OCA Java SE 7

Programmer I

CERTIFICATION GUIDE

Prepare for the 1ZO-803 exam

Mala Gupta

FOREWORD BY **Jeanne Boyarsky**

/// MANNING

OCA Java SE 7 Programmer I Certification Guide

by Mala Gupta

Introduction

brief contents

Introduction

This introduction covers

- Introduction to the Oracle Certified Associate (OCA) Java SE 7 Programmer certification (exam number 1Z0-803)
- Importance of OCA Java SE 7 Programmer certification
- Comparison of the OCA Java SE 7 Programmer I exam with OCA Java SE 5/6 exam
- Comparison of the OCA Java SE 7 Programmer I exam (1Z0-803) with OCP Java SE 7 Programmer II exam (1Z0-804)
- Detailed exam objectives, mapped to book chapters
- Readiness checklist to determine your readiness level for writing the exam
- FAQ on exam preparation and on taking the exam
- Introduction to the testing engine used for the exam

This book is intended specifically for individuals who wish to earn the Oracle Certified Associate (OCA) Java SE 7 Programmer certification (exam number 1Z0-803). It assumes that you are familiar with Java and have some experience working with it.

If you are completely new to Java or to object-oriented languages, I suggest that you start your journey with an entry-level book and then come back to this one.

1   Disclaimer

The information in this chapter is sourced from Oracle.com, public websites, and user forums. Input has been taken from real people who have earned Java certification, including the author. All efforts have been made to maintain the accuracy of the content, but the details of the exam—including the exam objectives, pricing, exam pass score, total number of questions, maximum exam duration, and others—are subject to change per Oracle's policies. The author and publisher of the book shall not be held responsible for any loss or damage accrued due to any information contained in this book or due to any direct or indirect use of this information.

2   Introduction to OCA Java SE 7 Programmer certification

The Oracle Certified Associate (OCA) Java SE 7 Programmer I exam (1Z0-803) covers the fundamentals of Java SE 7 programming, such as the importance of object-oriented programming, its implementation in code, and using flow control, arrays, and other constructs.

This exam is the first of the two steps in earning the title of Oracle Certified Professional (OCP) Java SE 7 Programmer. It certifies that an individual possesses a strong foundation in the Java programming language. Table 1 lists the details of this exam.

Table 1   Details for OCA Java SE 7 Programmer I exam (1Z0-803)

Exam number	1Z0-803
Java version	Based on Java version 7
Number of questions	90
Passing score	77%
Time duration	140 minutes
Pricing	US$300
Type of questions	Multiple-choice questions

2.1   The importance of OCA Java SE 7 Programmer certification

The OCA Java SE 7 Programmer I exam (1Z0-803) is an entry-level exam in your Java certification roadmap, as shown in figure 1. This exam is a prerequisite for the OCP Java SE 7 Programmer II exam (1Z0-804), which is itself a prerequisite for most of the other Oracle certifications in Java. The dashed lines and arrows in figure 1 depict the prerequisites for a certification.

As shown in figure 1, the Java certification tracks are offered under the categories Associate, Professional, Expert, and Master.

Associate	Professional	Expert	Master	
Java SE 7	Java SE 7		Java SE 6 Developer	Java SE
Java SE 5/6	Java SE 6/5			
Exam covered by book	Java EE 5 Web Component Developer	Java EE 6 Web Component Developer	Java EE 5 Enterprise Architect	
	Java EE 5 Business Component Developer	Java EE 6 Enterprise JavaBeans Developer		Java EE
	Java EE 5 Web Services Developer	Java EE 6 Web Services Developer		
		Java EE 6 Java Persistence API Developer		
		Java ME Mobile Application Developer		Java ME

