

Oracle Database 10g: A Comprehensive Introduction to Oracle

Five days

Course Description: This course consists of an introduction to Oracle's relational database and hands-on labs in how to add, update, extract, and organize information from the database. It covers how to format reports, and export data to ODBC files and working with Oracle's Structured Query Language (SQL), SQL*Plus. In addition, a hands-on introduction to Oracle 10g PL/SQL procedural language for SQL is covered. How to insert, update, and delete data, control data sharing and locking, debug and use error report procedures, and develop database triggers, stored procedures, and functions for future reuse are covered.

Audience: Application designers, developers, database administrators, and end-users will benefit from this course.

Prerequisites: Students should have an understanding of relational database design concepts. Oracle experience not required.

Outline

DATABASE MANAGEMENT SYSTEM OVERVIEW

- What is a Database?
- Types of DBMSs

INTRODUCTION TO ENTITY RELATIONSHIP MODELING

- What is a Data Model?
- Why Use an Entity Relationship Model?

FUNDAMENTALS OF RELATIONAL DATABASE MANAGEMENT SYSTEMS

- What is an RDBMS?
- Physical Data Storage
- Relationships between Tables
- Domains - Data Integrity

SQL BASICS AND SQL*PLUS

- Understanding the Difference Between SQL, SQL*Plus and PL/SQL
- Invoking and Leaving SQL*Plus
- Entering and Executing Commands
- The SELECT Command & Mandatory Clauses

USING ISQLPLUS

- Understanding the iSQL*Plus Environment and Commands

THE WHERE AND ORDER BY CLAUSE

- WHERE and ORDER BY Clauses
- Using the Data Dictionary

SINGLE ROW FUNCTIONS

- Functions, Date and Numeric Format Models/Data Conversion
- Control Statements

JOINING DATA FROM MULTIPLE TABLES IN QUERIES

- The JOIN Condition / The Cartesian Product
- Outer JOINS
- ANSI99 Joins

GROUP FUNCTIONS AND THE GROUP BY CLAUSE

- Group Functions
- Distinct Operator in Group Functions

USING SUBQUERIES AND CASE CLAUSES

- Single-Row, Multi-Row, Multi-Column Subqueries
- Subqueries – SELECT, FROM, WHERE, HAVING, ORDER BY, Correlated Subqueries
- CASE expressions



Oracle Database 10g: A Comprehensive Introduction to Oracle

ANALYTIC FUNCTIONS (OPTIONAL)

- Single Row and Aggregating Analytic Functions

SQL*PLUS REPORTING

- SQL*Plus Report Writing Commands
- COLUMN Command / Titles, System Variables
- Master-Detail Report with TITLE and COLUMN Commands
- Control Breaks, Computing Aggregate Amounts

DATA MANIPULATION LANGUAGE (DML) COMMANDS

- INSERT, UPDATE, DELETE, MERGE Command
- Use of Subqueries
- Transaction Control / Read Consistency / Locking

GETTING DATA IN AND OUT OF ORACLE

- SQL*Loader Basics
- Importing Into Excel
- Direct Database Queries Using ODBC

PL/SQL BASICS

- SQL and PL/SQL
- PL/SQL anonymous block structure and Datatypes
- Variable declarations
- Object naming rules
- Executable Statements
- Operators in PL/SQL
- Repetition control
- LOOP statements – Basic LOOP, WHILE, FOR
- CASE Expressions and Statements
- Nested Blocks
- Labels and block identification
- Basic Coding Standards
- SQL*PLUS development environment

WORKING WITH DATABASE DATA

- SELECT statements in PL/SQL
- Selecting single and multiple rows

- Referencing other variables or a database column's datatypes
- Modifying database data (DML)
- Transaction control commands
- Selecting data into PL/SQL variables
- Explicit cursors
- Transaction control commands
- Referencing other structures datatypes
- Using the cursor FOR LOOP
- FOR UPDATE / WHERE CURRENT OF

EXCEPTION HANDLING

- Writing an exception handler section
- Handling predefined and user-defined exceptions
- Controlling exception processing
- Preventing unhandled exceptions
- RAISE_APPLICATION_ERROR
- Using SQLCODE and SQLERRM

STORED PL/SQL OBJECTS

- Introduction to procedures and functions stored in the database
- Creating stored PL/SQL objects
- Passing values with parameters
- Creating procedures, functions, packages, package bodies
- Introduction to database triggers
- Viewing and recompiling stored data

COURSE LABS

- Lab 1: RDBMS Principles
- Lab 2: SQL*Plus Basics
- Lab 3: Using iSQL*Plus
- Lab 4: Insert, Update and Delete Data
- Lab 5: SQL Queries
- Lab 6: Filtering And Sorting Data
- Lab 7: Single Row Functions
- Lab 8: Joining Multiple Tables
- Lab 9: ANSI SQL99 Joins
- Lab 10: Group Clauses and Functions
- Lab 11: Subqueries
- Lab 12: Analyzing Data (Optional)
- Lab 13: SQL*Plus Reporting



Oracle Database 10g: A Comprehensive Introduction to Oracle

- Lab 14: PL/SQL Basics
- Lab 15: Using PL/SQL to create an Anonymous Block
- Lab 16: Selecting and Updating Database Data
- Lab 17: Using Explicit Cursors
- Lab 18: Handling Exceptions
- Lab 19: Creating a Procedure
- Lab 20: Creating a Function
- Lab 21: Creating a Package
- Lab 22: Creating a Database Trigger