

Oracle Data Warehouse Pack

(Oracle Data warehouse Fundamentals + Oracle Data Integrator Student Guide 1,2)

نام دوره: Oracle Data warehouse Fundamentals

مدت دوره: ۱۶ ساعت

آنچه شما یاد خواهید گرفت:

در این دوره، دانشجویان مفاهیم اولیه انبار داده را می آموزند و با موارد مربوط به برنامه ریزی، طراحی، ساخت، جمع آوری و نگهداری یک انبار داده موفق آشنا خواهند شد و همچنین اصول اولیه معماری پارتیشن بندی پایگاه داده اوراکل را یاد گرفته و مزایای پارتیشن بندی را می شناسند. مزایای عملیات موازی را بررسی کرده تا زمان پاسخگویی برای عملیات فشرده را کاهش دهند و همچنین عملیات واکنشی، انتقال و بارگذاری داده به یک انبار داده پایگاه داده اوراکل (فاز های ETL) را می آموزند. اصول اولیه در مورد مزایای استفاده از **materialized view** اوراکل را برای بهبود عملکرد انبار داده ها را آموخته و همچنین در سطح بالا یاد می گیرند که چگونه بازنویسی کوئری می تواند عملکرد کوئری را بهبود بخشد، در ادامه دانشجویان OLAP و Data Mining را بررسی می کنند و برخی از مفاهیم پیاده سازی انبار داده را شناسایی می کنند و به طور خلاصه از برخی از ابزارهای موجود انبار داده مانند Oracle Warehouse Builder، Oracle Application Express و Analytical Workspace Manager استفاده می کنند.

دانشجویان بعد از پایان این دوره یاد می گیرید:

- اصطلاحات و مفاهیم پایه ی انبار داده را توضیح دهید
- فناوری و برخی از ابزارهای اوراکل برای پیاده سازی یک انبار داده موفق شناسایی کنید
- روش ها و ابزارهای استخراج، تبدیل و بارگیری داده ها توصیف کنید
- برخی از ابزارها برای دسترسی و تجزیه و تحلیل داده های انبار داده شناسایی کنید
- مزایای پارتیشن بندی، عملیات موازی، **materialized views** و بازنویسی کوئری در یک انبار داده را توصیف کنید
- پیاده سازی و مسائل سازمانی در مورد پروژه انبار داده را توضیح دهید

مفاهیم

- توسعه دهندگان نرم افزار
- مهندس پشتیبانی
- توسعه دهنده انبار داده
- اجرای عملیاتی
- مدیر انبار داده
- تحلیلگر انبار داده
- توسعه دهنده
- مدیر پروژه

اهداف دوره

- تعریف اصطلاحات و توضیح مفاهیم پایه انبار داده
- توصیف روش ها و ابزارهای استخراج، تبدیل و لود داده ها
- شناسایی برخی از ابزارها برای دسترسی و تجزیه و تحلیل داده انبارداده
- شناسایی فناوری و برخی از ابزارهای اوراکل برای پیاده سازی یک انبار داده موفق
- تعریف هدف پشتیبانی تصمیم گیری و هدف نهایی یک انبار داده
- توصیف مزایای پارتیشن بندی، عملیات موازی، **materialized view** و بازنویسی کوئری در یک انبار داده
- توضیح پیاده سازی و مسائل سازمانی در مورد پروژه انبار داده
- استفاده از **materialized view** و بازنویسی کوئری برای بهبود عملکرد انبارداده
- توسعه آشنایی با برخی از فناوری مورد نیاز برای پیاده سازی یک انبار داده

سرفصل دوره:

- **Introduction**
 - Objectives
 - Questions about You
 - Lesson Agenda
 - Course Objectives



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- Prerequisites and Suggested Prerequisites
- Suggested Course Schedule
- Lesson Agenda
- Some of the Sample Schemas Used in the Course
- Sales History (sh) Schema
- Class Account Information
- Appendixes in the Course
- SQL Environments Available in the Course
- Entering SQL Statements Using Oracle SQL*Plus
- What Is Oracle SQL Developer?
- Creating Schema Objects
- Data Warehousing Tools Used in this Course
- Lesson Agenda
- Oracle 11g Useful Documentation
- Continuing Your Education
- Oracle Technology Network (OTN)
- Oracle by Example (OBE)
- Oracle Warehouse Builder OBEs
- Analytic Workspace Manager (AWM) OBEs
- Oracle Application Express (APEX) OBEs Technical Support Summary
- Summary

- Data Warehousing, Business Intelligence, OLAP, and Data Mining
 - Objectives
 - Lesson Agenda
 - Evolution of BI
 - Early Management Information Systems
 - Analyzing Data from Operational Systems
 - Why OLTP Is Not Suitable for Analytical Reporting
 - Data Extract Processing
 - Issues with Data Extract Programs
 - Productivity Issues with Extract Processing
 - Data Quality Issues with Extract Processing
 - Data Warehousing and Business Intelligence
 - Technological Solutions for Data Warehousing
 - Advantages of Warehouse Processing Environments
 - Business Intelligence (BI): Definition and Purpose
 - What Is Business Intelligence?
 - The User Dilemma
 - Problem: Multivendor, Uninterested Environment
 - The Optimal Information Platform for Business Intelligence