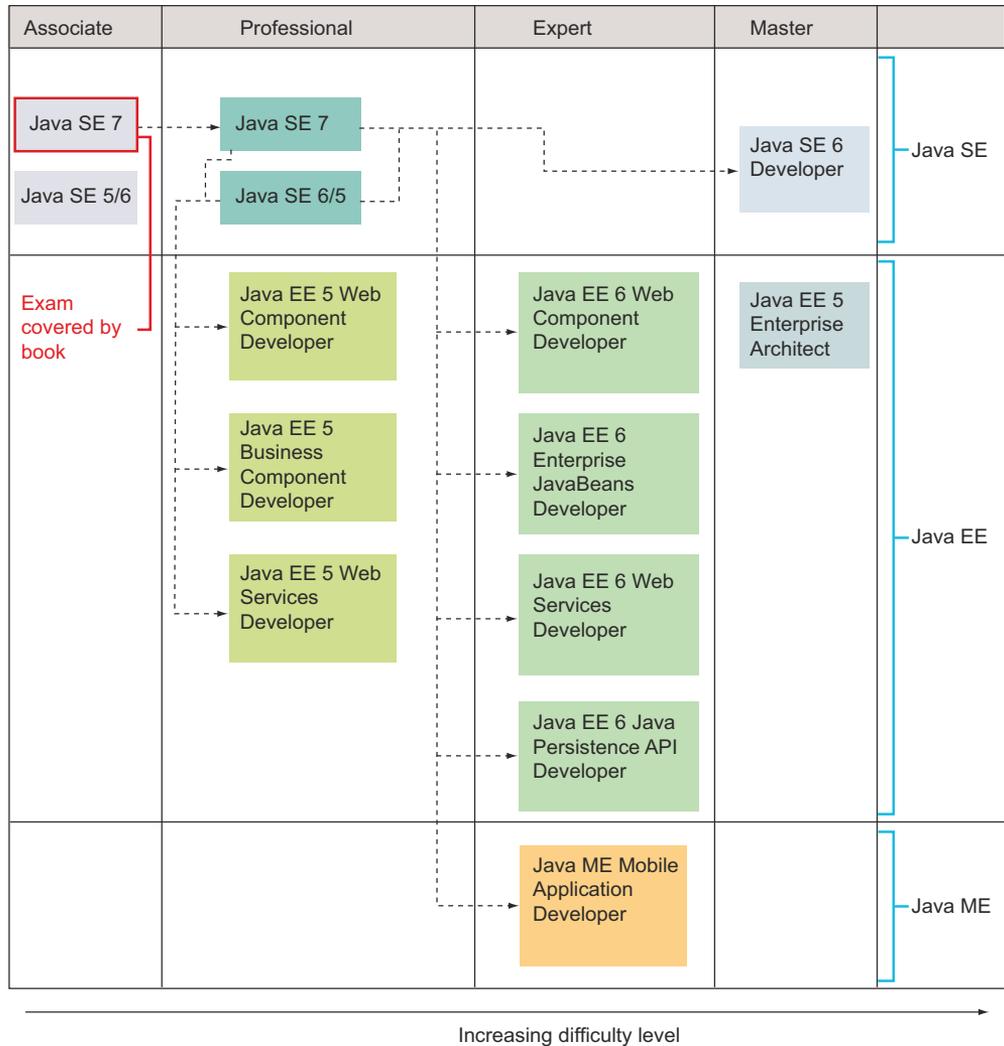Increasing difficulty level

Figure 1   OCA Java SE 7 Programmer certification is the entry-level certification in the Java certification roadmap. It's a prerequisite for the OCP Java SE 7 Programmer II exam (1Z0-804), which is a prerequisite for most of the other certifications in Java.

2.2   *Comparing OCA Java exam versions*

This section will clear up any confusion surrounding the different versions of the OCA Java exam. As of now, Oracle offers two versions of the OCA certification in Java:

- OCA Java SE 7 Programmer I (exam number: 1Z0-803)
- OCA Java SE 5/SE 6 (exam number: 1Z0-850)

These two exam versions are quite different as far target audience, total number of questions, passing score, and exam duration are concerned, as listed in table 2.

Table 2   Comparing exams: OCA Java SE 7 Programmer I and OCA Java SE 5/6

	OCA Java SE 7 Programmer I (1Z0-803)	OCA Java SE 5/SE 6 (1Z0-850)
Target audience	Java programmers	Java programmers and IT managers
Java version	Based on Java version 7	Based on Java version 5/6
Total number of questions	90	51
Exam duration	140 minutes	115 minutes
Passing score	77%	68%
Pricing	US$300	US$300

Figure 2 shows a detailed comparison of the exam objectives of OCA Java SE 5/6 (1Z0-850) and OCA Java SE 7 Programmer I (1Z0-803). It shows objectives that are exclusive to each of these exam versions and those that are common to both. The first column shows the objectives that are included only in OCA Java SE 5/6 (1Z0-850), the middle column shows common exam objectives, and the right column shows exam objectives covered only in OCA Java SE 7 Programmer I (1Z0-803).

