Oracle Database 11g: Data Warehousing Fundamentals

Duration: 3 Days

What you will learn

This Oracle Database 11g: Data Warehousing Fundamentals training will teach you about the basic concepts of a data warehouse. Explore the issues involved in planning, designing, building, populating and maintaining a successful data warehouse.

Learn To:

Define the terminology and explain basic concepts of data warehousing.

Identify the technology and some of the tools from Oracle to implement a successful data warehouse.

Describe methods and tools for extracting, transforming and loading data.

Identify some of the tools for accessing and analyzing warehouse data.

Describe the benefits of partitioning, parallel operations, materialized views and query rewrite in a data warehouse.

Explain the implementation and organizational issues surrounding a data warehouse project.

Improve performance or manageability in a data warehouse using various Oracle Database features.

Oracle's Database Partitioning Architecture

You'll also explore the basics of Oracle's Database partitioning architecture, identifying the benefits of partitioning. Review the benefits of parallel operations to reduce response time for data-intensive operations. Learn how to extract, transform and load data (ETL) into an Oracle database warehouse.

Improve Data Warehouse Performance

Learn the benefits of using Oracle's materialized views to improve the data warehouse performance. Instructors will give a high-level overview of how query rewrites can improve a query's performance. Explore OLAP and Data Mining and identify some data warehouse implementations considerations.

Use Data Warehousing Tools

During this training, you'll briefly use some of the available data warehousing tools. These tools include Oracle Warehouse Builder, Analytic Workspace Manager and Oracle Application Express.

Audience
Application Developers
Data Warehouse Administrator
Data Warehouse Analyst
Data Warehouse Developer
Developer
Functional Implementer

Project Manager
Support Engineer

Course Objectives
Describe methods and tools for extracting, transforming, and loading data

Identify some of the tools for accessing and analyzing warehouse data

Identify the technology and some of the tools from Oracle to implement a successful data warehouse

Define the decision support purpose and end goal of a data warehouse

Describe the benefits of partitioning, parallel operations, materialized views, and query rewrite in a data warehouse

Explain the implementation and organizational issues surrounding a data warehouse project

Use materialized views and query rewrite to improve the data warehouse performance

Define the terminology and explain the basic concepts of data warehousing

Develop familiarity with some of the technologies required to implement a data warehouse

Course Topics

Introduction
Course Objectives
Course Schedule
Course Pre-requisites and Suggested Pre-requisites
The sh and dm Sample Schemas and Appendices Used in the Course
Class Account Information
SQL Environments and Data Warehousing Tools Used in this Course
Oracle 11g Data Warehousing and SQL Documentation and Oracle By Examples
Continuing Your Education: Recommended Follow-Up Classes

Data Warehousing, Business Intelligence, OLAP, and Data Mining
Data Warehouse Definition and Properties
Data Warehouses, Business Intelligence, Data Marts, and OLTP
Typical Data Warehouse Components
Warehouse Development Approaches

Extraction, Transformation, and Loading (ETL)
The Dimensional Model and Oracle OLAP
Oracle Data Mining

Defining Data Warehouse Concepts and Terminology
Data Warehouse Definition and Properties
Data Warehouse Versus OLTP
Data Warehouses Versus Data Marts
Typical Data Warehouse Components
Warehouse Development Approaches
Data Warehousing Process Components
Strategy Phase Deliverables
Introducing the Case Study: Roy Independent School District (RISD)

Business, Logical, Dimensional, and Physical Modeling
Data Warehouse Modeling Issues
Defining the Business Model
Defining the Logical Model
Defining the Dimensional Model
Defining the Physical Model: Star, Snowflake, and Third Normal Form
Fact and Dimension Tables Characteristics
Translating Business Dimensions into Dimension Tables
Translating Dimensional Model to Physical Model

Database Sizing, Storage, Performance, and Security Considerations
Database Sizing and Estimating and Validating the Database Size
Oracle Database Architectural Advantages
Data Partitioning
Indexing
Optimizing Star Queries: Tuning Star Queries
Parallelism
Security in Data Warehouses
Oracle's Strategy for Data Warehouse Security

The ETL Process: Extracting Data
Extraction, Transformation, and Loading (ETL) Process
ETL: Tasks, Importance, and Cost
Extracting Data and Examining Data Sources
Mapping Data
Logical and Physical Extraction Methods
Extraction Techniques and Maintaining Extraction Metadata
Possible ETL Failures and Maintaining ETL Quality
Oracle's ETL Tools: Oracle Warehouse Builder, SQL*Loader, and Data Pump

The ETL Process: Transforming Data
Transformation
Remote and Onsite Staging Models
Data Anomalies
Transformation Routines
Transforming Data: Problems and Solutions
Quality Data: Importance and Benefits
Transformation Techniques and Tools

Maintaining Transformation Metadata

The ETL Process: Loading Data
Loading Data into the Warehouse
Transportation Using Flat Files, Distributed Systems, and Transportable Tablespaces
Data Refresh Models: Extract Processing Environment
Building the Loading Process
Data Granularity
Loading Techniques Provided by Oracle
Postprocessing of Loaded Data
Indexing and Sorting Data and Verifying Data Integrity

Refreshing the Warehouse Data
Developing a Refresh Strategy for Capturing Changed Data
User Requirements and Assistance
Load Window Requirements
Planning and Scheduling the Load Window
Capturing Changed Data for Refresh
Time- and Date-Stamping, Database triggers, and Database Logs
Applying the Changes to Data
Final Tasks

Materialized Views
Using Summaries to Improve Performance
Using Materialized Views for Summary Management
Types of Materialized Views
Build Modes and Refresh Modes
Query Rewrite: Overview
Cost-Based Query Rewrite Process
Working With Dimensions and Hierarchies

Leaving a Metadata Trail
Defining Warehouse Metadata
Metadata Users and Types
Examining Metadata: ETL Metadata
Extraction, Transformation, and Loading Metadata
Defining Metadata Goals and Intended Usage
Identifying Target Metadata Users and Choosing Metadata Tools and Techniques
Integrating Multiple Sets of Metadata
Managing Changes to Metadata

Data Warehouse Implementation Considerations
Project Management
Requirements Specification or Definition
Logical, Dimensional, and Physical Data Models
Data Warehouse Architecture
ETL, Reporting, and Security Considerations
Metadata Management
Testing the Implementation and Post Implementation Change Management
Some Useful Resources and White Papers