

# 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

- 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 Composite Datatypes

- User-Defined Records
- Indexing Tables of Records

### 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

### 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

To search and register for events scheduled in your area, visit the [Academy events calendar](#).