2.3 *Comparing the OCA Java SE 7 Programmer I (1Z0-803) and OCP Java SE 7 Programmer II (1Z0-804) exams*

The confusion between these two exams is due to the similarity in their names, but these are two separate exams. Starting with Java 7, Oracle has raised the bar to earn the title of Oracle Certified Professional Java SE 7 Programmer, which now requires successfully completing the following two exams:

- OCA Java SE 7 Programmer I (exam number: 1Z0-803)
- OCP Java SE 7 Programmer II (exam number: 1Z0-804)

The OCP Java SE 7 Programmer certification is designed for individuals who possess advanced skills in the Java programming language. This certification covers comparatively advanced Java features, such as threads, concurrency, Java file I/O, inner classes, localization, and others.

2.4 *Complete exam objectives, mapped to book chapters, and readiness checklist*

Table 3 includes a complete list of exam objectives for the OCA Java SE 7 Programmer I exam, which was taken from Oracle's website. All the objectives are mapped to the book's chapters and the section numbers that cover them. You can also check your readiness to take the exam by selecting the appropriate stars. Here's the legend:

☆   Basic knowledge
☆☆   Intermediate (you can use it in code)
☆☆☆   Advanced (you can answer all questions about it)

OCA Java SE 5/6 1Z0-850	Common objectives	OCA Java SE 7 Programmer I 1Z0-803
Algorithm design and implementation • Algorithm • Pseudocode	**Java basics** • Variable scope • Structure of Java class • `import` and `package` statements • `main` method	
Working with Java data types		
• Enums	• Primitives, object references • Read/write to object fields • Call methods on objects • `String`s	• `StringBuilder`

Java development fundamentals
• Use of `javac` command
• Use of `java` command
• Purpose and type of classes in packages
    `java.awt`
    `javax.swing`
    `java.io`
    `java.net`
    `java.util`
	Operators and decision constructs
	• Java operators
	• `if` and `if-else` constructs
	• `switch` statement
		Parentheses to override operator precedence
		• Parentheses to override operator precedence
		• Test equality between `String` and other objects using`==` and `equals()`

	Creating and using arrays • One-dimensional arrays • Multidimensional arrays	• `ArrayList`
Java platforms and integration technologies • Compare and contrast J2SE, J2ME, J2EE • RMI • JDBC, SQL, RDMS • JNDI, messaging, and JMS	**Loop constructs** • `for` and enhanced `for` loops • `while` and `do-while` loops • `break` and `continue` statements	
Client technologies • HTML, JavaScript • J2ME MIDlets • Applets • Swing	**Methods and encapsulation** • Create methods with arguments and return types • Apply access modifiers • Effect on object references and primitives when they are passed to methods	**Methods and encapsulation** • Apply `static` keyword to methods and fields • Overloaded constructors and methods • Default and user-defined constructors
Server technologies • EJB, servlets, JSP, JMS, SMTP, JAX-RBC, WebServices, JavaMail • Servlet and JSP for HTML • EJB session, entity, and message-driven beans • Web tier, business tier, EIS tier	**Inheritance** • Implement inheritance • Polymorphism • Differentiate between type of a reference variable and object • Use abstract classes and interfaces	**Inheritance** • Determine when casting is necessary • Use `super` and `this` to access objects and constructors
OOP concepts • UML diagrams • Association • Composition • Association navigation		**Handling exceptions** • Exceptions and errors • `try-catch` blocks • Use of exceptions • Methods that throw exceptions • Common exception classes and categories

Figure 2   Comparing objectives of exams OCA Java SE 5/6 and OCA Java SE 7 Programmer I

Table 3   Exam objectives and subobjectives mapped to chapter and section numbers, with readiness score

