

Data Modeling: Entities, Relationships & Normalization

Learn to build logical data models, from discovering entities and relationships to normalizing them for data integrity.

9

MODULES

56

TOPICS

COURSE OVERVIEW

This course covers logical data modeling, starting with its role in requirements and its relationship to physical data models. It then addresses project context, including solution scope, requirements sources and types of modeling projects, before moving into conceptual data modeling to discover entities, attributes and relationships, including cardinality, business rules and advanced relationship types such as many-to-many, self-referencing and ternary relationships. The course also covers supertypes and subtypes, normalization through first, second and third normal form, reasons for denormalization, and verification and validation of the logical data model using CASE tools and other models such as data flow diagrams and CRUD matrices.

WHO THIS COURSE IS FOR

Data Modelers

Business Analysts

Database Designers

Systems Analysts

Data Architects

LEARNING OBJECTIVES

- Explain the importance of logical data modeling in requirements
- Identify sources of requirements and types of modeling projects
- Discover and define entities and their attributes
- Model relationships and their cardinality between entities
- Apply naming conventions when documenting attributes
- Model advanced relationships such as many-to-many and ternary
- Apply supertypes and subtypes to manage model complexity
- Normalize a logical data model through first to third normal form

9 Modules, 56 Topics

01

Introduction to Logical Data Modeling

TOPICS

- Importance of logical data modeling in requirements
- When to use logical data models
- Relationship between logical and physical data model
- Elements of a logical data model
- Read a high-level data model
- Data model prerequisites
- Data model sources of information
- Developing a logical data model

02

Project Context and Drivers

TOPICS

- Importance of well-defined solution scope
- Functional decomposition diagram
- Context-level data flow diagram

SOURCES OF REQUIREMENTS

- Functional decomposition diagrams
- Data flow diagrams
- Use case models
- Workflow models
- Business rules
- State diagrams
- Class diagrams
- Other documentation

TYPES OF MODELING PROJECTS

- Transactional business systems
- Business intelligence and data warehousing systems
- Integration and consolidation of existing systems
- Maintenance of existing systems
- Enterprise analysis
- Commercial off-the-shelf application

03

Conceptual Data Modeling

TOPICS

- Discovering entities
- Defining entities
- Documenting an entity
- Identifying attributes
- Distinguishing between entities and attributes

04

Conceptual Data Modeling-Identifying Relationships and Business Rules

TOPICS

Model fundamental relationships

CARDINALITY OF RELATIONSHIPS

One-to-one · One-to-many · Many-to-many

Is the relationship mandatory or optional? · Naming the relationships

05

Identifying Attributes

TOPICS

- Discover attributes for the subject area
- Assign attributes to the appropriate entity
- Name attributes using established naming conventions
- Documenting attributes

06

Advanced Relationships

TOPICS

- Modeling many-to-many relationships
- Model multiple relationships between the same two entities
- Model self-referencing relationships
- Model ternary relationships
- Identify redundant relationships

07

Completing the Logical Data Model

TOPICS

- Use supertypes and subtypes to manage complexity
- Use supertypes and subtypes to represent rules and constraints

08

Data Integrity Through Normalization

NORMALIZE A LOGICAL DATA MODEL

- First normal form
- Second normal form
- Third normal form
- Reasons for denormalization
- Transactional vs. business intelligence applications

09

Verification and Validation

TOPICS

- Verify the technical accuracy of a logical data model
- Use CASE tools to assist in verification

VERIFY THE LOGICAL DATA MODEL USING OTHER MODELS

- Data flow diagram
- CRUD matrix

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

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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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