

KOENIG SOLUTIONS · COURSE OUTLINE

Implementing a SQL 2016 Data Warehouse (SSIS)

Learn to design, build and deploy a SQL Server data warehouse with SSIS, from schema design to ETL, quality and reporting.

14

MODULES

87

TOPICS

52

HANDS-ON LABS

COURSE OVERVIEW

This course covers data warehouse concepts, infrastructure planning, and logical and physical schema design, including the use of Columnstore indexes and Azure SQL Data Warehouse. It then addresses building ETL solutions with SSIS, covering data flow, control flow, debugging, and incremental data extraction. Further modules cover enforcing data quality and master data management, extending and deploying SSIS packages, and consuming data through reporting and analysis tools.

WHO THIS COURSE IS FOR

Database Developers

BI Developers

ETL Developers

Data Warehouse Designers

Database Administrators

Report Developers

LEARNING OBJECTIVES

- Describe the key elements and considerations of a data warehousing solution
- Plan data warehouse hardware and infrastructure
- Implement logical and physical designs for a data warehouse
- Create and work with Columnstore indexes
- Implement an Azure SQL Data Warehouse and migrate data to it
- Develop data flow and control flow in SSIS packages
- Debug, log and handle errors in SSIS packages
- Implement incremental data extraction and enforce data quality

14 Modules, 87 Topics

01

3 Labs

Introduction to Data Warehousing

This module describes data warehouse concepts and architecture consideration.

LESSONS

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

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

02

Lab

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

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

03

3 Labs

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

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

04**3 Labs**

Columnstore Indexes

This module introduces Columnstore Indexes.

LESSONS

Introduction to Columnstore Indexes · Creating Columnstore Indexes · Working with Columnstore Indexes

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

Create Columnstore indexes · Work with Columnstore Indexes

05**3 Labs**

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

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

06**3 Labs**

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

Describe ETL with SSIS · Explore Source Data · Implement a Data Flow

07**3 Labs****2 Labs**

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

Describe control flow · Create dynamic packages · Use containers

08**4 Labs**

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

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

09**4 Labs****4 Labs**

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

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

10**3 Labs****2 Labs**

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

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

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

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

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

Use custom components in SSIS · Use scripting in SSIS

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

AFTER COMPLETING THIS MODULE, YOU WILL BE ABLE TO:

Describe an SSIS deployment · Deploy an SSIS package · Plan SSIS package execution

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

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

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	Introduction to Data Warehousing	■ Exploring a Data Warehouse Solution: Exploring data sources ■ Exploring an ETL process ■ Exploring a data warehouse
02	Planning Data Warehouse Infrastructure	Planning Data Warehouse Infrastructure: Planning data warehouse hardware
03	Designing and Implementing a Data Warehouse	■ Implementing a Data Warehouse Schema: Implementing a star schema ■ Implementing a snowflake schema ■ Implementing a time dimension table
04	Columnstore Indexes	■ 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
05	Implementing an Azure SQL Data Warehouse	■ 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
06	Creating an ETL Solution	■ 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

#	MODULE	ACTIVITY
07	Implementing Control Flow in an SSIS Package	■ Implementing Control Flow in an SSIS Package: Using tasks and precedence in a control flow ■ Using variables and parameters ■ Using containers ■ Using Transactions and Checkpoints: Using transactions ■ Using checkpoints
08	Debugging and Troubleshooting SSIS Packages	■ Debugging and Troubleshooting an SSIS Package: Debugging an SSIS package ■ Logging SSIS package execution ■ Implementing an event handler ■ Handling errors in data flow
09	Implementing a Data Extraction Solution	■ Extracting Modified Data: Using a datetime column to incrementally extract data ■ Using change data capture ■ Using the CDC control task ■ Using change tracking ■ 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
10	Enforcing Data Quality	■ Cleansing Data: Creating a DQS knowledge base ■ Using a DQS project to cleanse data ■ Using DQS in an SSIS package ■ De-duplicating Data: Creating a matching policy ■ Using a DS project to match data
11	Using Master Data Services	■ 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
12	Extending SQL Server Integration Services (SSIS)	Using scripts: Using a script task
13	Deploying and Configuring SSIS Packages	■ 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

#	MODULE	ACTIVITY
14	Consuming Data in a Data Warehouse	■ Using a data warehouse: Exploring a reporting services report ■ Exploring a PowerPivot workbook ■ Exploring a power view report

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

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Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

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