	Exam objectives	Covered in chapter/section	Your readiness score
1	**Java basics**	**Chapters 1 and 3**	
1.1	Define the scope of variables	Section 3.1	☆☆☆
1.2	Define the structure of a Java class	Section 1.1	☆☆☆
1.3	Create executable Java applications with a main method	Section 1.2	☆☆☆
1.4	Import other Java packages to make them accessible in your code	Section 1.3	☆☆☆
2	**Working with Java data types**	**Chapters 2, 3, and 4**	
2.1	Declare and initialize variables	Sections 2.1 and 2.3	☆☆☆
2.2	Differentiate between object reference variables and primitive variables	Sections 2.1 and 2.3	☆☆☆
2.3	Read or write to object fields	Section 3.6	☆☆☆
2.4	Explain an object's life cycle	Section 3.2	☆☆☆
2.5	Call methods on objects	Section 3.6	☆☆☆
2.6	Manipulate data using the `String-Builder` class and its methods	Section 4.2	☆☆☆
2.7	Create and manipulate strings	Section 4.1	☆☆☆
3	**Using operators and decision constructs**	**Chapters 2, 4, and 5**	
3.1	Use Java operators	Section 2.4	☆☆☆
3.2	Use parentheses to override operator precedence	Section 2.4	☆☆☆
3.3	Test equality between strings and other objects using `==` and `equals()`	Section 4.1	☆☆☆
3.4	Create `if` and `if-else` constructs	Section 5.1	☆☆☆
3.5	Use a `switch` statement	Section 5.2	☆☆☆
4	**Creating and using arrays**	**Chapter 4**	
4.1	Declare, instantiate, initialize, and use a one-dimensional array	Section 4.3	☆☆☆
4.2	Declare, instantiate, initialize, and use a multidimensional array	Section 4.3	☆☆☆
4.3	Declare and use an `ArrayList`	Section 4.4	☆☆☆

Table 3   Exam objectives and subobjectives mapped to chapter and section numbers, with readiness score *(continued)*

	Exam objectives	Covered in chapter/section	Your readiness score
5	**Using loop constructs**	**Chapter 5**	
5.1	Create and use `while` loops	Section 5.5	☆☆☆
5.2	Create and use `for` loops, including the enhanced `for` loop	Sections 5.3 and 5.4	☆☆☆
5.3	Create and use `do-while` loops	Section 5.5	☆☆☆
5.4	Compare loop constructs	Section 5.6	☆☆☆
5.5	Use `break` and `continue`	Section 5.7	☆☆☆
6	**Working with methods and encapsulation**	**Chapters 1 and 3**	
6.1	Create methods with arguments and return values	Section 3.3	☆☆☆
6.2	Apply the `static` keyword to methods and fields	Section 1.5	☆☆☆
6.3	Create an overloaded method	Section 3.4	☆☆☆
6.4	Differentiate between default and user-defined constructors	Section 3.5	☆☆☆
6.5	Create and overload constructors	Section 3.5	☆☆☆
6.6	Apply access modifiers	Section 1.4	☆☆☆
6.7	Apply encapsulation principles to a class	Section 3.7	☆☆☆
6.8	Determine the effect upon object references and primitive values when they are passed into methods that change the values	Section 3.8	☆☆☆
7	**Working with inheritance**	**Chapters 1 and 6**	
7.1	Implement inheritance	Section 6.1	☆☆☆
7.2	Develop code that demonstrates the use of polymorphism	Section 6.6	☆☆☆
7.3	Differentiate between the type of a reference and the type of an object	Section 6.3	☆☆☆
7.4	Determine when casting is necessary	Section 6.4	☆☆☆
7.5	Use `super` and `this` to access objects and constructors	Section 6.5	☆☆☆
7.6	Use abstract classes and interfaces	Sections 1.5, 6.2, and 6.6	☆☆☆

Table 3   Exam objectives and subobjectives mapped to chapter and section numbers, with readiness score *(continued)*

