Complete Java 2 Certification Study Guide

Java 2 认证考试学习指南

（英文原版）

Simon Roberts
〔美〕 Philip Heller 著
Michael Ernest

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For my children, Emily and Bethan
—Simon

To Virginia, Karen, and Dave: friends who have supported my creativity.
—Philip

For Becky Day
—Michael

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—Simon Roberts

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—Philip Heller

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—Michael Ernest

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Preface to the Second Edition

For a while it didn't seem to be moving at all, and I wondered if it ever would. Then it moved forward a few steps, wobbly but at least making progress. Then it was definitely on the move, and then it took off. It rose, stabilized, and soared.

As a matter of fact, I'm not talking about Java certification. I'm talking about a bird I can see through my office window. I mention the bird because one way to introduce a subject is to introduce something else to get people's attention, and then slyly switch over to what you're supposed to be talking about.

As a matter of fact, Java certification has acted a lot like that bird. It started slowly, finally took off, and now it has reached a really impressive height. I can't give you specific numbers, because for now Sun is treating all statistics regarding certification as confidential. I can't tell you how many people are taking the various exams, or what fraction of those people are passing. But if I can't give you hard numbers, I can still give you anecdotal evidence that indicates the growth of interest in Java certification.

First, sales of the previous edition of this book have been, well, gratifying. The other authors and I would like to express our sincere gratitude to all the readers who have previously bought the book, read it, and used it to gain their certification.

Second, other publishers are deciding that Java certification is big enough that they ought to get in the game. We have even seen at least one book that is as close as one can legally come to being a shameless imitation of ours. The sincerest form of flattery! We still believe we can give you the best information, because we designed the Programmer's and Developer's exams, and continue to maintain them.

Third, attendance at my "Fast-Track Java Platform Certification" seminar is growing by leaps and bounds... or, to continue the bird metaphor, it's growing by flaps and surges.

The fourth bit of evidence is a program that was announced at the June 1999 JavaOne conference. Four impressive companies joined with Sun in an initiative to endorse Java certification. The four companies are IBM, Oracle, Novell, and Netscape. The endorsements took the form of action, not just words and press releases. You can read about the details of this initiative in Appendix D, "The Certification Initiative for Enterprise Development." The big idea is that these companies, along with Sun, are throwing their considerable weight behind the proposition that people who claim to know how to program in Java should be able to prove it. This is in marked contrast to a hiring philosophy that was prevalent a few years ago, and has been rapidly losing popularity. The old hiring criterion was to see if the candidate's resume said "Java" on it somewhere. If the candidate passed this test, a cold mirror was held just in front of the candidate's mouth for a count of thirty seconds. Misty condensation on the mirror meant "hire;" no condensation meant "don't hire, this one isn't breathing." The test was every bit as reliable as a dowser's wand or a groundhog's shadow; friends in the medical profession assure me that even a person in a coma can still fog a mirror. But they can't write good code, no matter what anyone else says, and the five companies of the certification initiative are out to replace the mirror test with a much more difficult exam.

Finally, there is the attention that Sun has been paying to certification. They must know something we don't. The exam was completely rewritten in the middle of 2000. There has been no change to the style, depth, or balance of the questions; the only difference is that there is a whole new set of questions.

More than ever, *much* more than ever, Java certification is important.

What's New in This Edition?

We have kept the basic organization of the original book, but we have gone over the content of this book with a fine tooth comb. And we have added some new material that we think you're really going to like:

- We added a 50-question "Programmer's Final Exam." If you pass it, you are good and ready.
- We added 150 brand new questions to the tester on the CD-ROM.
- We greatly expanded our coverage of the Developer's Exam.
- We added a reference section on the certification alliance mentioned above.

Everybody who worked on this edition is extremely pleased with how it came out. We hope you enjoy reading it, enjoy taking the exams, greatly enjoy being told that you have passed, and boundlessly enjoy the career freedom that certification brings.