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- **The Optimal Information Platform**
- **Success Factors for a Dynamic Business Environment**
- **Business Drivers for Data Warehouses**
- **Business Intelligence: Requirements**
- **Lesson Agenda**
- **OLAP: Overview**
- **Typical Example of an OLAP Query**
- **The Dimensional Model**
- **Measures**
- **Measure Types**
- **Dimensions**
- **Example of Dimensions in a Report**
- **Sharing Dimensions**
- **Hierarchy**
- **Hierarchy: Example**
- **Level**
- **Hierarchy Types**
- **Attributes**
- **Attributes and Levels: Examples**
- **Dimensional Model Summarized**
- **Physical Layers of a Data Warehouse**
- **Managing the Data Warehouse**
- **Oracle OLAP: Part of an Integrated DW Platform**
- **What Is Oracle OLAP?**
- **Oracle OLAP Option: 11g Highlights**
- **ROLAP Versus MOLAP**
- **Oracle Data Mining: An Overview**
- **Oracle Data Mining: Interfaces**
- **Summary**

- **Defining Data Warehouse Concepts and Terminology**
 - **Objectives**
 - **Lesson Agenda**
 - **Data Warehouse: Definition**
 - **Data Warehouse Properties**
 - **Subject Oriented**
 - **Integrated**
 - **Time Variant**
 - **Nonvolatile**
 - **Changing Warehouse Data**
 - **Data Warehouse Versus OLTP**



- **Enterprise-Wide Data Warehouse**
- **Data Warehouses Versus Data Marts**
- **Dependent Data Mart**
- **Independent Data Mart**
- **Typical Data Warehouse Components**
- **Lesson Agenda**
- **Warehouse Development Approaches**
- **“Big Bang” Approach**
- **Top-Down Approach**
- **Bottom-Up Approach**
- **Incremental Approach to Warehouse Development**
- **Data Warehousing Process Components**
- **Methodology**
- **Architecture**
- **Extraction, Transformation, and Loading (ETL)**
- **Implementation**
- **Operation and Support**
- **Phases of the Incremental Approach**
- **Strategy Phase Deliverables**
- **Introducing the Case Study: Roy Independent School District (RISD)**
- **Summary**

- **Business, Logical, Dimensional, and Physical Modeling**
 - **Objectives**
 - **Lesson Agenda**
 - **Data Warehouse Modeling Issues**
 - **Data Warehouse: Design Phases**
 - **Phase 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**
 - **Determining Granularity**
 - **Identifying Business Definitions and Rules: Example**
 - **Documenting Metadata**
 - **Business Metadata Elements**
 - **Metadata Documentation Approaches**
 - **Phase 2: Designing the Logical Model**
 - **Lesson Agenda**
 - **Phase 3: Defining the Dimensional Model**



- **Data Warehouse Schemas**
- **Star Schema Model**
- **Star Dimensional Modeling**
- **Advantages of Using a Star Dimensional Model**
- **Snowflake Schema Model**
- **Third Normal Form (3NF)**
- **Fact Table: Characteristics**
- **More on Fact less Fact Tables**
- **Identifying Base and Derived Measures**
- **Fact Table Measures**
- **Dimension Table: Characteristics**
- **Translating Business Dimensions into Dimension Tables**
- **Slowly Changing Dimensions**
- **Slowly Changing Dimension (SCD): An Example**
- **Types of Database Keys**
- **Using Time in the Data Warehouse**
- **Time Dimension**
- **Identifying Hierarchies for Dimensions**
- **Using Hierarchies to Drill on Data and Aggregate Data**
- **Using Data-Modeling Tools**
- **Phase 4: Defining the Physical Model**
- **Translating a Dimensional Model to a Physical Model**
- **Architectural Requirements**
- **Making the Right Choice**
- **Storage and Performance Considerations**
- **Summary**

- **Database Sizing, Storage, Performance, and Security Considerations**
 - **Objectives**
 - **Lesson Agenda**
 - **Sizing the Database and Other Storage Requirements**
 - **Estimating the Database Size**
 - **Validating Database Size Assumptions**
 - **Testing Load Sampling**
 - **Oracle Database Architectural Advantages**
 - **Lesson Agenda**
 - **Why Data Partitioning Is Needed**
 - **Data Partitioning**
 - **Benefits of Partitioning**
 - **Oracle's Partitioning Strategies**



- **Partition Performance Benefits: Partition Pruning**
- **Indexing**
- **B-Tree Index**
- **Bitmap Indexes**
- **Bitmap Index: Example**
- **Comparing B-Tree and Bitmap Indexes**
- **Other Index Properties**
- **Optimizing Star Queries: Tuning Star Queries**
- **Optimizing Star Queries: Star Transformation**
- **Star Query: Example**
- **Lesson Agenda**
- **Parallelism**
- **Degree of Parallelism (DOP)**
- **Operations That Can Be Parallelized**
- **Parallel Execution Server Pool**
- **PARALLEL Clause: Examples**
- **Using Summary Data**
- **HP Oracle Exadata Storage Server Hardware**
- **Exadata Storage Deployment**
- **Exadata Key Benefits for Data Warehousing**
- **Security in Data Warehouses**
- **Oracle's Strategy for Data Warehouse Security**
- **Oracle-Supplied Technology and Tools for Implementing VPD**
- **Summary**