	Exam objectives	**Covered in chapter/section**	**Your readiness score**
8	**Handling exceptions**	**Chapter 7**	
8.1	Differentiate among checked exceptions, `RuntimeExceptions`, and `Errors`	Section 7.3	☆☆☆
8.2	Create a `try-catch` block and determine how exceptions alter normal program flow	Section 7.2	☆☆☆
8.3	Describe what exceptions are used for in Java	Section 7.1	☆☆☆
8.4	Invoke a method that throws an exception	Section 7.2	☆☆☆
8.5	Recognize common exception classes and categories	Section 7.4	☆☆☆

When you are ready to take the exam, you should ideally be able to select three stars for each item in the table. But let's define a better way to evaluate your exam readiness. Once you have marked all the stars in the previous chart, calculate your total points using the following values:

☆   1 point
☆☆   2 points
☆☆☆   4 points

As the maximum number of points is 172 (43 objectives × 4), a score in the range of 150–172 is considered a good score.

You can download a PDF version of the form from the book's web page at http://manning.com/gupta/ if you wish to mark yourself more than once.

3 *FAQs*

You might be anxious when you start your exam preparation or even think about getting certified. This section can help calm your nerves by answering frequently asked questions on exam preparation and on writing the exam.

3.1 *FAQs on exam preparation*

This sections answers frequently asked questions on how to prepare for the exam, including the best approach, study material, preparation duration, how to test self-readiness, and more.

WILL THE EXAM DETAILS EVER CHANGE FOR THE OCA JAVA SE 7 PROGRAMMER I EXAM?

Oracle can change the exam details for a certification even after the certification is made live. The changes can be to the exam objectives, pricing, exam duration, exam questions, and other parts. In the past, Oracle has made similar changes to certification

exams. Such changes may not be major, but it is always advisable to check Oracle's website for the latest exam information when you start your exam preparation.

WHAT IS THE BEST WAY TO PREPARE FOR THIS EXAM?

At the time of writing this book, there weren't many resources available to prepare for this exam. Apart from this book, Oracle offers an online course on this exam.

Generally, candidates use a combination of resources, such as books, online study materials, articles on the exam, free and paid mock exams, and training to prepare for the exam. Different combinations work best for different people, and there is no one perfect formula to prepare. Depending on whether training or self-study works best for you, you can select the method that is most appropriate for you. Combine it with a lot of code practice and mock exams.

HOW DO I KNOW WHEN I AM READY FOR THE EXAM?

You can be sure about your exam readiness by *consistently* getting a good score in the mock exams. Generally, a score of 80% and above in approximately seven mock exams (the more the better) attempted consecutively will assure you of a similar score in the real exam. You can also test your exam readiness using table 3. This table contains exam objectives and subobjectives with multiple stars representing different levels of expertise.

HOW MANY MOCK TESTS SHOULD I ATTEMPT BEFORE THE REAL EXAM?

Ideally, you should attempt at least 10 mock exams before you attempt the real exam. The more the better!

I HAVE TWO YEARS' EXPERIENCE WORKING WITH JAVA. DO I STILL NEED TO PREPARE FOR THIS CERTIFICATION?

It is important to understand that there is a difference between the practical knowledge of having worked with Java and the knowledge required to pass this certification exam. The authors of the Java certification exams employ multiple tricks to test your knowledge. Hence, you need a structured preparation and approach to succeed in the certification exam.

WHAT IS THE IDEAL TIME REQUIRED TO PREPARE FOR THE EXAM?

The preparation time frame mainly depends on your experience with Java and the amount of time that you can spend to prepare yourself. On average, you will require approximately 150 hours of study over two or three months to prepare for this exam. Again, the number of study hours required depends on individual learning curves and backgrounds.

It's important to be consistent with your exam preparation. You cannot study for a month and then restart after, say, a gap of a month or more.

DOES THIS EXAM INCLUDE ANY UNSCORED QUESTIONS?

A few of the questions that you write in any Oracle exam may be marked unscored. Oracle's policy states that while writing an exam, you won't be informed whether a question will be scored. You may be surprised to learn that as many as 10 questions out of the 90 questions in the OCA Java SE 7 Programmer I exam may be unscored. Even if you answer a few questions incorrectly, you stand a chance of scoring 100%.

Oracle regularly updates its question bank for all its certification exams. These unscored questions may be used for research and to evaluate new questions that can be added to an exam.