Philip Heller
September 2000
Mountain View, California

Introduction

Hello! Come in, sit down, and make yourself at home. Please get comfortable; there are a lot of topics to cover in this book.

You have come here because you are ready. Ready to *get* ready, at least, which is practically the same thing. Now all that's left to do is the work.

And there is a lot of work to be done. Probably you heard that the 1.1 version of the exam was difficult. That was true; the Java 2 version is harder still, since it covers a few more topics. Not everybody passes—even on repeated attempts. We want to change these statistics. It wouldn't hurt to get a little help—and we're the ones to help.

Since this is, after all, the Introduction, allow us to introduce ourselves: Simon, Mike, and Phil. We are Java instructors by day, and by night we write. What we teach (by day) are Java courses. When the 1.1 edition of this book was published, we wrote that among us we had taught Java to more than 1,000 people. By now the number is well into the thousands. We have been through our own certification process for instructors, and Sun trusts us to teach people the Java facts that Sun considers important. Recently, Simon has been developing new course material; Phil now teaches a two-day exam-preparation seminar. We want you to know all this because we want to be the ones you choose to help you pass the Certification Exam. We want you to know our credentials.

What we write (by night) are Java books. (Phil keeps talking about finishing his novel this year; we will just have to wait and see.) We wrote the *Java 1.1 Developer's Handbook* (Sybex, 1997) and we contributed to *Mastering Java 1.1* (Sybex, 1997). Then we wrote the *Java 1.1 Certification Study Guide*. Later, Sun released Java 2, so we rewrote everything. And now here we are, presenting the latest Java 2 version of the *Certification Study Guide*.

We thought we were the best team to write this book. Simon led the team that wrote all of the questions for the exam. Phil was a consultant for developing the exam and is one of the graders for the Developer's Exam, so he also has the inside view of things. And Mike, who wrote the chapters about the Developer's Exam, has been on the front lines of Java instruction for years.

Simon's unique position at Sun places a few restrictions on us. We can't give away any answers to the questions on the exam. (We wouldn't want to do that anyway; we want you to pass because you're good at Java, not because we slipped you a crib.) We had to make sure that the sample questions did not accidentally match any of the real test questions. It took a bit more work, but we think the benefit to you is tremendous: Everything in this book is here for a very good reason. If it's here, then it's here because we know you need to know about it. We understand that buying a book like this costs you money, reading it costs you time, and absorbing it costs you effort. We appreciate your investment, and we believe it will pay off.

If you read this book, absorb it, solve the practice questions at the end of each chapter, and work through the practice exam on the CD-ROM, you will be in the best possible position when you walk through the doors of your local testing center.

Let's just take care of a few standard formalities and then we can really get started.

Taking the Exam

You can take the Java Certification Exam whenever you like, by making an appointment with Sun Educational Services. Sun contracts with third-party test centers throughout the world, so hopefully you won't have to travel far. The cost of taking the exam is $150.

NOTE The U.S. telephone number for Sun Educational Services is (800) 422-8020; their URL is http://suned.sun.com. From there it will be easy to find the links you need. We hesitate to give more detailed instructions, because the site changes fairly often.

You can make an appointment for any time during regular business hours. When you make the appointment, ask how much time you will have. This is subject to change; on average, you'll be given two minutes per question. You will not be allowed to bring food or personal belongings into the test area. One piece of scratch paper is permitted; you will not be allowed to keep it after you have finished the exam. (See the end of Chapter 9, "Layout Managers," for a suggestion about how to use the scratch paper.) Most sites have security cameras.

You will be escorted to a cubicle containing a PC. The exam program will present you with randomly selected questions. Navigation buttons take you to the next or previous question for review and checking. When you have finished the test, the program will immediately present you with your score and a pass/fail indication. You will also be given feedback that indicates how well you performed in each of the dozen or so categories of the objectives. You will not be told which particular questions you got right or wrong.

