sorting and grouping for attributes.
- Implement slowly changing dimensions.

Module 4: Working with Measures and Measure Groups
This module describes how to implement measures and measure groups in a cube.

Lessons

- Working with measures

- Working with measure groups

Lab : Configuring Measures and Measure Groups

- Configuring Measures
- Defining Dimension Usage and Relationships
- Configuring Measure Group Storage

After completing this module, you will be able to:

- Configure measures.
- Configure measure groups.

Module 5: Introduction to MDX

This module describes the MDX syntax and how to use MDX.

Lessons

- MDX fundamentals
- Adding calculations to a cube
- Using MDX to query a cube

Lab : Using MDX

- Querying a cube using MDX
- Creating a Calculated Member

After completing this module, you will be able to:

- Use basic MDX functions.
- Use MDX to add calculations to a cube.
- Use MDX to query a cube.

Module 6: Customizing Cube Functionality

This module describes how to customize a cube.

Lessons

- Implementing key performance indicators
- Implementing actions
- Implementing perspectives
- Implementing translations

Lab : Customizing a Cube

- Implementing a KPI
- Implementing an action
- Implementing a perspective
- Implementing a translation

After completing this module, you will be able to:

- Implement KPIs in a Multidimensional database
- Implement Actions in a Multidimensional database
- Implement perspectives in a Multidimensional database
- Implement translations in a Multidimensional database

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Module 7: Implementing a Tabular Data Model by Using Analysis Services
This module describes how to implement a tabular data model in PowerPivot.

Lessons

- Introduction to tabular data models
- Creating a tabular data model
- Using an analysis services tabular model in an enterprise BI solution

Lab : Working with an Analysis services tabular data model

- Creating an Analysis Services Tabular Data Model
- Configure Relationships and Attributes
- Configuring Data Model for an Enterprise BI Solution.

After completing this module, you will be able to:

- Describe tabular data models
- Create a tabular data model
- Be able to use an analysis services tabular data model in an enterprise BI solution

Module 8: Introduction to Data Analysis Expression (DAX)
This module describes how to use DAX to create measures and calculated columns in a tabular data model.

Lessons

- DAX fundamentals
- Using DAX to create calculated columns and measures in a tabular data model

Lab : Creating Calculated Columns and Measures by using DAX

- Creating Calculated Columns
- Creating Measures
- Creating a KPI
- Creating a Parent – Child Hierarchy

After completing this module, you will be able to:

- Describe the key features of DAX
- Create calculated columns and measures by using DAX

Module 9: Performing Predictive Analysis with Data Mining
This module describes how to use data mining for predictive analysis.

Lessons

- Overview of data mining
- Using the data mining add-in for Excel
- Creating a custom data mining solution
- Validating a data mining model
- Connecting to and consuming a data mining model

Lab : Using Data Mining

- Creating a Data Mining Structure and Model
- Exploring Data Mining Models
- Validating Data Mining Models

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- Consuming a Data Mining Model
- Using the Excel Data Mining add-in

After completing this module, you will be able to:

- Describe considerations for data mining
- Create a data mining model
- Validate a data mining model
- Connect to a data-mining model
- Use the data mining add-in for Excel

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