Oracle Data Modeling and Relational Database Design

Duration: 4 Days

What you will learn

This course teaches you the Data Modeling and Database Development process, along with the models used at each phase of the lifecycle. You'll use several real life examples to document business requirements, the flow of information through a particular process and which data needs to be captured to accomplish the business rules.

Learn To:

Create an Entity Relationship Diagram (ERD) and a Data Flow Diagram (DFD).
Use techniques to revise and enhance your ERD.
Normalize the model.
Add recursive and exclusive relationships.
Identify entity hierarchies (subtypes/supertypes) and define and use User Defined Data Types (Data Types Model).
Map the objects and engineer the logical model to a relational model.

Participate in Hands-On Workshops

This course is designed to be workshop based. You'll take part in many group discussions to develop the models. The SQL Developer Data Modeler tool is then used to document the results of what is discussed.

Benefits To You

You will learn how you can optimize the Relational Design using many de-normalization techniques. Additional objects like indexes and views to the Physical Design can also be added.

Creating Database Objects

Once the Relational Design has been validated, you'll learn how the Physical Model can be used to add all physical properties. Finally, see how the DDL is generated to create the database objects.

Audience

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

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 many 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

Introduction to Modeling
List the reasons why modeling is important
Describe the phases of the Database and Application Development Lifecycle
Identify which modeling approach to use for a given situation

Document the Business Background
Define and identify business objectives, assumptions, critical success factors, key performance indicators and problems
Establish Business Direction Objectives

Build a Process Model (Data Flow Diagram)
List the reasons why process modeling is useful
Describe the components of a Data Flow Diagram
Build a Data Flow Diagram

Use SQL Developer Data Modeler to Create Your Data Flow Diagram
Load and set the default options for Oracle SQL Developer Data Modeler
Build a Data Flow Diagram using Oracle SQL Developer Data Modeler
Edit the Layout of your Data Flow Diagram

Validate Your Data Flow Diagram
Validate a DFD based on set of DFD Rules
Identify different types of processes
Decompose Processes into Primitive Processes

Identify Entities and Attributes
Identify and Diagram Entities
Identify and Diagram Attributes

Identify Relationships
Create a relationship between two entities
Model relationships using a relationship matrix

Assign Unique Identifiers
Identify unique identifiers for entities and relationships

Use Oracle SQL Developer Data Modeler to Create an Entity Relationship Diagram
Examine the General Options for Logical Data Modeling
Build an ERD in Oracle SQL Developer Data Modeler
Edit the Layout of your ERD
Create a Subview and Display

Validate Your Entity Relationship Diagram
Apply Diagram Layout and Attribute Rules
Distinguish Entities from Attributes
Evaluate Attribute Optionality
Define Naming Standards, Glossary and Abbreviations
Supplement the ERD with Useful Information

Normalize Your Data Model
Normalize your ERD to third normal form

Validate Relationships
Resolve M:M Relationships
Model Hierarchical Data
Examine Recursive Relationships
Model Exclusive Relationships
Model Entity Type Hierarchies
Model Data Over Time

Add and Use Data Types
Create different types of data types
Build a Data Type model
Analyze various relationships between structured types on your data type model
Assign data types to the attributes in your logical data model

Put It All Together
Build an ERD from a Case Study

Map Your Entity Relationship Diagram to a Relational Database Design
Describe why a database design is needed
Decide on naming conventions and rules
Perform a mapping between a logical and relational model
Utilize the SQL Developer Data Modeler facility

Analyze your Relational Model
Modify each Tables properties according to requirements

Determine when to create an Index or View

Denormalize Your Design to Increase Performance
Recognize when denormalization techniques can be used in your relational model

Define Your Physical Model
Create objects in a physical model
Refine relational model objects in the physical model

Generate Your Database
Generate DDL for your Database

Alter an Existing Design
Import from the Data Dictionary
Reverse Engineering to Create the Logical Model
Compare and Merge models
Export your model
Analyze your Model by running Data Modeler Reports

Create a Multidimensional Model
Describe each multidimensional object
Import a Model with Dimensions
Generate a Multidimensional Model
Review and Modify the Relational Model
Export the Multidimensional Model to an Oracle AW