Formalities of the Exam

There are no trick questions on the exam, but every question requires careful thought. The wording of the questions is highly precise; the exam has been reviewed not just by Java experts, but also by language experts whose task was to eliminate any possible ambiguity. All you have to worry about is knowing Java; your score will not depend on your ability to second-guess the examiners.

It is not a good idea to try to second-guess the question layout. For example, do not be biased toward answer C simply because C has not come up recently. The questions are taken from a pool and presented to you in a random order, so it is entirely possible to get a run of a particular option; it is also possible to get the answers neatly spread out.

Most of the questions are multiple choice. Of these, some have a single answer while others require you to select all the appropriate responses. The graphical user interface of the test system indicates which kind of answer you should supply. If a question only has one correct answer, you will be presented with radio buttons, so that selecting a second answer cancels the selection of a previous answer. With this kind of question, you have to select the most appropriate answer. If, on the other hand, you are presented with check boxes, then you may need to make more than one selection, so every possible answer has to be considered on its own merits—not weighed against the others.

You should be aware that where multiple answers are possible, you are being asked to make a decision about each answer, rather as though the question were five individual true/false questions. This requires more effort and understanding from you, because you have to get all the pieces correct. Fortunately, such questions will state how many correct answers there are. Think carefully, and always base your answer on your knowledge of Java.

The short-answer, type-in questions often cause undue concern. How are they marked? What happens if you omit a semicolon? These worries can stem from the knowledge that the questions are marked electronically and the belief that an answer might be marked wrong simply because the machine didn't have the sense to recognize a good variation of what it was programmed to accept.

As with all exam questions, you should be careful to answer precisely what is asked. However, you should also be aware that the system does accept a variety of different answers; it has been set up with all the variations that the examination panel considered to be reasonable.

Some of the type-in questions *do*, however, provide specific instructions concerning the format of the answer. Take this guidance seriously. If, for example, a question says, "Answer in the form methodname()," then your answer should be

```
method()
```

and not any of

```
object.method()
method();
method(a, b)
method
```

Some of the other answers might well be accepted, but programming is a precision job and you should be accustomed to following precise directions.

The test is taken using a windowed interface that can be driven almost entirely with the mouse. Many of the screens require scrolling; the scroll bar is on the right side of the screen. Always check the scroll bar so you can be sure you have read a question in its entirety. It would be a shame to get a question wrong because you didn't realize you needed to scroll down a few lines.

The exam contains about 60 questions. On average, this gives you a little more than two minutes per question. Some of the questions are easier than others, and undoubtedly there will be some that you can answer faster than others. However, you really do need to answer all the questions if you possibly can. The test system allows you to review your work after you reach the end. The system will explicitly direct your attention toward any multiple-choice questions that have no items selected. So if you find a particular question difficult, consider moving on and coming back to it later.

If you pass, you will be given a temporary certificate. A few weeks later you will receive by mail a permanent certificate, along with instructions for downloading an artwork sheet. The artwork shows the "Sun Certified Programmer for the Java™ 2 Platform" logo. By passing the exam (and signing an online license agreement), you have earned the right to display the logo. Printers know how to reproduce the artwork onto business cards, stationery, and so on. The lettering is legible (just barely, by people who eat carrots) down to a reduction of about 5/8" wide by 3/8" high.

Conventions Used in This Book

This book uses a number of conventions to present information in as readable a manner as possible. Tips, Notes, and Warnings, shown below, appear from time to time in the text in order to call attention to specific highlights.

TIP

This is a Tip. Tips contain specific programming information.

NOTE

This is a Note. Notes contain important side discussions.

WARNING

This is a Warning. Warnings call attention to bugs, design omissions, and other trouble spots.

This book takes advantage of several font styles. **Bold font** in text indicates something that the user types. A `monospaced font` is used for code, output, URLs, and file and directory names. A *`monospaced italic font`* is used for code variables mentioned in text.

These style conventions are intended to facilitate your learning experience with this book—in other words, to increase your chances of passing the exam.

Let's begin.

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