CAN I START MY EXAM PREPARATION WITH THE MOCK EXAMS?

If you are quite comfortable with the Java language features, then yes, you can start your exam preparation with the mock exams. This will also help you to understand the types of questions to expect in the real certification exam. But if you have little or no experience working with Java, or if you are not quite comfortable with the language features of Java, I don't advise you to start with the mock exams. The exam authors often use a lot of tricks to evaluate a candidate in the real certification exam. Starting your exam preparation with mock exams will only leave you confused about the Java concepts.

SHOULD I REALLY BOTHER GETTING CERTIFIED?

Yes, you should, for the simple reason that employers bother about the certification of employees. Organizations prefer a certified Java developer over a noncertified Java developer with similar IT skills and experience. The certification can also get you a higher paycheck than uncertified peers with comparable skills.

3.2   *FAQs on taking the exam*

This section contains a list of frequently asked questions related to the exam registration, exam coupon, do's and don'ts while taking the exam, and exam retakes.

WHERE AND HOW DO I WRITE THIS EXAM?

You can write this exam at an Oracle Testing Center or Pearson VUE Authorized Testing Center. To sit for the exam, you must register for the exam and purchase an exam voucher. The following options are available:

- Register for the exam and pay Pearson VUE directly.
- Purchase an exam voucher from Oracle and register at Pearson VUE to take the exam.
- Register at an Oracle Testing Center.

Look for the nearest testing centers in your area, register yourself, and schedule an exam date and time. Most of the popular computer training institutes also have a testing center on their premises. You can locate a Pearson VUE testing site at www.pearsonvue .com/oracle/, which contains detailed information on locating testing centers and scheduling or rescheduling an exam. At the time of registration, you'll need to provide the following details along with your name, address, and contact numbers:

- Exam title and number (OCA Java SE 7 Programmer I, 1Z0-803)
- Any discount code that should be applied during registration
- Oracle Testing ID/Candidate ID, if you have written any other Oracle/Sun certification exam
- Your OPN Company ID (if your employer is in the Oracle Partner Network, you can find out the company ID and use any available discounts on the exam fee)

HOW LONG IS THE EXAM COUPON VALID FOR?

Each exam coupon is printed with an expiry date. Beware of any discounted coupons that come with an assurance that they can be used past the expiration date.

CAN I REFER TO NOTES OR BOOKS WHILE WRITING THIS EXAM?

You can't refer to any books or notes while writing this exam. You are not allowed to carry any blank paper for rough work or even your mobile phone inside the testing cubicle.

WHAT IS THE PURPOSE OF MARKING A QUESTION WHILE WRITING THE EXAM?

By marking a question, you can manage your time efficiently. Don't spend a lot of time on a single question. You can mark a difficult question to defer answering it while writing your exam. The exam gives you an option to review answers to the marked questions at the end of the exam. Also, navigating from one question to another using the Back and Next buttons is usually time consuming. If you are unsure of an answer, mark it and review it at the end.

CAN I WRITE DOWN THE EXAM QUESTIONS AND BRING THEM BACK WITH ME?

No. The exam centers no longer provide sheets of paper for the rough work that you may need to do while taking the exam. The testing center will provide you with either erasable or nonerasable boards. If you're provided with a nonerasable board, you may request another one if you need it.

Oracle is quite particular about certification candidates distributing or circulating the memorized questions in any form. If Oracle finds out that this is happening, it may cancel a candidate's certificate, bar that candidate forever from writing any Oracle certification, inform the employer, or take legal action.

WHAT HAPPENS IF I COMPLETE THE EXAM BEFORE OR AFTER THE TOTAL TIME?

If you complete the exam before the total exam time has elapsed, revise your answers and click the Submit or Finish button. The screen will display your score within 10 seconds of clicking the Submit button!

If you have not clicked the Submit button and you use up all the exam time, the exam engine will no longer allow you to modify any of the exam answers and will present the screen with the Submit button.

WILL I RECEIVE MY SCORE IMMEDIATELY AFTER THE EXAM?

Yes, you will. When you click the Submit button, the screen will show your total score. It will also show what you scored on each objective. The testing center will also give you hard copies of your certification score. The certificate itself will arrive via post within six to eight weeks.

