Oracle Data Modeling and Relational Database Design

Duration: 4 Days

What you will learn

This Oracle Data Modeling and Relational Database Design training covers the Data Modeling and Database Development process and the models that are used at each phase of the lifecycle. Learn from expert Oracle University instructors through interactive instruction and hands-on exercisese.

Learn To:

Identify the types of models.
Develop a process model (Data Flow Diagram).
Use advanced data modeling techniques.
Create the Physical Model, add several Physical Model objects, and generate the DDL.
Use several real life examples to document business requirements.
Work with design rules that can be applied to check and enforce the integrity and consistency of your designs.
Work in a collaborative environment using Subversion.

Benefits to You

By taking this course, you will develop an understanding of the data modeling and database development process, as well as the models used in each phase of the development lifecycle. You'll develop the skills to model and understand the database development lifecycle based on real life examples, while mapping the objects and engineer the logical model to a relational model.

Validate Data Models

You will also learn techniques to validate these data models. Once the Relational Design has been validated, you can create physical models to add all physical properties and finally generate a DDL to create the database objects for your database. You will also better understand how you can work as a team on developing a model using Subversion.

Related Training

Suggested Prerequisites
Basic understanding of relational database concepts

Course Objectives

Create an Entity Relationship Diagram by identifying entities

attributes

relationships and constraints from a set of requirements

Normalize the Entity Relationship Diagram to third Normal form

Enhance the Entity Relationship Diagram to utilize several data modeling techniques

Create a Data Flow Diagram by identifying processes

external agents

information stores and information flows that show how the information flows and how it is being transformed

Engineer the Entity Relationship Model into an initial relational database design

Optimize the Relational Database Design

Complete the Physical Model and generate the DDL

Use Oracle SQL Developer Data Modeler to document all the concepts learned throughout the course

Course Topics

Understanding What to Model
Why Model?
Why Model: A Practical Example
Database and Application Development Life Cycle
Process Modeling
Logical Data Modeling
Database Design
Database Generation
Data Type Model

Documenting the Business Background
Documenting the Business Direction
Components of a Business Direction Statement

Business Objectives
Assumptions
Critical Success Factors
Key Performance Indicators
Problems
Devising Business Direction Objectives and Actions

Building a Process Model (Data Flow Diagram)
What Is a Process Model?
Why Create a DFD?
Components of a Data Flow Diagram
Events
Analyzing Event Responses

Using Oracle SQL Developer Data Modeler to Create Your Process Model (Data Flow Diagram)
Downloading and Installing Oracle SQL Developer Data Modeler
Oracle SQL Developer Data Modeler Main Window Components
Building a Data Flow Diagram
Editing the Diagram Layout
Adding and Reusing Process Events
Saving Your Model
Opening a Saved Model

Validating Your Process Model (Data Flow Diagram)
DFD Rules
Design Rules in Oracle SQL Developer Data Modeler
Types of Processes
Process Decomposition
Decomposition Guidelines

Identifying Entities and Attributes
What Is a Logical Data Model?
Why Create an ERD?
Components of an Entity Relationship Diagram
Attributes
Attribute Characteristics

Identify Relationships
Relationships
Components of a Relationship
Relationships: Additional Examples
Relationship Types
Using a Relationship Matrix
Determining a Relationship s Existence
Naming the Relationship
Determining the Relationship s Cardinality

Assign Unique Identifiers
Unique Identifiers
Unique Identifier Examples
Identifying Relationships
Identifying Relationships with Multiple Entities

Non-Identifying Relationships
Primary and Secondary Unique Identifiers
Searching for Unique Identifiers

Using Oracle SQL Developer Data Modeler to Create the Entity Relationship Diagram
Building an Entity Relationship Diagram
Specifying Logical Model General Option
Modifying Model Properties
Notation Types
Editing a Diagram Layout
What Is a Subview?
Creating a Subview
What Is a Display?

Validating your Entity Relationship Diagram
ERD Checklist
Attribute Rules
Distinguishing Attributes and Entities
Attribute Optionality
Adding Additional Information to the ERD
Creating Reports

Normalizing your Data Model
What Is Normalization?
First Normal Form (1NF)
Second Normal Form (2NF)
Third Normal Form (3NF)
Normalization Example

Validating Relationships
Resolving M:M Relationships
Modeling Hierarchical Data
Examining Recursive Relationships
Resolving a M:M Recursive Relationships
Modeling Exclusive Relationships
Creating an Exclusive Relationship in Oracle SQL Developer Data Modeler
Entity Type Hierarchies
Modeling Subtypes in Oracle SQL Developer Data Modeler

Adding and Using Data Types
Attribute Data Types
Logical Type
Types Administration
Domain
Adding a Check Constraint to a Domain
Adding Ranges or Value Lists to a Domain
Preferred Logical Types and Domains
Creating Domains from Logical Types

Put It All Together
Build an ERD from a Case Study

Map Your Entity Relationship Diagram to a Relational Database Design
Why Create a Relational Model?
Review: Database Design
Relational Database Overview
Terminology Mapping
Naming Conventions
Naming Restrictions with Oracle
Ensuring That Your Logical Data Model Is Complete
Mapping Simple Entities

Engineering Your Entity Relationship Diagram to a Relational Database Design in Oracle SQL Developer Data Mc
Relational Model and Relational Model Diagram Preferences
Reviewing Table Properties
Previewing the DDL for a Table
Preferences: Classification Types
Assigning a Classification Type to One Table
Changing the Color for Classified Tables
Changing the Prefix for Classified Tables
Assigning Classification Types to Multiple Tables

Defining Your Physical Model
What Is a Physical Model?
Creating a Physical Model
RDBMS Administration
RDBMS Administration: Changing the Default RDBMS Sites
Creating Physical Model Objects
Adding a User
Adding Segment Templates (Storage)
Associating Physical Objects with Your Table

Generating Your Database
Database Generation
Generating DDL
DDL Preferences
DDL/Migration General Options
Design Rules
Working With Rule Sets
Working With Custom Rules
Working With Libraries

Altering an Existing Design
Approaches to Modeling
SUsing Import to Create a Model
Importing an Existing Database
Importing Domains
Creating a Logical Data Model from Your Relational Model
Reviewing and Making Changes to Your Logical Model
Checking the Design Rules
Forward Engineering to a New Relational Model

Working in a Collaborative Environment
The Benefits of Version Control