

# Oracle Database 19c: Data Warehousing Concepts LVC

Oracle Database

DURATION

**2 Days**

MODULES

**6 Lectures**

COURSE CODE

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## Course Overview

The course covers the following topics: Evolution of information management systems and data warehousing Need for machine learning, artificial intelligence, and big data in future data analytics Data warehouse concepts and terminology Multidimensional model concepts and create analytic views Explain the business, logical, dimensional, and physical data warehousing models Importance of extraction, transformation, and loading in data warehousing systems

## What You Will Learn

### Course Overview

- Objectives
- Lesson Agenda
- Course Objectives
- Prerequisites and Suggested Prerequisites
- Lesson Agenda
- Course Roadmap
- Lesson Agenda
- Use Case: NuMart Electronics
- Course Persona: Amy and John
- Lesson Agenda
- Course Environment
- Sample Database Schemas Used in the Course
- The HR Schema - Entity Relationship Diagram
- Sales History (SH) Schema
- Analytic Views (AV) Schema
- Class Account Information
- SQL Environments Available in the Course
- Entering SQL Statements by Using Oracle SQL\*Plus
- What Is Oracle SQL Developer?
- Lesson Agenda

- Oracle Database 19c: Data Warehousing Documentation
- Resources to Bookmark
- Summary
- Practices

## Evolution of Information Management and Data Warehousing

- John Begins His Training
- Objectives
- Lesson Agenda
- Evolution of Information Management Systems
- Executive Information Systems (EIS)
- Decision Support Systems (DSS)
- Challenges with Analyzing Data from Operational Systems
- OLTP Systems Versus Analytical Reporting
- Data Extract Processing
- Issues with Data Extract Programs
- Data Quality Issues with Extract Processing
- Lesson Agenda
- Data Warehousing and Business Intelligence
- Technological Advances That Make Data Warehousing Implementable
- Advantages of Warehouse Processing Environments
- Business Intelligence (BI): Definition and Purpose
- Business Drivers for DW & BI
- Capabilities of Business Intelligence
- Business Intelligence: Requirements
- Lesson Agenda
- What Other Data Can be Analyzed
- Characteristics of Big Data
- Challenges with Big Data
- Data Lakes Versus Data Warehouses
- Lesson Agenda
- Modern Data Warehouse
- Summary
- Practices

## Overview of Data Warehouse and Multidimensional Model Concepts

- Data Warehousing Process Flow
- In Focus: Multidimensional Model
- Objectives
- Lesson Agenda
- Data Warehouse: Definition
- Data Warehouse Characteristics
- Use Case 1:
- Subject Oriented
- Use Case 2:

- Integrated
- Use Case 3:
- Time Variant
- Use Case 4:
- Nonvolatile
- Changing Warehouse Data
- Data Warehouse Versus OLTP
- Quiz
- Lesson Agenda
- Data Warehouse Architectures
- Basic Data Warehouse
- Characteristics of Enterprisewide Data Warehouse
- Data Warehouse Architecture with Staging Area
- Data Warehouse Architecture with Staging Area and Data Marts
- Data Warehouses Versus Data Marts
- Types of Data Marts
- Dependent Data Mart
- Independent Data Mart
- Quiz
- Lesson Agenda
- Data Warehouse Development Approaches
- “Big Bang” Approach
- Incremental Approach to Warehouse Development
- Phases of Incremental Approach
- Top-Down Approach
- Bottom-Up Approach
- Lesson Agenda
- #1: Methodology
- #2: Architecture
- #3: Extraction, Transformation, and Loading (ETL)
- #4: Implementation
- #5: Operation and Support
- Lesson Agenda
- A Typical Data Warehouse Query
- Breaking It Down Further . . .
- Multidimensional Model
- Star Schema Model
- Facts and Dimensions
- Multidimensional Model: Example Schema
- What Are Analytic Views?
- Analytic Views: Use Case
- A Query’s Tasks to Answer This Question
- Components of Analytic Views
- Hierarchy
- Analytic View: Example
- Analytic View Performance

- Summary
- Practices

## About Business, Logical, Dimensional, and Physical Models

- John Learns About Data Warehouse Models
- In Focus: Data Presentation
- Objectives
- Lesson Agenda
- Data Warehouse Modeling
- Designing a Data Warehouse
- Data Warehouse Design Phases
- Lesson Agenda
- #1: Defining the Business Model
- Defining the Business Model: Performing Strategic Analysis
- Defining the Business Model: Creating the Business Model
- Business Requirements Drive the Design Process
- Using a Business Process Matrix
- Identifying Business Measures and Dimensions
- Quiz
- Determining Granularity
- Identifying Business Definitions and Rules
- Defining the Business Model: Documenting Warehouse Metadata
- Business Metadata Elements
- Metadata Documentation Approaches
- Lesson Agenda
- #2: Designing the Logical Model
- Entity Relationship Model (E-R Model)
- Defining Relationship Between Entities in E-R Diagram
- Lesson Agenda
- #3: Defining the Dimensional Model
- Dimensional Modeling Tasks
- Task 1: Identify the Fact Tables
- Fact Table Characteristics
- Fact Table Measures
- Base and Derived Measures
- Identifying Base and Derived Measures
- Task 2: Identify the Dimension Tables
- Dimension Table Characteristics
- Translating Business Dimensions into Dimension Tables
- Slowly Changing Dimensions
- Slowly Changing Dimension (SCD): An Example
- Primary Key and Foreign Key
- Composite Key and Surrogate Key
- Task 3: Link Fact and Dimension Tables
- Star Schema Model

- Star Dimensional Modeling
- Factless Fact Tables
- Advantages of Using a Star Dimensional Model
- Snowflake Schema Model
- Challenges with Snowflake Dimensional Model
- Third Normal Form (3NF)
- Task 4: Model the Time Dimension
- Modeling the Time Dimension
- Identifying Hierarchies for Dimensions
- Using Hierarchies to Drill on Data and Aggregate Data
- Using Logical Data Modeling Tools
- Lesson Agenda
- #4: Defining the Physical Model
- Physical Modeling Tasks
- Translating a Dimensional Model to a Physical Model
- Architecture Requirements
- Storage and Performance Considerations
- Summary
- Practices

## Introduction to Extracting, Transforming, Loading Data

- In Focus: Data Enrichment
- Objectives
- Lesson Agenda
- Extraction, Transformation, and Loading (ETL) Process
- ETL: NuMart Electronics Use Case
- Data Transformation Location
- Extraction, Loading, and Transformation (E-LT)
- ETL Versus E-LT
- Extraction, Transformation, Loading: Tasks and Importance
- Lesson Agenda
- Data Extraction
- Factors Involved in Data Extraction
- Lesson Agenda
- Data Transformation
- Factors Involved in Data Transformation
- Lesson Agenda
- Data Loading
- Initial Load and Refresh
- Factors Involved in Data Loading
- Summary
- Practices

## Introduction to Data Warehousing Platforms and Tools

- Objectives

- Lesson Agenda
- Data Warehouse Platforms
- Lesson Agenda
- Data Warehousing: Oracle On-Premises Tools
- Data Enrichment Layer: Oracle On-Premises Tools
- Model Enrichment Layer: Oracle On-Premises Tools
- Business Enrichment Layer: Oracle On-Premises Tools
- Lesson Agenda
- Data Warehousing: Oracle Cloud Services
- Data Enrichment Layer: Oracle Cloud Service
- Model Enrichment and Business Enrichment Layers: Oracle Cloud Service
- Summary
- Practices