- **The ETL Process: Extracting Data**
 - **Objectives**
 - **Lesson Agenda**
 - **Extraction, Transformation, and Loading (ETL) Process**
 - **ETL: Tasks, Importance, and Cost**
 - **Extracting Data**
 - **Examining Data Sources**
 - **Production Data**
 - **Archive Data**
 - **Internal Data**
 - **External Data**
 - **Mapping Data**
 - **Lesson Agenda**
 - **Extraction Methods**
 - **Change Data Capture Mechanism in Oracle Database**
 - **Extraction Techniques**



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- **Designing Extraction Processes**
- **Maintaining Extraction Metadata**
- **Possible ETL Failures**
- **Maintaining ETL Quality**
- **Oracle's ETL Tool: Oracle Warehouse Builder**
- **Oracle-Supported Features for ETL**
- **Oracle's Solution for ETL: Oracle Streams, Replication, and Message Queuing**
- **Summary**

- **The ETL Process: Transforming Data**
 - **Objectives**
 - **Lesson Agenda**
 - **Transformation**
 - **Remote Staging Model**
 - **On-Site Staging Model**
 - **Data Anomalies**
 - **Transformation Routines**
 - **Transforming Data: Problems and Solutions**
 - **Multipart Keys Problem**
 - **Multiple Local Standards Problem**
 - **Multiple Files Problem**
 - **Missing Values Problem**
 - **Duplicate Values Problem**
 - **Element Names Problem**
 - **Element Meanings Problem**
 - **Input Formats Problem**
 - **Referential Integrity Constraints Problem**
 - **Name and Address Problem**
 - **Name-and-Address Processing in Oracle Warehouse Builder**
 - **Quality Data: Importance and Benefits**
 - **Quality: Standards and Improvements**
 - **Data Quality Guidelines**
 - **Data Quality: Solutions and Management**
 - **Lesson Agenda**
 - **Transformation Techniques: Merging Data**
 - **Transformation Techniques: Adding a Date Stamp**
 - **Transformation Techniques: Adding Keys to Data**
 - **Summarizing Data**
 - **Maintaining Transformation Metadata**
 - **Data Ownership and Responsibilities**
 - **Transformation Timing and Location**

- **Choosing a Transformation Point**
- **Monitoring and Tracking**
- **Designing Transformation Processes**
- **Transformation Tools**
- **Data Transformation**
- **Multistage Data Transformation**
- **Pipelined Data Transformation**
- **Oracle's Enhanced Features for Transformation**
- **Application of the MERGE Statement in Data Warehousing: Example**
- **Multitable INSERT Statements**
- **Advantages of Multitable INSERTs**
- **Oracle's Enhanced Features for Transformation**
- **Summary**

- **The ETL Process: Loading Data**
 - **Objectives**
 - **Lesson Agenda**
 - **Loading Data into the Warehouse**
 - **Transportation in a Data Warehouse**
 - **Transportable Tablespaces**
 - **Initial Load and Refresh**
 - **Data Refresh Models: Extract Processing Environment**
 - **Data Refresh Models: Warehouse Processing Environment**
 - **Building the Loading Process**
 - **Data Granularity**
 - **Loading Techniques**
 - **Loading Technique Considerations**
 - **Loading Techniques Provided by Oracle: SQL*Loader**
 - **Loading Techniques Provided by Oracle**
 - **Using External Tables**
 - **Benefits of Using External Tables**
 - **Creating External Tables**
 - **Example of Defining External Tables**
 - **Defining External Tables Using SQL*Loader**
 - **Creating and Loading an External Table Using ORACLE_DATAPUMP: Example**
 - **Lesson Agenda**
 - **Postprocessing of Loaded Data**
 - **Indexing and Sorting Data**
 - **Unique Indexes**
 - **Creating Derived Keys**
 - **Summary Management**



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- **Filtering Data**
- **Verifying Data Integrity**
- **Steps for Verifying Data Integrity**
- **Standard Quality Assurance Checks**
- **Summary**

- **Refreshing the Warehouse Data**
 - **Objectives**
 - **Lesson Agenda**
 - **Developing a Refresh Strategy for Capturing Changed Data**
 - **User Requirements and Assistance**
 - **Load Window Requirements**
 - **Planning the Load Window**
 - **Scheduling the Load Window**
 - **Capturing Changed Data for Refresh**
 - **Choosing a Method for Change Data Capture**
 - **Wholesale Data Replacement**
 - **Comparison of Database Instances**
 - **Time- and Date-Stamping**
 - **Database Triggers**
 - **Using a Database Log**
 - **Refresh Mechanisms in the Oracle Database**
 - **Lesson Agenda**
 - **Applying the Changes to Data**
 - **Overwriting a Record**
 - **Adding a New Record**
 - **Adding a Current Field**
 - **Limitations of Methods for Applying Changes**
 - **Maintaining History: Techniques**
 - **History Tables and One-to-Many Relationships Versioning**
 - **Preserving Complete History**
 - **Purging and Archiving Data**
 - **Oracle-Supported Techniques for Purging Data**
 - **Oracle-Supported Techniques for Archiving Data**
 - **Final Tasks**
 - **Publishing Data**
 - **Summary**

