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# Oracle Database 12c PL/SQL Advanced Programming Techniques

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Protecting Oracle Database 12c  
PL/SQL Programming  
Learning Oracle PL/SQL  
Oracle Database 10g The Complete Reference  
Programming with Packages  
Beginning Oracle Database 12c Administration  
From Novice to Professional  
Advanced Oracle PL/SQL Developer's Guide  
Oracle Database 11g PL/SQL Programming  
Oracle Database 12c Release 2 New Features  
Oracle 12c For Dummies  
ORACLE DATABASE 12C HANDS-ON SQL AND PL/SQL  
Oracle Database 12c Performance Tuning Recipes  
Murach's Oracle SQL and PL/SQL for Developers  
Oracle PL/SQL Best Practices  
Oracle 12c: SQL  
Oracle and PL/SQL Recipes  
Covers Versions Through Oracle Database 12c  
Oracle Database 12c SQL  
A Problem-Solution Approach  
Generating Optimal Execution Plans  
Oracle Database 12c The Complete Reference  
Oracle PL/SQL by Example  
Advanced Oracle PL/SQL  
Oracle PL/SQL Language Pocket Reference  
Oracle Database 12c SQL  
The Complete Reference  
Oracle Database 12c The Complete Reference  
Oracle Database 11g : Hands-On SQL & PL/SQL  
Oracle Developer's Guide  
Mastering Oracle SQL  
OCA Oracle Database SQL Exam Guide (Exam 1Z0-071)  
For Oracle Database 12c  
Oracle Database 11g PL/SQL Programming Workbook  
Mastering Oracle PL/SQL  
Oracle PL/SQL Programming  
Optimizing Oracle Code  
Oracle SQL Tuning with Oracle SQLTXPLAIN

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Database 12c  
PL/SQL  
Advanced  
Programming  
Techniques*

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## GILL HUFFMAN

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### Protecting Oracle

#### Database 12c Apress

Introduce the latest version of the fundamental SQL language used in all relational databases today with Casteel's ORACLE 12C: SQL, 3E. Much more than a study guide, this edition helps those who have only a basic knowledge of databases master the latest SQL and Oracle concepts and techniques. Learners gain a strong understanding of how to use Oracle 12c SQL most effectively as they prepare for the first exam in the Oracle Database Administrator or Oracle Developer Certification Exam paths. This edition initially focuses on creating database objects, including tables, constraints, indexes, sequences, and more. The author then explores data query techniques, such as row filtering, joins, single-row functions, aggregate functions, subqueries, and views, as well as advanced query topics. ORACLE 12C: SQL, 3E introduces the latest

features and enhancements in 12c, from enhanced data types and invisible columns to new CROSS and OUTER APPLY methods for joins.

To help readers transition to further studies, appendixes introduce SQL tuning, compare Oracle's SQL syntax with other databases, and overview Oracle connection interface tools: SQL Developer and SQL Plus. Readers can trust ORACLE 12C: SQL, 3E to provide the knowledge for Oracle certification testing and the solid foundation for pursuing a career as a successful database administrator or developer. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Oracle Database 12c PL/SQL Programming Protecting Oracle Database 12c helps you solve the problem of maximizing the safety, resilience, and security of an Oracle database whilst preserving performance, availability, and integration despite ongoing and new security issues in the software. The book demonstrates, through coded examples, how you can enable the

consolidation features of Oracle Database 12c without increasing risk of either internal corruption or external vulnerability. In addition, new protections not publicly available are included, so that you can see how demonstrable risk improvements can be achieved, measured, and reported through Enterprise Manager 12c. Most importantly, the challenge of privileged access control within a consolidation environment will be addressed, thus enabling a safe move to greater efficiency.