WHAT HAPPENS IF I FAIL? CAN I RETAKE THE EXAM?

It's not the end of the world. Don't worry if you fail. You can retake the exam after 14 days (and the world will not know it's a retake).

However, you cannot retake a passed exam to improve your score. Also, you cannot retake a beta exam.

4   *The testing engine used in the exam*

The user interface of the testing engine used for the certification exam is quite simple. (You could even call it primitive, compared to today's web, desktop, and smartphone applications.)

Before you can start the exam, you will be required to accept the terms and conditions of the Oracle Certification Candidate Agreement. Your computer screen will display all these conditions and give you an option to accept the conditions. You can proceed with writing the exam only if you accept these conditions.

Here are the features of the testing engine used by Oracle:

- *Engine UI is divided into three sections*—The UI of the testing engine is divided into the following three segments:
  - *Static upper section*—Displays question number, time remaining, and a checkbox to mark a question for review.
  - *Scrollable middle section*—Displays the question text and the answer options.
  - *Static bottom section*—Displays buttons to display the previous question, display the next question, end the exam, and review marked questions.
- *Each question is displayed on a separate screen*—The exam engine displays one question on the screen at a time. It does not display multiple questions on a single screen, like a scrollable web page. All effort is made to display the complete question and answer options without scrolling, or with little scrolling.
- *Code Exhibit button*—Many questions include code. Such questions, together with their answers, may require significant scrolling to be viewed. As this can be quite inconvenient, such questions include a Code Exhibit button that displays the code in a separate window.
- *Mark questions to be reviewed*—The question screen displays a checkbox with the text "Mark for review" at the top-left corner. A question can be marked using this option. The marked questions can be quickly reviewed at the end of the exam.
- *Buttons to display the previous and next questions*—The test includes buttons to display the previous and next questions within the bottom section of the testing engine.
- *Buttons to end the exam and review marked questions*—The engine displays buttons to end the exam and to review the marked questions in the bottom section of the testing engine.
- *Remaining time*—The engine displays the time remaining for the exam at the top right of the screen.
- *Question number*—Each question displays its serial number.
- *Correct number of answer options*—Each question displays the correct number of options that should be selected from multiple options.

On behalf of all at Manning Publications, I wish you good luck and hope that you score very well on your exam.

JAVA CERTIFICATION

OCA Java SE 7
Programmer I Certification Guide
Mala Gupta

To earn the OCA Java SE 7 Programmer Certification, you need to know your Java inside and out, and to pass the exam it's good to understand the test itself. This book cracks open the questions, exercises, and expectations you'll face on the OCA exam so you'll be ready and confident on test day.

OCA Java SE 7 Programmer I Certification Guide is a comprehensive guide to the 1Z0-803 exam. You'll explore important Java topics as you systematically learn what is required. Each chapter starts with a list of exam objectives, followed by sample questions and exercises designed to reinforce key concepts. It provides multiple ways to digest important techniques and concepts, including analogies, diagrams, flowcharts, and lots of well-commented code.

What's Inside

- Covers all exam topics
- Hands-on coding exercises
- How to avoid built-in traps and pitfalls

Written for developers with a working knowledge of Java who want to earn the OCA Java SE 7 Programmer I Certification.

Mala Gupta has been training programmers to pass Java certification exams since 2006. She holds OCA Java SE7 Programmer I, SCWCD, and SCJP certifications.

To download their free eBook in PDF, ePub, and Kindle formats, owners of this book should visit manning.com/OCAJavaSE7ProgrammerICertificationGuide

Free eBook
SEE INSERT

> "The author knows her stuff and is a great teacher of Java."
> —From the Foreword by Jeanne Boyarsky, CodeRanch

> "Filled with cool illustrations and neat code examples, this book packs a punch!"
> —Ashwin Mhatre Midasis Technologies

> "A very instructive study guide, with a bunch of sample questions and explanations included!"
> —Roel De Nijs, Javaroe

> "Excellent breakdown of the exam objectives."
> —Michael Piscatello MBP Enterprises, LLC

MANNING $49.99 / Can $52.99 [INCLUDING eBook]