- **Materialized Views**
 - **Objectives**



- Lesson Agenda
- The Need for Summary Management
- Using Summaries to Improve Performance
- Summary Management
- Summary Navigation
- Managing Historical Summary Data in the Warehouse
- Summary Management Using the Oracle Database
- Using Materialized Views for Summary Management
- Using Summaries Without Materialized Views: Example
- Using Materialized Views for Summary Management: Example
- Determining Which Materialized View to Create
- Creating a Materialized View Using the CREATE SQL Statement: Example
- Available Refresh Modes When Creating a Materialized View
- Manual Refresh Using the DBMS_MVIEW Package Procedures
- Using the DBMS_MVIEW Package: The Available ON DEMAND Refresh Methods
- Refreshing at Scheduled Time: Using the START WITH and NEXT Clauses
- Query Rewrite Overview
- Cost-Based Query Rewrite Process
- Conditions Required for Oracle to Rewrite a Query
- Query Rewrite
- Lesson Agenda
- What Are Dimensions?
- A dimension is a structure that categorizes data to enable users to answer business questions.
- What Are Dimension Objects?
- Why Are Dimensions Important?
- Dimensions and Hierarchies
- Dimension Example
- Defining Dimensions and Hierarchies
- Dimensions with Multiple Hierarchies
- Summary
- Leaving a Metadata Trail
 - Objectives
 - Defining Warehouse Metadata
 - Metadata Users
 - Types of Metadata
 - Examining Metadata: ETL Metadata
 - Extraction Metadata
 - Transformation Metadata
 - Loading Metadata



- Examining Metadata: End-User Metadata
 - End-User Metadata: Context
 - Historic Context of Data
 - Types of Context
 - Developing a Metadata Strategy
 - Defining Metadata Goals and Intended Usage
 - Identifying Target Metadata Users
 - Choosing Metadata Tools and Techniques
 - Choosing the Metadata Location
 - Managing the Metadata
 - Integrating Multiple Sets of Metadata
 - Managing Changes to Metadata
 - Additional Metadata Content and Considerations
 - Common Warehouse Metamodel
 - Oracle Warehouse Builder: Compliance with OMG-CWM
 - Summary
- Data Warehouse Implementation Considerations
 - Objectives
 - Project Management
 - Requirements Specification or Definition
 - Logical, Dimensional, and Physical Data Models
 - Data Warehouse Architecture
 - ETL Considerations
 - Reporting Considerations
 - Security Considerations
 - Metadata Management
 - Testing the Implementation
 - Post-Implementation Change Management
 - Some Useful Resources and White Papers

نام دوره: 1,2 Oracle Data Integrator Student Guide

مدت دوره: ۴۴ ساعت

آنچه شما یاد خواهید گرفت:

تاریخ به روزرسانی: شهریور ۹۷

Oracle Data Integrator یک پلت فرم جامع یکپارچه سازی داده است که تمام نیازهای یکپارچه سازی داده را با حجم و کارایی بالا با استفاده از فرایندهای یکپارچه سازی انجام می‌دهد Oracle Data Integrator برای تبدیل و بارگذاری داده ها از موتورهای RDBMS متفاوتی استفاده می کند و می‌تواند به عنوان ابزار پیاده سازی ETL به منظور طراحی و پیاده سازی انبار داده مورد استفاده قرار گیرد.

دانشجویان بعد از پایان این دوره یاد می گیرید:

- از Oracle Data Integrator برای انجام تبدیل داده ها در میان پلت فرم های مختلف استفاده کنید
- از نقشه های ODI ، روش ها و بسته ها برای انجام انجام تبدیلات داده ELT طراحی کنید
- مدیریت منابع ODI و تنظیم امنیت در ODI را انجام دهید
- یکپارچه سازی داده ها و تبدیل در میان پلت فرم های مختلف را انجام دهید
- از رابط گرافیکی ODI برای تعریف رویه ها ، بسته ها و کارهای ELT استفاده کنید.
- یک محیط امن و چند کاربره ODI را تنظیم و نگهداری کنید
- با استفاده از ODI پیاده سازی CDC را انجام دهید

مفاهیم:

- تحلیلگران کسب و کار
- مدلسازان داده
- مدیر انبار داده
- مدیران پایگاه داده
- مشاور فنی

اهداف دوره:

- توصیف مفاهیم مدل ODI
- توصیف معماری Oracle Data Integrator 12c
- کاربرد مفاهیم توپولوژی ODI برای ادغام داده ها
- طراحی نقشه های ODI ، روش ها ، بسته ها و برنامه های بار برای تبدیل داده ELT
- جستجو، رسیدگی داده و اعمال کیفیت داده با ODI
- مدیریت منابع ODI و تنظیم امنیت با ODI
- پیاده سازی CDC با ODI

