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OCA

Oracle® Database 11g Administrator Certified Associate STUDY GUIDE

Exams 1Z0-051
and 1Z0-052

Biju Thomas

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OCA
Oracle® Database 11g
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Study Guide



Biju Thomas



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Dear Reader,

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Best regards,



Neil Edde Vice President and Publisher Sybex, an Imprint of Wiley

*To the loving memory of my father
To Joshua and Jeanette*

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About the Author

Biju Thomas is an Oracle 7.3, Oracle8, Oracle8*i*, Oracle9*i*, Oracle 10*g*, and Oracle 11*g* OCP certified professional. He is also a certified Oracle Database SQL Expert. Biju has been developing and administering Oracle databases since 1993, starting with Oracle version 6. He is a senior database consultant at OneNeck IT Services Corporation (www.oneneck.com) and resides in Keller, Texas. He maintains a website for DBAs at www.bijoos.com/oracle.

Introduction

There is high demand for professionals in the information technology (IT) industry, and Oracle certifications are the hottest credential in the database world. You have made the right decision to pursue certification, because being Oracle Database 11g certified will give you a distinct advantage in this highly competitive market.

Many readers may already be familiar with Oracle and do not need an introduction to Oracle databases. Oracle, founded in 1977, sold the first commercial relational database and is now the world's leading database company and second-largest independent software company with annual revenues of more than \$22 billion, and is headquartered in Redwood City, California.

Oracle databases are the de facto standard for large Internet sites and mission-critical enterprise applications. Oracle advertisers are boastful but honest when they proclaim, "The Internet runs on Oracle." Almost all the big Internet sites run on Oracle databases. Oracle's penetration of the database market runs deep and is not limited to Internet implementations. Enterprise resource planning (ERP) application suites, data warehouses, and custom applications at many large and medium companies rely on Oracle. The demand for DBA resources remains higher than others during weak economic times.

This book is intended to help you on your exciting path toward becoming an Oracle Database 11g Administrator Certified Associate (OCA), which is the first step on the path toward the Oracle Certified Professional (OCP) and Oracle Certified Master (OCM) certifications. This book covers the two exams required for the OCA certification. Using this book and a practice database, you can start learning Oracle 11g and pass the Oracle Database 11g: SQL Fundamentals I

(1Z0-051) and Oracle Database 11g: Administration I (1Z0-052) exams.

Why Become Oracle Certified?

The number-one reason to become OCA or OCP certified is to gain more visibility and greater access to the industry's most challenging opportunities. Oracle certification is the best way to demonstrate your knowledge and skills in Oracle database systems.

Certification is proof of your knowledge and shows that you have the skills required to support Oracle core products. The Oracle certification program can help a company identify proven performers who have demonstrated their skills and who can support the company's investment in Oracle technology. It demonstrates that you have a solid understanding of your job role and the Oracle products used in that role.

The certification tests are scenario-based, which is the most effective way to assess your hands-on expertise and critical problem-solving skills. OCPs are among the best paid in the IT industry. Salary surveys consistently show the OCP certification to yield higher salaries than the other certifications, including Microsoft, Novell, and Cisco.

So, whether you are beginning a career, changing careers, securing your current position, or seeking to refine and promote your position, this book is for you!

Oracle Certifications

Oracle certifications follow a track that is oriented toward a job role. The certification tracks are Database, Middleware, Applications, and Linux. Within each track, Oracle has a tiered certification program of OCA and OCP. Only the Database track has OCM.

The Database track is clearly for the database administrator job role. The Middleware track has certifications on many products, such as Oracle 10g Application Server, Oracle Essbase, Oracle Forms, Oracle PL/SQL, Oracle WebLogic, and Service-Oriented Architecture (SOA) and is intended for application developers, system administrators, consultants, and architects.

The Applications track is for ERP administrators and functional consultants. This track covers the Oracle E-Business Suite, Siebel, Hyperion, and PeopleSoft applications. The Linux track is for Linux administrators.



For the latest certification information on all of Oracle certification paths, please visit the Oracle website at http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=39&p_org_id=1001&lang=US.

