KOENIG SOLUTIONS · COURSE OUTLINE

40364 Database Administration Fundamentals

Learn to design, query and administer SQL Server databases using T-SQL, from core concepts to security and backups.

32 Hours	5	28
DURATION	MODULES	TOPICS

COURSE OVERVIEW

This course provides a comprehensive introduction to SQL Server, covering core database concepts, data manipulation, and administration. Participants will gain practical experience in designing, querying, and managing databases using T-SQL. The program emphasizes hands-on exercises, ensuring learners can apply their knowledge in real-world scenarios.

WHO THIS COURSE IS FOR

- **Database Administrators**
- **Database Developers**
- **SQL Developers**
- **IT Professionals**
- **Application Developers**

PREREQUISITES

- Basic understanding of computing concepts (e.g., files, data storage)
- Familiarity with any programming language (helpful but not required)
- No prior SQL knowledge needed

LEARNING OBJECTIVES

By the end of this course, learners will:

- Understand fundamental database concepts, including relational databases and normalization
- Apply T-SQL to create and manipulate database objects efficiently
- Write queries to retrieve, insert, update, and delete data while ensuring integrity
- Optimize data storage using indexes and keys for improved performance
- Implement database security measures and perform backup/restore operations

COURSE SYLLABUS

5 Modules, 28 Topics

01

Understanding Core Database Concepts

UNDERSTANDING DATA STORAGE IN TABLES

- **Structure:** columns (fields) and rows (records)

RELATIONAL DATABASE CONCEPTS

- Definition and importance of RDBMS
- Establishing relations between tables

DATA MANIPULATION LANGUAGE (DML)

- Purpose and role in databases

DATA DEFINITION LANGUAGE (DDL)

- Using T-SQL to create database objects (tables, views)

02

Creating Database Objects

CHOOSING DATA TYPES

Importance and impact on storage requirements

CREATING TABLES

Purpose of tables · Using ANSI SQL syntax

CREATING VIEWS

When and why to use views · Using T-SQL or graphical designers

CREATING STORED PROCEDURES AND FUNCTIONS

Operations: SELECT, INSERT, UPDATE, DELETE

03

Manipulating Data

SELECTING DATA

- Using SELECT queries to extract data
- Utilizing joins, UNION, INTERSECT

INSERTING DATA

- Using INSERT statements

UPDATING DATA

- Writing updated data using UPDATE statements

DELETING DATA

- Removing data from single or multiple tables
- Maintaining referential integrity with transactions

04

Understanding Data Storage

NORMALIZATION

- Reasons and five common levels
- Normalizing to third normal form

PRIMARY, FOREIGN, AND COMPOSITE KEYS

- Role in databases
- Choosing appropriate data types
- Relationships between foreign and primary keys

INDEXES

- Clustered and non-clustered indexes

05

Administering a Database

DATABASE SECURITY CONCEPTS

Securing database objects · User accounts and roles

DATABASE BACKUPS AND RESTORE

Backup types: full, incremental · Importance of backups · Restoring a database

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.

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