Oracle Data Modeling and Relational Database Design

Duration: 4 Days

Course Description:

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.

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 Objectives:

- Application Developers
- Business Analysts
- Data Modelers
- Database Administrators
- Database Designers
- System Analysts

Audience

- Application Developers
- Business Analysts
- Data Modelers
- Database Administrators
- Database Designers
- System Analysts

Course Outlines:

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?

COURSE OUTLINE

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 Modeler
- 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
- Working With Data Modeler and Subversion
- Pending Changes
- Basic Workflow: Using Subversion with a Design
- Maintaining Versions