The role of database administrator (DBA) has become a key to success in today's highly complex database systems. The best DBAs work behind the scenes but are in the spotlight when critical issues arise. They plan, create, maintain, and ensure that the database is available for the business. They have tools to proactively monitor the database for performance issues and to prevent unscheduled downtime. The DBA's job requires a broad understanding of the architecture of Oracle Database and an expertise in solving problems.

Sybex has Oracle certification study guides for the Database track. In the following sections, I'll introduce you to the different tiers in the Oracle Database 11g certification track.

Oracle Database 11g Administrator Certified Associate

The Oracle Certified Associate (OCA) credential is the first step toward achieving the Oracle Certified Professional (OCP) certification. OCA shows that you have the fundamental knowledge and skills to support an Oracle 11g database. This certification requires you to pass two exams that demonstrate your Oracle basics:

- 1Z0-051: Oracle Database 11g: SQL Fundamentals I
- 1Z0-052: Oracle Database 11g: Administration I

If you have already passed any one of the following tests, you need not take the 1Z0-051 test; you need to pass only 1Z0-052:

- 1Z0-001: Introduction to Oracle: SQL and PL/SQL
- 1Z0-007: Introduction to Oracle9i SQL
- 1Z0-047: Oracle Database SQL Expert

You can take the 1Z0-051 exam at a testing location or from your home using the Internet. The 1Z0-052 test is offered only at a Prometric facility.



To register for the test or find the location of a testing center, visit Prometric at www.prometric.com/oracle, or call 1-800-891-3926. At the time of writing this book, the exam fee was \$95 USD for the online exam and \$125 USD for the in-facility exam.

Oracle Database 11g Administrator Certified Professional

The Oracle Certified Professional credential shows that you have the skill and technical expertise to manage and implement enterprise databases. The OCP tier challenges you to demonstrate your continuing experience and

knowledge of Oracle technologies. The Oracle Database 11g Administrator Certified Professional certification requires you to have the OCA certification as well as to pass the following exam at a Prometric facility.

- 1Z0-053: Oracle Database 11g Administration II

In addition, the OCP candidate must take one instructor-led Oracle University hands-on requirement class from the following list:

- Oracle Database 11g: Advanced PL/SQL
- Oracle Database 11g: Data Guard Administration
- Oracle Database 11g: Performance Tuning
- Oracle Database 11g: Administration Workshop I
- Oracle Database 11g: Administration Workshop II
- Oracle Database 11g: Introduction to SQL
- Oracle Database 11g: New Features for Administrators
- Oracle Database 11g: Program with PL/SQL
- Oracle Database 11g: Develop PL/SQL Program Units
- Oracle Database 11g: Implement Streams
- Oracle Database 11g: SQL Tuning Workshop
- Oracle Spatial 11g: Essentials
- Oracle Database 11g: RAC Administration
- Oracle Database 11g: SQL Fundamentals I



You should verify the list of approved hands-on course at the Oracle University website at http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=244#5. This list may change without notice.

Oracle Database 11g Administrator Certified Master

The highest level of certification available in any track is the Oracle Certified Master. The OCM certification credential shows that you have the highest level of expertise in an Oracle product. To become an Oracle Certified Master, you must first achieve OCP status and then complete two advanced instructor-led classes at an Oracle University facility. You must also pass a hands-on examination at an Oracle University facility. At the time of writing this book, the Oracle Database 11g Certified Master exam has not been released yet.

More Information and Resources

You can find most current information about Oracle certifications at www.oracle.com/global/us/education/certification. You may be asked to choose your country of residence before being directed to the site. Follow the links under Certifications to choose the track and learn more.

Choose the Database track to view the different certification versions available. Choose Oracle 11g Administrator Certified Associate, and then click the test to learn more about the test contents, the objectives covered on the test, and the passing score. You can also register for the test here.

Oracle also provides sample practice questions for the OCA and OCP exams. You can find Oracle Database 11g SQL Fundamentals I exam practice questions at www.oracle.com/global/us/education/certification/sample_questions/exam_1z0-051.html. You can find the sample questions for the Oracle Database 11g Administration I exam at www.oracle.com/global/us/education/certification/sample_questions/exam_1z0-052.html.