[PL/SQL Programming](#)  
McGraw Hill Professional  
Ramp Up Your PL/SQL  
Programming Skills  
Master PL/SQL through  
the hands-on exercises,  
extensive examples, and  
real-world projects inside  
this Oracle Press guide.  
Filled with best practices,  
Oracle Database 11g  
PL/SQL Programming  
Workbook covers all the  
latest features and  
enhancements of the  
language. Mastery checks  
at the end of each chapter  
reinforce the material  
covered, and sample code  
from the book is available  
for download. Even  
experienced Oracle  
professionals will benefit  
from this practical  
resource. Understand the

Oracle development architecture and the mechanics of connections Work with data types, structures, blocks, cursors, and PL/SQL semantics Write, deploy, and use functions, procedures, and packages Manage transactions and more Use dynamic SQL statements in real-world applications Support online transaction processing and data warehousing applications with external tables Find syntax samples and best practices to solve problems Write, deploy, and use object types For a complete list of Oracle Press titles, visit [www.OraclePressBooks.com](http://www.OraclePressBooks.com)

*Learning Oracle PL/SQL* Apress  
Take Your PL/SQL Programming Skills to the Next Level Build robust database-centric PL/SQL applications quickly and effectively. Oracle Database 12c PL/SQL Advanced Programming Techniques shows you how to write and deploy Java libraries inside Oracle Database 12c, use the utl\_file and DBMS\_SCHEDULER packages, and create external tables and external procedures. Application security, performance tuning, and

Oracle Database In-Memory are also covered in this Oracle Press guide. Configure, deploy, and troubleshoot Java libraries for Oracle object types Use the utl\_file package to manage unstructured and structured data Develop and deploy Java I/O libraries and wrap them with PL/SQL Create and use external tables Implement high-speed data transfer Harden database systems and develop secure applications Manage complex schedules and jobs with the DBMS\_SCHEDULER package Optimize PL/SQL for use in performance tuning Create and deploy external procedures Implement the Oracle Database In-Memory column store feature

**Oracle Database 10g The Complete Reference** Createspace Independent Publishing Platform  
Officially authorized by Oracle, this book will teach potential developers all they need to know to develop good Oracle applications. It provides the code needed to perform many common tasks and covers Oracle7 background information, program development, and distributed databases. Security, error

handling, and optimizing performance are discussed for those interested in advanced programming.

*Programming with Packages* McGraw Hill Professional  
Get a thorough understanding of Oracle Database 10g from the most comprehensive Oracle database reference on the market, published by Oracle Press. From critical architecture concepts to advanced object-oriented concepts, this powerhouse contains nearly 50 chapters designed to enlighten you. Upgrade from earlier versions, use SQL, SQL Plus, and PL/SQL. Get code examples and access popular documentation PDFs--plus a full electronic copy of the book on the included CD-ROM. Go beyond the basics and learn security, text searches, external tables, using Java in Oracle, and a great deal more.

[Beginning Oracle Database 12c Administration](#) Apress  
Considered the best Oracle PL/SQL programming guide by the Oracle community, this definitive guide is precisely what you need to make the most of Oracle's powerful

procedural language. The sixth edition describes the features and capabilities of PL/SQL up through Oracle Database 12c Release 1. Hundreds of thousands of PL/SQL developers have benefited from this book over the last twenty years; this edition continues that tradition. With extensive code examples and a lively sense of humor, this book explains language fundamentals, explores advanced coding techniques, and offers best practices to help you solve real-world problems. Get PL/SQL programs up and running quickly, with clear instructions for executing, tracing, testing, debugging, and managing code. Understand new 12.1 features, including the ACCESSIBLE\_BY clause, WITH FUNCTION and UDF pragma, BEQUEATH CURRENT\_USER for views, and new conditional compilation directives. Take advantage of extensive code samples, from easy-to-follow examples to reusable packaged utilities. Optimize PL/SQL performance with features like the function result cache and Oracle utilities such as PL/Scope and the PL/SQL hierarchical

