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Database Programming with PL/SQL – Course Description

Overview

This course introduces students to PL/SQL, Oracle's procedural extension language for SQL and the Oracle relational database. Participants explore the differences between SQL and PL/SQL. They also examine the characteristics of PL/SQL and how it is used to extend and automate SQL to administer the Oracle database. This course culminates with a project that challenges students to program, implement, and demonstrate a database solution for a business or organization.

Available Curriculum Languages:

- English

Duration

- Recommended total course time: 180 hours*
- Professional education credit hours for educators who complete Oracle Academy training: 60

** Course time includes instruction, self-study/homework, practices, projects, and assessment*

Target Audiences

Educators

- College/university faculty who teach computer programming or a related subject
- Secondary school teachers who teach computer programming

Students

- Students who wish to learn the techniques and tools to automate database application tasks
- Students who possess basic mathematical, logical, and analytical problem-solving skills
- Novice programmers, as well as those at advanced levels, to learning the PL/SQL programming language to an advanced level

Prerequisites

Required

- Previous experience with at least one programming language

Suggested

- Previous Experience with a database application
- Oracle Academy Course – Database Design and Database Programming with SQL

Suggested Next Courses

- Java Fundamentals
- Java Programming

Lesson-by-Lesson Topics

Fundamentals

- Introduction to PL/SQL
- Benefits of PL/SQL
- Creating PL/SQL Blocks

Defining Variables and Datatypes

- Using Variables in PL/SQL
- Recognizing PL/SQL Lexical Units
- Recognizing Data Types
- Using Scalar Data Types
- Writing PL/SQL Executable Statements
- Nested Blocks and Variable Scope
- Good Programming Practices

Using SQL in PL/SQL

- Review of SQL DML
- Retrieving Data in PL/SQL
- Manipulating Data in PL/SQL
- Using Transaction Control Statements

Program Structures to Control Execution Flow

- Conditional Control: IF Statements
- Conditional Control: Case Statements
- Iterative Control: Basic Loops
- Iterative Control: While and For Loops
- Iterative Control: Nested Loops

Using Cursors and Parameters

- Introduction to Explicit Cursors
- Using Explicit Cursor Attributes
- Cursor FOR Loops
- Cursors with Parameters
- Using Cursors For Update
- Using Multiple Cursors

Using Composite Datatypes

- User-Defined Records
- Indexing Tables of Records

Exception Handling

- Handling Exceptions
- Trapping Oracle Server Exceptions
- Trapping User-Defined Exceptions
- Recognizing the Scope of Exceptions

Using and Managing Procedures

- Creating Procedures
- Using Parameters in Procedures
- Passing Parameters

Using and Managing Functions

- Creating Functions
- Using Functions in SQL Statements
- Review of the Data Dictionary
- Managing Procedures and Functions
- Review of Object Privileges
- Using Invoker's Rights and Autonomous Transactions

Using and Managing Packages

- Creating Packages
- Managing Package Concepts
- Advanced Package Concepts

Getting the Best out of Packages

- Persistent State of Package Variables
- Using Oracle-Supplied Packages

Improving PL/SQL Performance

- Using Dynamic SQL
- Improving PL/SQL Performance

Using and Managing Triggers

- Introduction to Triggers
- Creating DML Triggers: Part I
- Creating DML Triggers: Part II
- Creating DDL and Database Event Triggers
- Managing Triggers

Recognizing and Managing Dependencies

- Introduction to Dependencies
- Understanding Remote Dependencies

Using the PL/SQL Compiler

- Using PL/SQL Initialization Parameters
- Displaying Compiler Warning Messages
- Using Conditional Compilation
- Hiding your Source Code