The Oracle documentation is available online at <http://tahiti.oracle.com>. The Oracle documentation contains

a wealth of information, which can be used to supplement what you learn from this book.

Oracle provides training series with step-by-step instructions to perform a variety of Oracle Database 11g tasks. You can find the Oracle by example (OBE) tutorial at www.oracle.com/technology/obe/11gr1_db/otn_all_db11gr1.html.

The Oracle Technology Network (www.oracle.com/technology/index.html) is also a great resource for database administrators and developers. You can read articles, view sample code, access documentation, participate in forums, and, most important, download a trial version of Oracle Database 11g and other Oracle products.

OCA/OCP Study Guides

The Oracle Database 11g administration certification consists of three tests: two for OCA and one for OCP. Sybex offers study guides to help you achieve OCA and OCP certification:

- *OCA: Oracle Database 11g Administrator Certified Associate Study Guide* (ISBN 9780470395127) covers the exams Oracle Database 11g: SQL Fundamentals I (1Z0-051) and Oracle Database 11g: Administration I (1Z0-052).
- *OCP: Oracle Database 11g Administrator Certified Professional Study Guide* (ISBN 9780470395134) covers the exam Oracle Database 11g: Administration II (1Z0-053).

These two books are offered in a boxed set as *OCP: Oracle Database 11g Administrator Certified Professional Certification Kit* (ISBN 9780470395141).

Oracle Exam Requirements

The Oracle Database 11g Database Administrator Certified Associate certification tests your basic SQL skills for the SQL exam and your database architecture and administration skills for the DBA exam. The SQL exam tests your knowledge of writing SQL and using the functions available in Oracle 11g. The Administration I exam concentrates on the architecture and the basic administration of Oracle 11g database. The following sections detail the skills needed to pass the SQL Fundamentals I and Administration I exams.

OCA SQL (1Z0-051) Requirements

To pass the Oracle Database 11g SQL Fundamentals I exam, you must have the following skills:

- Write SQL SELECT statements that display data from one or more tables.
- Join tables using ANSI syntax and Oracle traditional syntax.
- Restrict, sort, and aggregate data using single-row, conversion, and group functions.
- Write subqueries and queries using SET operators.
- Manipulate data via insert, update, and delete.
- Create and manage tables, indexes, views, synonyms, and sequences.

OCA Admin I (1Z0-052) Requirements

To pass the Oracle Database 11g Administration I exam, you must have the following skills:

- Understand the Oracle server architecture (database and instance).
- Be able to install the Oracle 11g software and create a database.
- Use the Database Configuration Assistant and Enterprise Manager Database Control tools.

- Understand the physical and logical storage of the database and be able to manage space allocation and growth.
- Use the data dictionary views and set database parameters.
- Manage and manipulate data, including its storage, loading, and reorganization.
- Create and manage tables, constraints, and indexes.
- Manage redo logs, archive logs, and automatic undo.
- Configure Oracle Net on the server side and the client side.
- Understand the backup and recovery architecture.
- Secure the database and audit database usage.
- Use advisors to tune and manage the database.
- Be able to contact Oracle Support for problem resolution and patches.

Tips for Taking the OCA Exams

The following tips will help you prepare for and pass each exam:

- Each OCP test consists of about 70 questions to be completed in 90 (120 for the SQL exam) minutes. Answer the questions you are sure of first, before you run out of time. Mark the difficult questions or the ones you are not sure of and return to them later.
- Many questions on the exam have answer choices that at first glance look identical. Read the questions carefully. Do not jump to conclusions. Make sure you clearly understand what each question asks.
- Most questions are based on scenarios. Some of the scenarios contain nonessential information and exhibits. You need to be able to identify what's important and what's not.

- Do not leave any questions unanswered. There is no negative scoring.
- When answering questions you are not sure about, use a process of elimination to get rid of the obviously incorrect answers first. Doing this greatly improves your odds if you need to make an educated guess.
- If you are not sure of your answer, mark it for review, and then look for other questions that may help you eliminate any incorrect answers. At the end of the test, you can review the questions you marked earlier.