profiler. Build modular, easy-to-maintain PL/SQL applications using packages, procedures, functions, and triggers. From Novice to Professional "O'Reilly Media, Inc." Beginning Oracle Database 12c Administration is your entry point into a successful and satisfying career as an Oracle Database Administrator. The chapters of this book are logically organized into four parts closely tracking the way your database administration career will naturally evolve. Part 1 "Database Concepts" gives necessary background in relational database theory and Oracle Database concepts, Part 2 "Database Implementation" teaches how to implement an Oracle database correctly, Part 3 "Database Support" exposes you to the daily routine of a database administrator, and Part 4 "Database Tuning" introduces the fine art of performance tuning. Beginning Oracle Database 12c Administration provides information that you won't find in other books on Oracle Database. You'll discover not only technical information, but

also guidance on work practices that are as vital to your success as are your technical skills. The author's favorite chapter is "The Big Picture and the Ten Deliverables." (It is the editor's favorite chapter too!) If you take the lessons in that chapter to heart, you can quickly become a much better Oracle database administrator than you ever thought possible. You will grasp the key aspects of theory behind relational database management systems and learn how to: • Install and configure an Oracle database, and ensure that it's properly licensed; • Execute common management tasks in a Linux environment; • Defend against data loss by implementing sound backup and recovery practices; and • Improve database and query performance.

**Advanced Oracle PL/SQL Developer's Guide** "O'Reilly Media, Inc."

This book is packed with real world examples that cover all the advanced features of PL/SQL. In turn, each major certification topic is covered in a separate chapter that makes understanding concepts easier. At the end of each

chapter, you will find plenty of practice questions to strengthen and test your learning. If you are a PL/SQL developer looking for deeper insight and a move from mid-level programmer to professional database developer, then this is the best guide for you. This book is also an ideal guide for all the Associate level PL/SQL programmers who are preparing for the Professional 1Z0-146 certification. This book assumes you have prior knowledge of PL/SQL programming.

**Oracle Database 11g PL/SQL Programming**  
Apress

If you have mastered the fundamentals of the PL/SQL language and are now looking for an in-depth, practical guide to solving real problems with PL/SQL stored procedures, then this is the book for you.

**Oracle Database 12c Release 2 New**

**Features** Oracle Press  
The book teaches the basics of the Oracle database from a beginner's perspective to the advanced concepts using a hands-on approach. Each and every concept has been elaborated with suitable practical examples along

with code for clear and precise understanding of the topic. Using a practical approach, this new edition of the book covers the detailed introspection of pluggable databases and explains practically the various new features incorporated in the new 12c version. It also explains how to retrieve, add, update and delete data in the Oracle database using SQL, SQL\*PLUS and PL/SQL. In the process, it discusses the various data types and built-in functions of Oracle, as well as the sorting of records and the table operations. The text also includes coverage of advanced queries using special operators, Oracle security, indexing, and stored functions and procedures. The book is suitable for undergraduate engineering students of Computer Science and Information Technology, B.Sc. (Computer Science/IT), M.Sc. (Computer Science/IT) and students of Computer Applications (BCA, MCA, PGDCA, and DCA). Besides, the book can be used as a reference by professionals pursuing short-term courses on Oracle Database and students of Oracle Certified Courses. KEY

**FEATURES** • Based on latest Oracle Database 12c: It explains the various features introduced with the new Oracle Database 12c software. • Hands-on methodology: Its objective is to impart practical skills using hands-on methodology. • Elaborate Practical Examples: Each topic begins with appropriate theory and concept followed by relevant examples for better understanding of the concepts. • Commands tested and executed on Oracle Database software: All the programming examples have been tested on actual Oracle Database software.

**Oracle 12c For Dummies** Packt

Publishing Ltd  
Explains how to write powerful SQL statements and PL/SQL programs using Oracle Database 12c. Original.

