## General Description

The PL/SQL programming language is at the core of most Oracle database applications. This training textbook will give attention to three fundamental pillars of effective implementation of PL/SQL applications. First, we will explore the advanced features of the language that allow powerful and adaptable database applications to be built. Next, we will discuss performance tuning techniques that allow these applications to run efficiently. Finally, we will consider critical security measures which should be implemented to counter hacker attacks and other security threats.

## Target Audience

The target audience for this textbook is senior application developers. Developers who will be building, debugging and tuning PL/SQL program units will benefit from this textbook.

## Prerequisites

Specific prerequisites for this textbook are the following Sideris titles, or equivalent experience:

- ORACLE DATABASE 12C: SQL FUNDAMENTALS (LEVELS I & II)
- ORACLE DATABASE 12C: PL/SQL FUNDAMENTALS (LEVELS I & II)

You can see where this textbook and its prerequisites fit within the Sideris Oracle Database 12c Application Developers curriculum.

## Certification

This textbook considers subjects applicable to certification as an Oracle Advanced PL/SQL Developer Certified Professional (OCP). The topics considered are included within "Exam 1Z0-146: Oracle Database Advanced PL/SQL".

## Content

- Volumes: 2
- Pages: 838
- Hands-on Workshops: 16
- Exercises: 99

## Suggested Next

The objectives for this course are as follows:

- Among the specific topics contained within these training materials are:
- Invoking external procedures and integrating these into PL/SQL applications. These include external Java classes using the JDBC interface and external C programs contained within DLL libraries.
- Using dynamic SQL to extend the functionality and flexibility of database programs, including the DBMS_SQL() system-supplied package for maximum flexibility.
- Identifying SQL injection attack vulnerabilities within an application and applying countermeasures to address security risks and protect against hacking.
- Incorporating collections and other advanced types into application logic to increase efficiency and execution speed.
- Working with LOBs, including piece-wise data manipulation and dynamic modification of
SecureFiles storage options.
- Expanding database application functionality with advanced system-supplied database utility packages, integrating ones applications with external mail systems, database internals and other facilities.
- Tuning with the DBMS_PROFILER() system-supplied package and debugging with the DBMS_TRACE() system-supplied package.
- Writing efficient PL/SQL code and avoiding common coding mistakes.
- Enabling native compilation and execution of all database-resident program units.
- Controlling and managing PL/SQL compilation for high-efficiency execution.
- Analyze PL/SQL code structure by means of the PL/Scope facility.
- Analyze PL/SQL application performance and tune bottlenecks using the PL/SQL Hierarchical Profiler.
- Implementing fine-grained security mechanisms as part of an advanced security model using application contexts and the Oracle virtual private database (VPD).
- Dynamic partitioning and DML parallelization using the system-supplied package DBMS_PARALLEL_EXECUTE().
- Using the wrap utility to hide the source code of database-resident programs, even from the owner or authorized users of the programs.

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  - Why Advanced Programming?
  - SQL & PL/SQL Execution Internals
  - SQL & PL/SQL PGA Internals

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  - Dynamic SQL Using DBMS_SQL()

Advanced Programming: Using Collections
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  - Bulk Bind Using Collections
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Advanced Programming: Java & C Interface Methods
  - Advanced Program Interfaces
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- Using SET_COUNT()
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- Using FETCH DDL
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System-Supplied Packages: DBMS_METADATA() – Part II

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System-Supplied Packages: DBMS_METADATA() – Part III

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- Using DBMS_REDEFINITION()
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- Autonomous Transactions
- Using NOCOPY FOR Parameters
- Choosing The Optimum Data Type
- About NOT NULL
- Useful PL/SQL Coding Techniques
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- DBMS_FILE_TRANSFER()
Oracle Database 12c: PL/SQL III – Advanced Programming & Tuning

Learning Resources Available From The Sideris Training Portal

• Controlling Compilation Messages
• PL/SQL Native Execution
• Wrapping Source Code

High Performance: Dynamic Partitioning & Parallelization

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• Creating & Processing Chunks
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• DBMS_TRACE() To Manage Runs
• Examining The Trace Data
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Application Security: SQL Injection Attacks

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Application Security: Virtual Private Databases

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• Preparing For A VPD
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High Performance: Tuning With The Hierarchical Profiler

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• Configuring The Profiler
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