MS 10777A: Implementing a Data Warehouse with Microsoft SQL Server 2012

Description: Data warehousing is a solution organizations use to centralize business data for reporting and analysis. This five-day instructor-led course focuses on teaching individuals how to create a data warehouse with SQL Server 2012, implement ETL with SQL Server Integration Services, and validate and cleanse data with SQL Server Data Quality Services and SQL Server Master Data Services.

Days: 5
Prerequisites: Before attending this course, student should have:

- At least 2 years' experience of working with relational databases, including:
  - Designing a normalized database.
  - Creating tables and relationships.
  - Querying with Transact-SQL.
  - Some exposure to basic programming constructs (such as looping and branching).
  - An awareness of key business priorities such as revenue, profitability, and financial accounting is desirable.

Course Outline

Module 1: Introduction to Data Warehousing

- Lessons
  - Overview of Data Warehousing
  - Considerations for a Data Warehouse Solution

- Lab: Exploring a Data Warehousing Solution
  - Exploring data sources
  - Exploring an ETL solution
  - Exploring a data warehouse

Module 2: Data Warehouse Hardware

- Lessons
  - Considerations for Building a Data Warehouse
  - Data Warehouse Reference Architectures and Appliances
Module 3: Designing and Implementing a Data Warehouse

- **Lessons**
  - Logical Design for a Data Warehouse
  - Physical Design for a Data Warehouse
- **Lab: Implementing a Data Warehouse Schema**
  - Implementing a Star Schema
  - Implementing a Snowflake Schema
  - Implementing a Time Dimension Table

Module 4: Creating an ETL Solution with SSIS

- **Lessons**
  - Introduction to ETL with SSIS
  - Exploring Source Data
  - Implementing Data Flow
- **Lab: Implementing Data Flow in a SSIS Package**
  - Exploring Source Data
  - Transferring Data by Using a Data Flow Task
  - Using Transformations in a Data Flow

Module 5: Implementing Control Flow in an SSIS Package

- **Lessons**
  - Introduction to Control Flow
  - Creating Dynamic Packages
  - Using Containers
  - Managing Consistency
- **Lab: Implementing Control Flow in an SSIS Package**
  - Using Tasks and Precedence in a Control Flow
  - Using Variables and Parameters
  - Using Containers
- **Lab: Using Transactions and Checkpoints**
  - Using Transactions
  - Using Checkpoints

Module 6: Debugging and Troubleshooting SSIS Packages

- **Lessons**
  - Debugging an SSIS Package
  - Logging SSIS Package Events
  - Handling Errors in an SSIS Package
- **Lab: Debugging and Troubleshooting an SSIS Package**
  - Debugging an SSIS Package
  - Logging SSIS Package Execution
Module 7: Implementing an Incremental ETL Process

- **Lessons**
  - Introduction to Incremental ETL
  - Extracting Modified Data
  - Loading Modified Data
- **Lab: Extracting Modified Data**
  - Using a DateTime Column to Incrementally Extract Data
  - Using a Change Data Capture
  - Using Change Tracking
- **Lab: Loading Incremental Changes**
  - Using a Lookup Transformation to Insert Dimension Data
  - Using a Lookup Transformation to Insert or Update Dimension Data
  - Implementing a Slowly Changing Dimension
  - Using a MERGE Statement to Load Fact Data

Module 8: Incorporating Data from the Cloud into a Data Warehouse

- **Lessons**
  - Overview of Cloud Data Sources
  - SQL Server Database
  - The Windows Azure Marketplace
- **Lab: Using Cloud Data in a Data Warehouse Solution**
  - Creating a SQL Azure Database
  - Extracting Data from a SQL Azure Database
  - Obtaining Data from the Windows Azure Marketplace

Module 9: Enforcing Data Quality

- **Lessons**
  - Introduction to Data Quality
  - Using Data Quality Services to Cleanse Data
  - Using Data Quality Services to Match Data
- **Lab: Cleansing Data**
  - Creating a DQS Knowledge Base
  - Using a DQS Project to Cleanse Data
  - Using DQS in an SSIS Package
- **Lab: Deduplicating Data**
  - Creating a Matching Policy
  - Using a DQS Project to Match Data

Module 10: Using Master Data Services
• Lessons
  – Introduction to Master Data Services
  – Implementing a Master Data Services Model
  – Using the Master Data Services Add-in for Excel
• Lab: Implementing Master Data Services
  – Creating a Basic Model
  – Editing a Model by Using the Master Data Services Add-in for Excel
  – Loading Data into a Model
  – Enforcing Business Rules
  – Consuming Master Data Services Data

Module 11: Extending SQL Server Integration Services

• Lessons
  – Using Custom Components in SSIS
  – Using Scripts in SSIS
• Lab: Using Custom Components and Scripts
  – Using a Custom Component
  – Using a Script Task

Module 12: Deploying and Configuring SSIS Packages

• Lessons
  – Overview of SSIS Deployment
  – Deploying SSIS Projects
  – Planning SSIS Package Execution
• Lab: Deploying and Configuring SSIS Packages
  – Create a SSIS Catalog
  – Deploy an SSIS Project
  – Create Environments for an SSIS Solution
  – Running an SSIS Package in SQL Server Management Studio
  – Scheduling SSIS Packages with SQL Server Agent

Module 13: Consuming Data in a Data Warehouse

• Lessons
  – Introduction to Business Intelligence
  – Introduction to Reporting
  – Introduction to Data Analysis
• Lab: Using Business Intelligence Tools
  – Exploring a Reporting Services Report
  – Exploring a PowerPivot Workbook
  – Exploring a Power View Report