**ORACLE DATABASE 12C HANDS-ON SQL AND PL/SQL** McGraw Hill Professional

The authors have revised and updated this bestseller to include both the Oracle8i and new Oracle9i Internet-savvy database products. Apress  
Demonstrates how to construct and properly

build PL/SQL packages, providing a full-use shareware version of PL/Vision and a library of dozens of packages written by the author on the companion disk. Original. (Advanced). *Oracle Database 12c Performance Tuning Recipes* "O'Reilly Media, Inc."

Design Feature-Rich PL/SQL Applications Deliver dynamic, client/server PL/SQL applications with expert guidance from an Oracle programming professional. With full coverage of the latest features and tools, Oracle Database 11g PL/SQL Programming lays out each topic alongside detailed explanations, cut-and-paste syntax examples, and real-world case studies. Access and modify database information, construct powerful PL/SQL statements, execute effective queries, and deploy bulletproof security. You'll also learn how to implement C, C++, and Java procedures, Web-enable your database, cut development time, and optimize performance. Create, debug, and manage Oracle-driven PL/SQL programs Use PL/SQL structures,

delimiters, operators, variables, and statements Identify and eliminate errors using PLSQL\_WARNINGS and exception handlers Work with functions, procedures, packages, collections, and triggers Define and deploy varray, nested table, and associative array data types Handle external routines, object types, large objects, and secure files Communicate between parallel sessions using DBMS\_ALERT and DBMS\_PIPE Call external procedures through Oracle Net Services and PL/SQL wrappers Integrate internal and server-side Java class libraries using Oracle JVM Develop robust Web applications using PL/SQL Gateway and Web Toolkit *Murach's Oracle SQL and PL SQL for Developers* McGraw Hill Professional Master the Cutting-Edge Features of Oracle Database 12c Maintain a scalable, highly available enterprise platform and reduce complexity by leveraging the powerful new tools and cloud enhancements of Oracle Database 12c. This authoritative Oracle Press guide offers complete coverage of installation, configuration, tuning, and administration. Find out

how to build and populate Oracle databases, perform effective queries, design applications, and secure your enterprise data. Oracle Database 12c: The Complete Reference also contains a comprehensive appendix covering commands, keywords, features, and functions. Set up Oracle Database 12c or upgrade from an earlier version Design Oracle databases and plan for application implementation Construct SQL and SQL\*Plus statements and execute powerful queries Secure data with roles, privileges, virtualization, and encryption Move data with SQL\*Loader and Oracle Data Pump Restore databases using flashback and the Oracle Database Automatic Undo Management feature Build and deploy PL/SQL triggers, procedures, and packages Work with Oracle pluggable and container databases Develop database applications using Java, JDBC, and XML Optimize performance with Oracle Real Application Clusters **Oracle PL/SQL Best Practices** Oreilly & Associates Incorporated Master the advanced concepts of PL/SQL for professional-level certification and learn the

new capabilities of Oracle Database 12c About This Book Learn advanced application development features of Oracle Database 12c and prepare for the 1Z0-146 examination Build robust and secure applications in Oracle PL/SQL using the best practices Packed with feature demonstrations and illustrations that will help you learn and understand the enhanced capabilities of Oracle Database 12c Who This Book Is For This book is for Oracle developers responsible for database management. Readers are expected to have basic knowledge of Oracle Database and the fundamentals of PL/SQL programming. Certification aspirants can use this book to prepare for 1Z0-146 examination in order to be an Oracle Certified Professional in Advanced PL/SQL. What You Will Learn Learn and understand the key SQL and PL/SQL features of Oracle Database 12c Understand the new Multitenant architecture and Database In-Memory option of Oracle Database 12c Know more about the advanced concepts of the Oracle PL/SQL language such as external procedures, securing data using Virtual Private