Introduction to Integration and Administration

- **Course Objectives**
- **Lesson Objectives**
- **Agenda**
- **Why Oracle Data Integrator?**
- **Conventional Integration Process: ETL**
- **Extract Load Transform (E-LT)**
- **ODI Architecture and Components**
- **ODI Architecture**
- **ODI Components: Overview**
- **Using ODI Studio**
- **Designer Navigator (Work Repository)**
- **Operator Navigator (Work Repository)**
- **Topology Navigator (Master Repository)**
- **Security Navigator (Master Repository)**
- **What Is an Agent?**
- **ODI Agents**
- **Three Types of Agents: Java EE, Standalone, Collocated Standalone**
- **Using the Three Types of Agents**
- **Standalone Agent: Example**
- **ODI Console**
- **Enterprise Manager FMW Console**
- **Management Pack for ODI for Enterprise Manager Cloud Control**
- **Management Pack for ODI for EM CC ODI Home Page**
- **Agenda**
- **ODI Repositories**
- **Master and Work Repositories**
- **Repository Setup: Example**
- **Repository Setup: Multiple Master Repositories**
- **Components: Global View**
- **Possible ODI Methodology**



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- Checklist of Practice Activities
- Starting Oracle Data Integrator
- Using Online Help
- Summary

- **Administering ODI Repositories**
 - Objectives
 - Agenda
 - Initial Repository Administration Tasks
 - Steps to Set Up ODI Repositories
 - 1.Run Repository Creation Utility
 - 1a. Create Schemas
 - 1b. Create Passwords and Tablespaces
 - 2. Connect to the Master/Work Repository
 - 3. Create a Wallet
 - Connecting to the Master/Work Repository
 - Exporting the Master Repository
 - Importing the Master Repository
 - Creating a Work Repository
 - Changing the Work Repository Password
 - Quiz
 - Summary
 - Checklist of Practice Activities
 - Practice 2-1: Creating and Connecting to ODI Master and Work Repositories

- **ODI Topology Concepts**
 - Objectives
 - Agenda
 - What Is Topology?
 - What Is in the Topology?
 - Agenda
 - What Is a Data Server?
 - Data Servers: Examples
 - Important Guideline 1
 - What Is a Physical Schema?
 - Physical Schemas: Properties
 - Technology Terminology Among Vendors
 - Important Guideline 2



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- **Agenda**
- **Infrastructure for Two Production Sites: Example**
- **ODI Design: Physical Architecture of the Two Production Sites**
- **Logical Schemas and Contexts**
- **What Is a Logical Schema?**
- **Important Guideline 3**
- **Logical Versus Physical Architecture**
- **Design Time Versus Run Time**
- **What Is a Context?**
- **A Context Maps a Logical to a Physical Schema**
- **Defining Contexts**
- **Mapping Logical and Physical Resources**
- **Agenda**
- **ODI Physical Agents**
- **Creating a Physical Agent**
- **ODI Agent Parameters**
- **Launching a Stand-Alone Agent: Examples**
- **Stopping the ODI Agent**
- **Deploying and Configuring a Java EE Agent**
- **Load Balancing: Example**
- **Important Guideline 5**
- **Infrastructure with Agents: Example**
- **Defining Agents: Example**
- **Special Case: Fragmentation Problem**
- **Special Case: Important Guideline 6**
- **Special Case: Defining the Physical Architecture**
- **Special Case: The Infrastructure**
- **Special Case: Physical Architecture in ODI**
- **Agenda**
- **Planning the Topology**
- **Matrix of Logical and Physical Mappings**
- **Summary**
- **Describing the Physical and Logical Architecture**
 - **Objectives**
 - **Agenda**
 - **What Topology Navigator Contains**
 - **Topology Navigator: Overview**



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- **Review: Context Connects Logical to Physical**
- **Objects You Create in the Practice**
- **Defining a Context**
- **Agenda**
- **Physical Architecture View**
- **Prerequisites for Connecting to a Server**
- **Important Note**
- **Creating a Data Server**
- **Creating a Data Server: JDBC**
- **JDBC Driver**
- **JDBC URL**
- **Creating a Data Server: JNDI**
- **Testing a Data Server Connection**
- **Creating a Physical Schema**
- **Agenda**
- **Logical Architecture and Context Views**
- **Creating a Logical Schema**
- **Creating a Logical Agent**
- **Editing a Context to Link Logical and Physical Agents**
- **Summary**

- **Setting Up a New ODI Project**
 - **Objectives**
 - **Agenda**
 - **What Is a Project?**
 - **Oracle Data Integrator Projects: Overview**
 - **How to Use ODI Projects in Your Work**
 - **Creating a New Project**
 - **Agenda**
 - **What Is a Folder?**
 - **Creating a New Folder**
 - **Organizing Projects and Folders**
 - **Agenda**
 - **What Is a Knowledge Module?**
 - **Types of Knowledge Modules**
 - **Which Knowledge Modules Are Needed?**
 - **Knowledge Modules: Examples**
 - **Importing Knowledge Modules**



