



# Oracle Database 12c: PL/SQL II

## Intermediate: Develop Program Units

Course ID #: 0380-073-12-W

Hours: 21

## Course Content

### Course Description:

This Oracle Database 12c: PL/SQL II - Intermediate: Develop Program Units students will apply the basics of the Oracle PL/SQL database programming language and its syntax, and employ the language in the development of database applications. In particular, the focus will be on the use of database-resident stored program units such as procedures, functions, packages and database triggers. New features introduced with the Oracle 12c release of the database are also explained and demonstrated.

This course considers subjects applicable to certification as both an Oracle PL/SQL Developer Certified Associate (OCA) and an Oracle Advanced PL/SQL Developer Certified Professional (OCP). The topics considered are included within 'Exam 1Z0-144: Program With PL/SQL'.

### Course Objectives:

Upon completion, students will be able to:

- Understand how database-resident program units can be used as part of the overall database application architecture
- Apply knowledge of database-resident program units to the development of PL/SQL packages
- Package PL/SQL program units
- Use advanced database programming capabilities
- Use and understand database triggers in advanced database application design

### Target Audience:

This course is well suited for:

- Application designers and database developers
- Database administrators
- Web server administrators

### Prerequisites:

DBOR-952 Oracle Database 12c: PL-SQL I - Introduction, or equivalent knowledge

### Topics:

#### Introducing Database-Resident Program Units

- About Database-Resident Programs
- Physical Storage & Execution
- Types Of Stored Program Units
- Stored Program Unit Advantages
- Modular Design Principles

#### Creating Stored Procedures & Functions

- Stored Procedures & Functions
- CREATE Procedure / CREATE Function
- Creating Procedures & Functions
- RAISE\_SALARY() Procedure
- SALARY\_VALID() Function
- The Parameter Specification



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- DEFAULT Clause
- SYSTEM & OBJECT Privileges
- Using The Development Tools

### Executing Stored Procedures & Functions

- Calling Procedures & Functions
- Unit Testing With EXECUTE
- ANONYMOUS BLOCK Unit Testing
- Specifying A Parameter Notation
- SQL Worksheet Unit Testing
- Calling Functions From SQL

### Maintaining Stored Program Units

- Recompiling Programs
- Mass Recompilation Using UTL\_RECOMP()
- Dropping Procedures & Functions
- DROP Procedure / Function
- Data Dictionary Metadata
- Using USER\_OBJECTS
- Using USER\_SOURCE
- Using USER\_ERRORS
- Using USER\_OBJECT\_SIZE
- Using USER\_DEPENDENCIES

### Managing Dependencies

- DEPENDENCY INTERNALS
- TRACKING DEPENDENCIES
- The DEPENDENCY TRACKING Utility
- SQL Developer Dependency Info
- Dependency Strategy Checklists

### Creating & Maintaining Packages

- About Packages
- Creating Packages
- Maintaining Packages
- Performance Considerations

### Advanced Package Capabilities

- Definer & Invoker Rights
- White Lists & Accessible By
- Persistent Global Objects
- Defining Initialization Logic
- Object Orientation Support

### Advanced Cursor Techniques

- USING CURSOR VARIABLES
- Using SYS\_REFCURSOR
- Using CURSOR Expressions

### Using System-Supplied Packages

- DBMS\_OUTPUT()
- UTL\_FILE()
- FOPEN() Example

### Database Trigger Concepts

- About Database Triggers
- DML EVENT TRIGGER Sub-Types
- DATABASE TRIGGER Scenario
- TRIGGER Execution Mechanisms
- TRIGGERS Within SQL Worksheet

### Creating Database Triggers

- STATEMENT-LEVEL TRIGGERS
- Using RAISE\_APPLICATION\_ERROR()
- ROW-LEVEL TRIGGERS
- EXAMPLES OF TRIGGERS
- EMPLOYEE\_SALARY\_CHECK Example
- EMPLOYEE\_JOURNAL Example
- BUDGET\_EVENT Example
- INSTEAD OF TRIGGERS
- Triggers Within An Application

### Maintaining Database Triggers

- CALL Syntax
- Trigger Maintenance Tasks
- SHOW ERRORS Trigger
- DROP Trigger
- ALTER Trigger
- Multiple Triggers For A Table
- Handling Mutating Table Issues

### Implementing System Event Triggers

- What Are System Event Triggers?
- Defining The Scope
- Available System Events
- System Event Attributes