Database (VPD), SecureFiles, and PL/SQL code tracing and profiling Implement Virtual Private Databases to prevent unauthorized data access Trace, analyze, profile, and debug PL/SQL code while developing database applications Integrate the new application development features of Oracle Database 12c with the current concepts Discover techniques to analyze and maintain PL/SQL code Get acquainted with the best practices of writing PL/SQL code and develop secure applications In Detail Oracle Database is one of the most popular databases and allows users to make efficient use of their resources and to enhance service levels while reducing the IT costs incurred. Oracle Database is sometimes compared with Microsoft SQL Server, however, Oracle Database clearly supersedes SQL server in terms of high availability and addressing planned and unplanned downtime. Oracle PL/SQL provides a rich platform for application developers to code and build scalable database applications and introduces multiple new features and enhancements to improve development experience.

Advanced Oracle PL/SQL Developer's Guide, Second Edition is a handy technical reference for seasoned professionals in the database development space. This book starts with a refresher of fundamental concepts of PL/SQL, such as anonymous block, subprograms, and exceptions, and prepares you for the upcoming advanced concepts. The next chapter introduces you to the new features of Oracle Database 12c, not limited to PL/SQL. In this chapter, you will understand some of the most talked about features such as Multitenant and Database In-Memory. Moving forward, each chapter introduces advanced concepts with the help of demonstrations, and provides you with the latest update from Oracle Database 12c context. This helps you to visualize the pre- and post-applications of a feature over the database releases. By the end of this book, you will have become an expert in PL/SQL programming and will be able to implement advanced concepts of PL/SQL for efficient management of Oracle Database. Style and approach The book

follows the structure of the Oracle Certification examination but doesn't restrict itself to the exam objectives. Advanced concepts have been explained in an easy-to-understand style, supported with feature demonstrations and case illustrations.

*Oracle 12c: SQL* Packt Publishing Ltd  
Murach's Oracle SQL and PL: SQL for Developers By Joel Murac

**Oracle and PL/SQL Recipes** McGraw Hill Professional

The book teaches the basics of the Oracle database from a beginner's perspective to the advanced concepts using a hands-on approach. Each and every concept has been elaborated with suitable practical examples along with code for clear and precise understanding of the topic. Using a practical approach, the book explains how to retrieve, add, update and delete data in the Oracle database using SQL, SQL\*PLUS and PL/SQL. In the process, it discusses the various data types and built-in functions of Oracle, as well as the sorting of records and the

table operations. The text also includes coverage of advanced queries using special operators, Oracle security, indexing, and stored functions and procedures. The book is suitable for undergraduate engineering students of Computer Science and Information Technology, B.Sc. (Computer Science/IT), M.Sc. (Computer Science/IT) and students of Computer Applications (BCA, MCA, PGDCA, and DCA). Besides, the book can be used as a reference by professionals pursuing short-term courses on Oracle Database and students of Oracle Certified Courses. Covers Versions Through Oracle Database 12c "O'Reilly Media, Inc." Considered the best Oracle PL/SQL programming guide by the Oracle community, this definitive guide is precisely what you need to make the most of Oracle's powerful procedural language. The sixth edition describes the features and capabilities of PL/SQL up through Oracle Database 12c Release 1. Hundreds of thousands of PL/SQL developers have

benefited from this book over the last twenty years; this edition continues that tradition. With extensive code examples and a lively sense of humor, this book explains language fundamentals, explores advanced coding techniques, and offers best practices to help you solve real-world problems. Get PL/SQL programs up and running quickly, with clear instructions for executing, tracing, testing, debugging, and managing code. Understand new 12.1 features, including the ACCESSIBLE\_BY clause, WITH FUNCTION and UDF pragma, BEQUEATH CURRENT\_USER for views, and new conditional compilation directives. Take advantage of extensive code samples, from easy-to-follow examples to reusable packaged utilities. Optimize PL/SQL performance with features like the function result cache and Oracle utilities such as PL/Scope and the PL/SQL hierarchical profiler. Build modular, easy-to-maintain PL/SQL applications using packages, procedures, functions, and triggers.