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- Replacing Existing KMs
- Knowledge Module Editor
- Editing a Knowledge Module
- Agenda
- Exporting and Importing
- Exporting an Object
- Importing an Object
- ID Numbers: Overview
- Import Types
- Choosing the Import Mode
- Import Report
- Agenda
- What Is a Marker?
- Tagging Objects with Markers
- Removing Markers
- Marker Groups
- Project and Global Markers
- Creating a Marker Group
- Summary

- **Oracle Data Integrator Model Concepts**
 - Objectives
 - What Is a Model?
 - Agenda
 - Relational Model
 - Relational Model: Tables and Columns
 - Relational Model: Keys
 - Relational Model: Foreign Keys
 - Relational Model: Constraints
 - Relational Model: Indexes
 - Relational Model Support in ODI
 - Additional Metadata in ODI
 - Flex Fields
 - Agenda
 - What Is Reverse-Engineering?
 - Methods for DBMS Reverse-Engineering
 - Other Methods for Reverse-Engineering
 - Standard Versus Customized Reverse-Engineering



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- **Reverse-Engineering Life Cycle**
- **Agenda**
- **Creating a Model by Reverse-Engineering**
- **Step 1: Creating and Naming a New Model**
- **Note: Creating and Naming a New Model**
- **Step 2: Defining a Reverse-Engineering Strategy**
- **Step 3: Starting the Reverse-Engineering Process**
- **Using RKM for Customized Reverse-Engineering**
- **Selective Reverse-Engineering**
- **Step 4: Fleshing Out Models**
- **Shortcuts**
- **Smart Export and Import**
- **Summary**

- **Organizing ODI Models and Creating ODI Datastores**
 - **Objectives**
 - **Agenda**
 - **What Is a Model Folder?**
 - **Creating a Model Folder**
 - **What Is a Submodel?**
 - **Creating a Submodel**
 - **Organizing Datastores into Submodels**
 - **Setting Up Automatic Distribution**
 - **Agenda**
 - **Creating Datastores**
 - **Creating a Datastore in a Model**
 - **Adding Columns to a Datastore**
 - **Agenda**
 - **What Is a Constraint in ODI?**
 - **Constraints in ODI**
 - **Creating a Mandatory Column**
 - **Agenda**
 - **Creating a Key**
 - **Checking a Key**
 - **Creating a Reference**
 - **Creating a Simple Reference**
 - **Creating a Complex Reference**
 - **Checking a Reference**



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- **Agenda**
- **Creating a Condition**
- **Checking a Condition**
- **Agenda**
- **Audit/Explore: When and Why**
- **Audit/Explore Process: Overview**
- **Agenda**
- **Displaying the Contents of a Datastore**
- **Viewing the Distribution of Values**
- **Analyzing the Contents of a Datastore**
- **Agenda**
- **Defining Business Rules in ODI**
- **From Business Rules to Constraints**
- **Deducing Constraints from Data Analysis**
- **Testing a Constraint**
- **Auditing a Model or Datastore**
- **Reviewing Erroneous Records**
- **Summary**

- **ODI Mapping Concepts**
 - **Objectives**
 - **Agenda**
 - **What Is a Mapping?**
 - **Business Rules for Mappings**
 - **Where Are the Rules Defined?**
 - **Agenda**
 - **What Is an Expression?**
 - **What Is a Join?**
 - **What Is a Filter?**
 - **What Is a Lookup?**
 - **What Is a Set?**
 - **What Are Some of the Others?**
 - **New with Patch: Pivot and Unpivot**
 - **Agenda**
 - **How Does ODI Implement Business Rules?**
 - **Business Problem**
 - **Implementing the Rules**
 - **Integration Process**



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- **Process Details**
- **Process Implementation: Example**
- **Process Implementation: Example**
- **Process Implementation: Example**
- **Agenda**
- **What Is the Staging Area?**
- **Execution Location**
- **Agenda**
- **From Business Rules to Processes**
- **Knowledge Modules**
- **What Is a Knowledge Module?**
- **Code Generation**
- **KM Types Used in Mappings**
- **Agenda**
- **Purpose of a Mapping**
- **What Is an Expression?**
- **Creating a One-to-One Mapping**
- **Creating and Naming a Mapping**
- **Defining the Target Datastore**
- **Multiple Targets**
- **Defining the Source Datastore**
- **Connecting the Ports to Make the Map**
- **Defining the Expressions**
- **Valid Expression Types**
- **Saving the Mapping**
- **Running the Mapping**
- **Summary**

- **Designing Mappings**
 - **Objectives**
 - **Agenda**
 - **Multiple-Source Datastores**
 - **Creating a Join Manually**
 - **Advanced Joins**
 - **Types of Joins**
 - **Setting Up a Join**
 - **Creating Lookups**
 - **Using Lookups**



