KOENIG
step forward

Microsoft Solutions Partner
Microsoft Cloud Training Services

KOENIG SOLUTIONS · COURSE OUTLINE

Developing Microsoft SQL Server 2012 Databases

Learn to design and implement SQL Server 2012 databases, from tables and indexes to stored procedures, functions and XML data.

20	65	20
MODULES	TOPICS	HANDS-ON LABS

COURSE OVERVIEW

This course covers the SQL Server 2012 platform and tools, working with data types, and designing and implementing tables with constraints for data integrity. It addresses indexing concepts, clustered and nonclustered indexes, and reading execution plans to improve query performance. It covers views, stored procedures, merging data with the MERGE statement, table-valued parameters, and user-defined functions. It also covers concurrency and transactions, error handling in T-SQL, DML triggers, SQL CLR integration, and storing and querying XML, spatial and full-text data.

WHO THIS COURSE IS FOR

- **Database Developers**
- **Database Administrators**
- **SQL Developers**
- **Application Developers**
- **BI Developers**

LEARNING OBJECTIVES

- Describe the SQL Server 2012 platform and its toolset
- Apply appropriate data types when designing tables
- Design and implement tables, schemas and constraints
- Plan indexing strategies using clustered and nonclustered indexes
- Interpret execution plans to identify performance issues
- Implement views, stored procedures and user-defined functions
- Apply the MERGE statement and table-valued parameters
- Implement error handling, triggers and SQL CLR integration

COURSE SYLLABUS

20 Modules, 65 Topics

01 Lab

Introduction to SQL Server 2012 and Its Toolset

TOPICS

Introduction to the SQL Server Platform · Working with SQL Server Tools · Configuring SQL Server Services

02 Lab

Working with Data Types

TOPICS

Using Data Types · Working with Character Data · Converting Data Types · Working with Specialized Data Types

03 Lab

Designing and Implementing Tables

TOPICS

Designing Tables · Working with Schemas · Creating and Altering Tables

04 Lab

Ensuring Data Integrity through Constraints

TOPICS

Enforcing Data Integrity · Implementing Domain Integrity · Implementing Entity and Referential Integrity

05 Lab

Planning for SQL Server 2012 Indexing

TOPICS

Core Indexing Concepts · Data Types and Indexes · Single Column and Composite Indexes

06 Lab

Implementing Table Structures in SQL Server 2012

TOPICS

SQL Server Table Structures · Working with Clustered Indexes · Designing Effective Clustered Indexes

07 Lab

Reading SQL Server 2012 Execution Plans

TOPICS

Execution Plan Core Concepts · Common Execution Plan Elements · Working with Execution Plans

08 Lab

Improving Performance through Nonclustered Indexes

TOPICS

Designing Effective Nonclustered Indexes · Implementing Nonclustered Indexes · Tracing and Tuning Queries

09

Lab

Designing and Implementing Views

TOPICS

Introduction to Views · Creating and Managing Views · Performance Considerations for Views

10

Lab

Designing and Implementing Stored Procedures

TOPICS

Introduction to Stored Procedures · Working With Stored Procedures · Implementing Parameterized Stored Procedures · Controlling Execution Context

11

Lab

Merging Data and Passing Tables

TOPICS

Using the MERGE Statement · Implementing TABLE Types · Using TABLE Types As Parameters

12

Lab

Designing and Implementing User-Defined Functions

TOPICS

- Overview of Functions
- Designing and Implementing Scalar Functions
- Designing and Implementing Table-valued Functions
- Considerations for Implementing Functions
- Alternatives to Functions

13

Lab

Creating Highly Concurrent SQL Server 2012 Applications

TOPICS

Introduction to Transactions · Introduction to Locks · Management of Locking · Transaction Isolation Levels

14

Lab

Handling Errors in T-SQL Code

TOPICS

Understanding T-SQL Error Handling · Implementing T-SQL Error Handling · Implementing Structured Exception Handling

15 Lab

Responding to Data Manipulation via Triggers

TOPICS

Designing DML Triggers · Implementing DML Triggers · Advanced Trigger Concepts

16 Lab

Implementing Managed Code in SQL Server 2012

TOPICS

Introduction to SQL CLR Integration · Importing and Cataloging Assemblies · Implementing SQL CLR Integration

17 Lab

Storing XML Data in SQL Server 2012

TOPICS

Introduction to XML and XML Schemas · Storing XML Data and Schemas in SQL Server · Implementing XML Indexes

18 Lab

Querying XML Data in SQL Server 2012

TOPICS

Using the T-SQL FOR XML Statement · Getting Started with XQuery · Shredding XML

19 Lab

Working with SQL Server 2012 Spatial Data

TOPICS

Introduction to Spatial Data · Working with SQL Server Spatial Data Types · Using Spatial Data in Applications

20 Lab

Working with Full-Text Indexes and Queries

TOPICS

Introduction to Full-Text Indexing · Implementing Full-Text Indexes in SQL Server · Working with Full-Text Queries

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	**Introduction to SQL Server 2012 and Its Toolset**	Introduction to SQL Server and its Toolset
02	**Working with Data Types**	Working with Data Types
03	**Designing and Implementing Tables**	Designing and Implementing Tables
04	**Ensuring Data Integrity through Constraints**	Ensuring Data Integrity through Constraints

#	MODULE	ACTIVITY
05	**Planning for SQL Server 2012 Indexing**	Planning for SQL Server Indexing
06	**Implementing Table Structures in SQL Server 2012**	Implementing Table Structures in SQL Server
07	**Reading SQL Server 2012 Execution Plans**	Reading SQL Server Execution Plans
08	**Improving Performance through Nonclustered Indexes**	Improving Performance through Nonclustered Indexes
09	**Designing and Implementing Views**	Designing and Implementing Views
10	**Designing and Implementing Stored Procedures**	Designing and Implementing Stored Procedures
11	**Merging Data and Passing Tables**	Passing Tables and Merging Data
12	**Designing and Implementing User-Defined Functions**	Designing and Implementing User-defined Functions
13	**Creating Highly Concurrent SQL Server 2012 Applications**	Creating Highly Concurrent SQL Server Applications
14	**Handling Errors in T-SQL Code**	Handling Errors in T-SQL Code
15	**Responding to Data Manipulation via Triggers**	Responding to Data Manipulation via Triggers
16	**Implementing Managed Code in SQL Server 2012**	Implementing Managed Code in SQL Server
17	**Storing XML Data in SQL Server 2012**	Storing XML Data in SQL Server
18	**Querying XML Data in SQL Server 2012**	Querying XML Data in SQL Server
19	**Working with SQL Server 2012 Spatial Data**	Working with SQL Server Spatial Data
20	**Working with Full-Text Indexes and Queries**	Working with Full-Text Indexes and Queries

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

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

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