You should be familiar with the exam objectives, which are included at the beginning of each chapter. Please check the objectives listing on the Oracle University website (http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getpage?page_id=244#5) for any changes or updates. The detail page for each exam shows the passing score, the number of questions, the minutes allocated, and any exam fees or other requirements.

What Is Covered in This Book

This book covers everything you need to pass the Oracle Database 11g Certified Associate exams. Part I includes the first eight chapters that cover the objectives for the Oracle Database 11g SQL Fundamentals I exam. Part II of the book includes the remaining 10 chapters that cover the objectives for the Oracle Database 11g Administration I exam.

Part I: Oracle Database 11g SQL Fundamentals I

Chapter 1: Introducing SQL introduces you to writing simple queries using the `SELECT` statement. It

also introduces you to filtering and sorting data.

Chapter 2: Using Single-Row Functions

discusses the single-row functions and conversion functions available in Oracle 11g, with details on how and where to use them.

Chapter 3: Using Group Functions explains data aggregations, Oracle's built-in group function, and how to nest functions.

Chapter 4: Using Joins and Subqueries explains how data from multiple tables can be related via joins, subqueries, and SET operators.

Chapter 5: Manipulating Data explores how to manipulate data—adding, removing, and updating data. The chapter also covers how transaction control works.

Chapter 6: Creating Tables and Constraints explains how to create and manage tables and constraints. It also discusses the various data types available in Oracle 11g to store data.

Chapter 7: Creating Schema Objects introduces you to creating and managing views, sequences, and synonyms.

Part II: Oracle Database 11g Administration I

Chapter 8: Introducing Oracle Database 11g Components and Architecture is the first chapter to read if you're studying for the Administration I exam. This chapter introduces you to the Oracle 11g database architecture and how to install the Oracle 11g software.

Chapter 9: Creating an Oracle 11g Database

explains how you can create an Oracle 11g database. It discusses the initialization parameters, stages of database startup and shutdown, where to find log and trace files, and how to use the data dictionary.

Chapter 10: Allocating Database Storage and Creating Schema Objects explores the logical and physical storage of the database. You will learn space management and the various types of tablespaces. This chapter also talks about creating and managing tables and constraints, but does not repeat what was covered in Chapter 6.

Chapter 11: Understanding Network

Architecture introduces you to the Oracle Net configuration and setup. You will learn to set up network architecture on the server and client.

Chapter 12: Implementing Security and Auditing shows how you can secure your database using privileges, profiles, and roles. You will also learn how to audit database usage.

Chapter 13: Managing Data and Undo shows you how you can add, update, and remove data from tables as well as how transactions work. It also introduces you to undo data and undo management. Be sure to read Chapter 5 before you read this chapter.

Chapter 14: Maintaining the Database and Managing Performance explores the tools available in Oracle 11g to manage the performance of the database. You will learn about optimizer

statistics, Automatic Workload Repository, various advisors, and Automatic Memory Management.

Chapter 15: Implementing Database Backups

introduces you to the backup architecture concepts. It discusses the various backup modes and how to use RMAN.

Chapter 16: Recovering the Database explores the various recovery scenarios and how best to get the data back. It introduces you to the Data Recovery Advisor, a new tool in Oracle 11g that helps in finding the recovery-related errors in the database, gives you advice, and helps you recover the database.

Chapter 17: Moving Data and Using EM Tools

introduces you to two tools available in Oracle 11g to move and load data: Data Pump and SQL*Loader. This chapter also covers the intelligent infrastructure of Enterprise Manager that helps DBAs manage patches and contact Oracle Support.

Each chapter ends with review questions that are specifically designed to help you retain the knowledge presented. To really nail down your skills, read and answer each question carefully.

How to Use This Book

This book provides a solid foundation for the serious effort of preparing for the Oracle 11g Certified Associate exams. To best benefit from the book, use the following study method:

- 1.** Take the assessment test immediately following this introduction (the answers are at the end of the test). Carefully read the explanations for any questions you get