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- **Agenda**
- **Filters in ODI**
- **Defining a Filter Manually**
- **Setting Up a Filter**
- **Agenda**
- **Physical Mapping Diagram**
- **Flow in the Physical Diagram**
- **What Defines the Flow?**
- **Scenario**
- **Basic Process**
- **Agenda**
- **Purpose of a Staging Area**
- **Placing the Staging Area**
- **Important Note**
- **Specifying the Staging Area**
- **Agenda**
- **Options for Expressions**
- **Setting Options for Expressions**
- **Disabling an Expression**
- **Enabling a Mapping for Inserts or Updates**
- **Agenda**
- **Execution Location and Syntax**
- **Why Change the Execution Location?**
- **Changing the Execution Location**
- **ODI Mapping Execution Simulation**
- **Agenda**
- **Which KMs for Which Flow?**
- **Knowledge Modules: Additional Information**
- **Identifying IKMs and LKMs**
- **IKMs and LKMs: Strategies and Methods**
- **Specifying an LKM**
- **Specifying an IKM**
- **Common KM Options**
- **Flow: Example 1**
- **Flow: Example 2**
- **Flow: Example 3**
- **Summary**

- **Mappings: Monitoring and Troubleshooting**

- Objectives
- Agenda
- Operator Navigator: Viewing the Log
- Using Operator Navigator
- Hierarchy: Sessions, Steps, Tasks
- Viewing Details of Sessions, Steps, and Tasks
- Monitoring Execution of an Mapping
- Troubleshooting a Session
- Identifying the Error
- Reviewing the Code
- Fixing the Code and Restarting the Session
- Fixing the Mapping
- Keys to Reviewing the Generated Code
- Agenda
- Common Errors and Symptoms
- Important Note
- Tips for Preventing Errors
- Using Attribute Panel for Quick Edits
- Summary

- ✓ **Designing Mappings: Advanced Topics 1**

- Objectives
- Agenda
- Business Rules in Mappings
- Business Rule Elements
- More Elements
- Expression Editor
- Agenda
- Using a Variable in Code
- Binding Versus Substitution
- Case Sensitivity
- Agenda
- Defining a Dataset
- Using Set-Based Operators
- Example of SET: UNION
- Agenda
- Types of Sequences



- **Support for Native Sequences**
- **Creating a Native Sequence**
- **Referring to Sequences**
- **Note: Sequences Updated by Agent**
- **Using Standard Sequences in Mappings Correctly**
- **Using ODI Standard Sequences in Mappings**
- **Populating Native Identity Attributes**
- **Sequences: Best Practices**
- **Automatic Temporary Index Management**
- **Tracking Variables and Sequences**
- **How Variable and Sequence Tracking Works**
- **Variable Actions**
- **Definition Tab of Session Step or Session Task**
- **Summary**

- **Designing Mappings: Advanced Topics 2**
 - **Objectives**
 - **Agenda**
 - **Partitioning**
 - **Definition in Datastore After Reverse-Engineering**
 - **Using Partitioning in a Mapping**
 - **Agenda**
 - **Reusable Mappings**
 - **Using Reusable Mappings: Example**
 - **Derived Select (Subselect) for Reusable Mappings**
 - **Agenda**
 - **What Is a User Function?**
 - **Why Use User Functions?**
 - **Properties of User Functions**
 - **Using User Functions**
 - **Creating a User Function**
 - **Defining an Implementation**
 - **Syntax and Implementations**
 - **User Functions at Design Time**
 - **User Functions at Run Time**
 - **Note: Functions in Execution Log**
 - **Agenda**
 - **Using Substitution Methods**



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- **Substitution Methods: Examples**
- **Agenda**
- **Description of KM Steps**
- **Details of the Steps**
- **Setting KM Options**
- **Developing Your Own KM: Guidelines**
- **Complex File Technology**
- **Summary**

- **Using ODI Procedures**
 - **Objectives**
 - **Agenda**
 - **What Is a Procedure?**
 - **Procedure: Examples**
 - **Creating Procedures: Overview**
 - **Agenda**
 - **Creating a New Procedure**
 - **Agenda**
 - **Creating a Command**
 - **Arranging Tasks in Order**
 - **Which Parameters Should Be Set?**
 - **Valid Types of Commands**
 - **More Elements**
 - **Why Use a Source Command?**
 - **Agenda**
 - **Types of Options**
 - **Creating a New Option**
 - **Making a Command Optional**
 - **Using an Option Value in a Command**
 - **Agenda**
 - **Procedure Execution**
 - **Using the Operator Navigator to View Results**
 - **Summary**

- **Using ODI Packages**
 - **Objectives**
 - **Agenda**
 - **What Is a Package?**



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- **Creating a Package**
- **Agenda**
- **Creating and Naming a Package**
- **Package Diagram**
- **Package Diagram Toolbar**
- **Agenda**
- **Package Steps**
- **Creating a Package Step**
- **What Is an ODI Tool?**
- **Creating an ODI Tool Step**
- **Tool Steps: Best Practices**
- **Agenda**
- **Sequencing Steps**
- **A Simple Package**
- **Sequencing Package Steps**
- **Agenda**
- **Executing a Package**
- **Agenda**
- **Basic Step Types**
- **Advanced Step Types**
- **Agenda**
- **Creating Model, Submodel, and Datastore Steps**
- **Models, Submodels, and Datastore Steps**
- **Agenda**
- **Creating a Variable Step**
- **Variable Steps**
- **Agenda**
- **Controlling Execution**
- **Error Handling**
- **Creating a Loop**
- **The Advanced Tab**
- **Summary**

