20767-C: Implementing a SQL Data Warehouse

Course outline

Module 1: Introduction to Data Warehousing

This module describes data warehouse concepts and architecture consideration.

Lessons

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

Lab : Exploring a Data Warehouse Solution

- Exploring data sources
- Exploring an ETL process
- Exploring a data warehouse

After completing this module, you will be able to:

- Describe the key elements of a data warehousing solution
- Describe the key considerations for a data warehousing solution

Module 2: Planning Data Warehouse Infrastructure

This module describes the main hardware considerations for building a data warehouse.

Lessons

- Considerations for data warehouse infrastructure.
- Planning data warehouse hardware.

Lab : Planning Data Warehouse Infrastructure

- Planning data warehouse hardware

After completing this module, you will be able to:

- Describe the main hardware considerations for building a data warehouse
- Explain how to use reference architectures and data warehouse appliances to create a data warehouse

Module 3: Designing and Implementing a Data Warehouse

This module describes how you go about designing and implementing a schema for a data warehouse.

Lessons

- Data warehouse design overview
- Designing dimension tables
- Designing fact tables
- 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

After completing this module, you will be able to:

- Implement a logical design for a data warehouse
- Implement a physical design for a data warehouse

Module 4: Columnstore Indexes

This module introduces Columnstore Indexes.

Lessons

- Introduction to Columnstore Indexes
- Creating Columnstore Indexes
- Working with Columnstore Indexes

Lab : Using Columnstore Indexes

- Create a Columnstore index on the FactProductInventory table
- Create a Columnstore index on the FactInternetSales table
- Create a memory optimized Columnstore table

After completing this module, you will be able to:

- Create Columnstore indexes
- Work with Columnstore Indexes

Module 5: Implementing an Azure SQL Data Warehouse

This module describes Azure SQL Data Warehouses and how to implement them.

Lessons

- Advantages of Azure SQL Data Warehouse
- Implementing an Azure SQL Data Warehouse
- Developing an Azure SQL Data Warehouse
- Migrating to an Azure SQ Data Warehouse
- Copying data with the Azure data factory

Lab : Implementing an Azure SQL Data Warehouse

- Create an Azure SQL data warehouse database
- Migrate to an Azure SQL Data warehouse database
- Copy data with the Azure data factory

After completing this module, you will be able to:

- Describe the advantages of Azure SQL Data Warehouse
- Implement an Azure SQL Data Warehouse
- Describe the considerations for developing an Azure SQL Data
- WarehousePlan for migrating to Azure SQL Data Warehouse

Module 6: Creating an ETL Solution

At the end of this module you will be able to implement data flow in a SSIS package.

Lessons

- Introduction to ETL with SSIS
- Exploring Source Data
- Implementing Data Flow

Lab : Implementing Data Flow in an SSIS Package

- Exploring source data
- Transferring data by using a data row task
- Using transformation components in a data row

After completing this module, you will be able to:

- Describe ETL with SSIS
- Explore Source Data

- Implement a Data Flow

Module 7: Implementing Control Flow in an SSIS Package

This module describes 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

After completing this module, you will be able to:

- Describe control flow
- Create dynamic packages
- Use containers

Module 8: Debugging and Troubleshooting SSIS Packages

This module describes how to debug and troubleshoot 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
- Implementing an event handler

- Handling errors in data flow

After completing this module, you will be able to:

- Debug an SSIS package
- Log SSIS package events
- Handle errors in an SSIS package

Module 9: Implementing a Data Extraction Solution

This module describes how to implement an SSIS solution that supports incremental DW loads and changing data.

Lessons

- Introduction to Incremental ETL
- Extracting Modified Data
- Loading modified data
- Temporal Tables

Lab : Extracting Modified Data

- Using a datetime column to incrementally extract data
- Using change data capture
- Using the CDC control task
- Using change tracking

Lab : Loading a data warehouse

- Loading data from CDC output tables
- Using a lookup transformation to insert or update dimension data
- Implementing a slowly changing dimension
- Using the merge statement

After completing this module, you will be able to:

- Describe incremental ETL
- Extract modified data
- Load modified data
- Describe temporal tables

Module 10: Enforcing Data Quality

This module describes how to implement data cleansing by using Microsoft Data Quality services.

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 : De-duplicating Data

- Creating a matching policy
- Using a DS project to match data

After completing this module, you will be able to:

- Describe data quality services
- Cleanse data using data quality services
- Match data using data quality services
- De-duplicate data using data quality services

Module 11: Using Master Data Services

This module describes how to implement master data services to enforce data integrity at source.

Lessons

- Introduction to Master Data Services
- Implementing a Master Data Services Model
- Hierarchies and collections
- Creating a Master Data Hub

Lab : Implementing Master Data Services

- Creating a master data services model
- Using the master data services add-in for Excel
- Enforcing business rules
- Loading data into a model
- Consuming master data services data

After completing this module, you will be able to:

- Describe the key concepts of master data services
- Implement a master data service model
- Manage master data
- Create a master data hub

Module 12: Extending SQL Server Integration Services (SSIS)

This module describes how to extend SSIS with custom scripts and components.

Lessons

- Using scripting in SSIS
- Using custom components in SSIS

Lab : Using scripts

- Using a script task

After completing this module, you will be able to:

- Use custom components in SSIS
- Use scripting in SSIS

Module 13: Deploying and Configuring SSIS Packages

This module describes how to deploy and configure SSIS packages.

Lessons

- Overview of SSIS Deployment
- Deploying SSIS Projects
- Planning SSIS Package Execution

Lab : Deploying and Configuring SSIS Packages

- Creating an SSIS catalog
- Deploying an SSIS project
- Creating environments for an SSIS solution
- Running an SSIS package in SQL server management studio
- Scheduling SSIS packages with SQL server agent

After completing this module, you will be able to:

- Describe an SSIS deployment
- Deploy an SSIS package

- Plan SSIS package execution

Module 14: Consuming Data in a Data Warehouse

This module describes how to debug and troubleshoot SSIS packages.

Lessons

- Introduction to Business Intelligence
- An Introduction to Data Analysis
- Introduction to reporting
- Analyzing Data with Azure SQL Data Warehouse

Lab : Using a data warehouse

- Exploring a reporting services report
- Exploring a PowerPivot workbook
- Exploring a power view report

After completing this module, you will be able to:

- Describe at a high level business intelligence
- Show an understanding of reporting
- Show an understanding of data analysis
- Analyze data with Azure SQL data warehouse