

Database Programming with PL/SQL

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.

Duration

- 180 hours

Target Audiences

Primary Audience

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

Secondary Audience

- None

Prerequisites

Required

- Previous experience with at least one programming language

Suggested

- None

Suggested Next Courses

- Getting Started with Java Using Alice
- Creating Java Programs with Greenfoot
- 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