- **Step-by-Step Debugger**
- **Objectives**
- **Agenda**
- **Overview**
- **Agenda**



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- **Process Overview**
- **Starting a Session in Debug mode**
- **Specifying Debug Properties**
- **Control Execution Flow**
- **Screen Step Numbering**
- **Agenda**
- **New Functionalities**
- **Benefits for End Users**
- **Agenda**
- **Debug Toolbar**
- **Toolbar: Current Cursor**
- **Toolbar: Get Data**
- **Toolbar: Step Into**
- **Toolbar: Run to Task End**
- **Toolbar: Run to Next Task**
- **Toolbar: Run to Step End**
- **Toolbar: Run to Next Step**
- **Toolbar: Pause**
- **Toolbar: Resume**
- **Summary**

- **Managing ODI Scenarios**
 - **Objectives**
 - **Agenda**
 - **What Is a Scenario?**
 - **Properties of Scenarios**
 - **Agenda**
 - **Scenario-Related Tasks**
 - **Generating a Scenario**
 - **Regenerating a Scenario**
 - **Generation Versus Regeneration**
 - **Executing a Scenario from the GUI**
 - **Executing a Scenario from a Command Line**
 - **Executing a Scenario from a Package**
 - **Exporting a Scenario**
 - **Agenda**
 - **Preparing Scenarios for Deployment**
 - **Automating Scenario Management**



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- **Scheduling the ODI Scenario**
- **Scheduling ODI Scenario with External Scheduler**
- **Managing Schedules**
- **Summary**

- **Using Load Plans**
 - **Objectives**
 - **Should You Organize Executions with Load Plans?**
 - **What Are Load Plans?**
 - **Load Plan Editor 5 Load Plan Steps**
 - **Defining the Restart Behavior**
 - **Are Load Plans Substitutes for Packages or Scenarios?**
 - **Benefits of Using Load Plans**
 - **Handling Failed Load Plans**
 - **Summary**

- **Enforcing Data Quality with ODI**
 - **Objectives**
 - **Agenda**
 - **Why Data Quality?**
 - **When to Enforce Data Quality**
 - **Data Quality in Source Applications**
 - **Data Quality Control in the Integration Process**
 - **Data Quality in the Target Applications**
 - **Agenda**
 - **Data Quality Business Rules**
 - **From Business Rules to Constraints**
 - **Agenda**
 - **Data Quality System: Overview**
 - **Static and Flow Controls: Differences**
 - **Data Quality Control: Properties**
 - **Synchronous Control**
 - **What Is a Constraint?**
 - **What Can Be Checked?**
 - **Enforcing Data Quality in a Mapping**
 - **Agenda**
 - **Setting Up Static or Flow Control**



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- **Enabling Static or Flow Control**
- **Agenda**
- **Setting the Physical Options**
- **Setting the Logical Options**
- **Agenda**
- **Selecting Which Constraints to Enforce**
- **Selecting Which Constraints to Check**
- **Differences Between Control Types**
- **Agenda**
- **Reviewing Erroneous Records**
- **EnterpriseDataQuality Tool**
- **Using the EDQ Tool**
- **Summary**

- **Working with Changed Data Capture**
 - **Objectives**
 - **Why Changed Data Capture?**
 - **CDC Techniques**
 - **Changed Data Capture in ODI**
 - **Journalizing Components**
 - **CDC Infrastructure in ODI**
 - **Simple Versus Consistent Set Journalizing**
 - **Limitations of Simple CDC Journalizing: Example**
 - **Consistent CDC Journalizing**
 - **Consistent CDC: Infrastructure**
 - **Setting Up Journalizing**
 - **Setting CDC Parameters: Example**
 - **Adding a Subscriber: Example**
 - **Starting Journal: Example**
 - **Journalizing Status**
 - **Viewing Data/Changed Data: Example**
 - **Using Changed Data**
 - **Oracle GoldenGate Integration**
 - **Oracle GoldenGate Integration in ODI 12c**
 - **Summary**

- **Advanced ODI Administration**
 - **Objectives**



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- **Agenda**
- **Introduction to ODI Security Navigator**
- **Security Concepts: Overview**
- **Defining Security Policies**
- **Creating Profiles**
- **Using Generic and Nongeneric Profiles**
- **Built-in Profiles**
- **Creating Users**
- **Assigning a Profile to a User**
- **Assigning an Authorization by Profile or User**
- **Defining Password Policies**
- **Setting User Preferences**
- **ODI Security Integration: Overview**
- **Implementing External Authentication (OPSS)**
- **Implementing External Authentication (OPSS): Switching the Authentication Mode**
- **Implementing External Password Storage**
- **Agenda**
- **Types of ODI Reports**
- **Generating Topology Reports**
- **Generated Topology Report: Example**
- **Version Comparison Report: Example**
- **Generating Object Reports**
- **Agenda**
- **Integration of ODI with Enterprise Manager**
- **Java EE Agent and Enterprise Manager Configuration with WebLogic Domain: Overview**
- **Using ODI Console: Example**