

Mastering Relational and Dimensional Data Warehouse Design

Course Summary

Description

This course provides students with the skills necessary to design a successful data warehouse using both relational and dimensional data modeling techniques.

Topics

- Introduction
- Fundamental Relational Concepts
- Understanding the Business Model
- Developing the Model
- Creating and Maintaining Keys
- Modeling the Calendar
- Modeling Hierarchies
- Modeling Transactions
- Data Warehouse Optimization
- Accommodating Business Change
- Maintaining the Models
- Deploying the Relational Solution
- Comparison of Data Warehouse Methodologies

Audience

This course is targeted at technical staff, team leaders and project managers who need to understand how to design a data warehouse using both relational (Bill Inmon style) and dimensional (Ralph Kimball style) data warehousing design techniques.

Prerequisites

Students should have at least some experience with any relational database management system.

Duration

Three days

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Course Outline

- I. Introduction**
 - A. Overview of Business Intelligence
 - B. BI Architecture
 - C. What Is a Data Warehouse?
 - D. The Multipurpose Nature of the Data Warehouse
 - E. Characteristics of a Maintainable Data Warehouse Environment
 - F. The Data Warehouse Data Model
 - G. Impact on Data Mart Creation
- II. Fundamental Relational Concepts**
 - A. Why Do You Need a Data Model?
 - B. Relational Data Modeling Objects: Subject, Entity, Attribute, and Relationships
 - C. Types of Data Models: Subject Area, Business, System, and Technology Models
 - D. Relational Data Modeling Guidelines
 - E. Normalization of the Relational Data Model
- III. Understanding the Business Model**
 - A. Business Scenario
 - B. Subject Area Model
 - C. Considerations for Specific Industries
 - D. Subject Area Model Development Process
 - E. Subject Area Model for Zenith Automobile Company
 - F. Business Data Development Process
- IV. Developing the Model**
 - A. Select the Data of Interest
 - B. Add Time to the Key
 - C. Add Derived Data
 - D. Determine Granularity Level
 - E. Summarize Data
 - F. Merge Entities
 - G. Create Arrays
 - H. Segregate Data
- V. Creating and Maintaining Keys**
 - A. Inconsistent Business Definition of Customer
 - B. Inconsistent System Definition of Customer
 - C. Inconsistent Customer Identifier Among Systems
 - D. Inclusion of External Data
 - E. Customers Uniquely Identified Based on Role
 - F. Customer Hierarchy Not Depicted
 - G. Key From a System of Record
 - H. Key From a Recognized Standard
 - I. Surrogate Keys
 - J. Differences in a Dimensional Model
 - K. Maintaining Dimensional Conformance
- VI. Modeling the Calendar**
 - A. Calendar Types: Fiscal, 4-5-4, Thirteen Month Fiscal
 - B. The Billing Cycle and Factory Calendars
 - C. Calendar Elements: Day of the Week, Holidays, Holiday Season, and Seasons
 - D. Calendar Time Span
 - E. Time and the Data Warehouse
 - F. Date Keys
 - G. Case Study: Simple Fiscal Calendar
 - H. Case Study: A Location Specific Calendar
 - I. Case Study: A Multilingual Calendar
 - J. Case Study: Multiple Fiscal Calendars
 - K. Case Study: Seasonal Calendars
- VII. Modeling Hierarchies**
 - A. Hierarchies in Business
 - B. Hierarchy Depth and Parentage
 - C. Balanced Versus Ragged Hierarchies
 - D. History
 - E. Case Study: Retail Sales Hierarchy
 - F. Case Study: Sales and Capacity Planning
 - G. Case Study: Retail Purchasing
 - H. Case Study: The Combination Pack
 - I. Transforming Structures: Making and Flattening a Recursive Tree

Mastering Relational and Dimensional Data Warehouse Design**Course Outline (cont'd)****VIII. Modeling Transactions**

- A. Business Transactions
- B. Snapshot Interfaces
- C. Delta Interfaces
- D. Database Transaction Logs
- E. Delivering Transaction Data
- F. Case Study: Sales Order Snapshots
- G. Case Study: Transaction Interface

IX. Data Warehouse Optimization

- A. Optimizing the Development Process
- B. Data Clustering
- C. Table Partitioning
- D. Enforcing Referential Integrity
- E. Index-Organized Tables
- F. Indexing Techniques: B-Tree and Bitmap Indexes
- G. Vertical Partitioning
- H. Denormalization
- I. Subtype Clusters

X. Accommodating Business Change

- A. The Changing Data Warehouse
- B. Modeling for Business Change
- C. Implementing Business Change

XI. Maintaining the Models

- A. Governing Models and Their Evolution
- B. Model Coordination
- C. Managing Multiple Modelers
- D. Roles and Responsibilities
- E. Collision Management

XII. Deploying the Relational Solution

- A. Data Mart Chaos
- B. Conform the Dimensions
- C. Create the Data Warehouse Data Model
- D. Convert by Subject Area
- E. Convert One Data Mart At a Time
- F. Build New Data Marts
- G. Build the Architecture From One Data Mart
- H. Choosing the Right Migration Path

XIII. Comparison of Data Warehouse Methodologies

- A. Multidimensional Architecture
- B. Corporate Information Factory Architecture
- C. Comparison of the CIF and MD Architectures