

uCertify

Data Modeling



Lesson



Practice test



Live-Lab

08 Jun 2023

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The Data Modeling course and lab cover the entire field of how to create data models that allow complex data to be analyzed, manipulated, extracted, and reported upon accurately. The labs are cloud-based, device-enabled, and can easily be integrated with an LMS. The computer architecture course and lab also provide knowledge on the areas such as I/O functions and structures, RISC, and parallel processors with real-world examples enhancing the text for reader interest.

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1: Introduction

- Who Should Read This Course
- What the Course Covers

2: Introduction to Data Modeling

- Data-Centric Design
- Anatomy of a Data Model
- Importance of Data Modeling
- Measures of a Good Data Model
- How Data Models Fit Into Application Development
- Data Modeling Participants

3: Relational Model Components

- Conceptual and Logical Model Components
- Physical Model Components

4: Data and Process Modeling

- Data Model Diagramming Alternatives
- Process Models
- Unified Modeling Language (UML)
- Relating Entities and Processes

5: Organizing Database Project Work

- The Traditional Life Cycle
- Nontraditional Life Cycles
- The Project Triangle

6: Conceptual Data Modeling

- The Conceptual Modeling Process
- Creating the Model
- Evaluating the Model

7: Logical Database Design Using Normalization

- The Need for Normalization
- Applying the Normalization Process
- Denormalization
- Practice Problems

8: Beyond Third Normal Form

- Advanced Normalization
- Resolving Supertypes and Subtypes

- Generalizing Attributes
- Alternatives for Reference Data

9: Physical Database Design

- The Physical Design Process
- Designing Tables
- Integrating Business Rules and Data Integrity
- Adding Indexes for Performance
- Designing Views

10: Alternatives for Incorporating Business Rules

- The Anatomy of a Business Rule
- Implementing Business Rules in Data Models
- Limitations on Implementing Business Rules in Data Models
- Functional Classification of Business Rules

11: Alternatives for Handling Temporal Data

- Temporal Data Structures

- Calendar Data Structures
- Business Rules for Temporal Data

12: Modeling for Analytical Databases

- Data Warehouses
- Data Marts
- Modeling Analytical Data Structures
- Loading Data into Analytical Databases

13: Enterprise Data Modeling

- Enterprise Data Management
- The Enterprise Data Model



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PRE-ASSESSMENTS QUESTIONS

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POST-ASSESSMENTS QUESTIONS

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Introduction to Data Modeling

- Creating a Conceptual model
- Creating a Physical Data Model
- Creating a Logical Data Model

Relational Model Components

- Modifying a Conceptual Model

Data and Process Modeling

- Drawing of a Conceptual Model with Nested Subtypes

Organizing Database Project Work

- Discussing the Traditional Life Cycle and Requirements Gathering
- Testing the Knowledge of Project Database Management Tasks

- Discussing Nontraditional Life Cycles and the Project Triangle

Conceptual Data Modeling

- Creating a Conceptual Model for the Employee Management System

Logical Database Design Using Normalization

- Creating a Data Model in Second Normal Form
- Creating a Data Model in First Normal Form
- Analyzing Normalization in Academic Tracking Database

Beyond Third Normal Form

- Creating a Data Model in Fourth Normal Form
- Creating a Complex Logical Data Model

Physical Database Design

- Converting a Logical Data Model into a Physical Data Model
- Creating a Physical Data Model ERD
- Creating a Data Model in Third Normal Form

Alternatives for Incorporating Business Rules

- Modeling Business Rules in a Logical Data Model

Alternatives for Handling Temporal Data

- Adding History to Data Models

Modeling for Analytical Databases

- Designing a Star Schema Fact Table

Enterprise Data Modeling

- Developing an Enterprise Conceptual Model

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