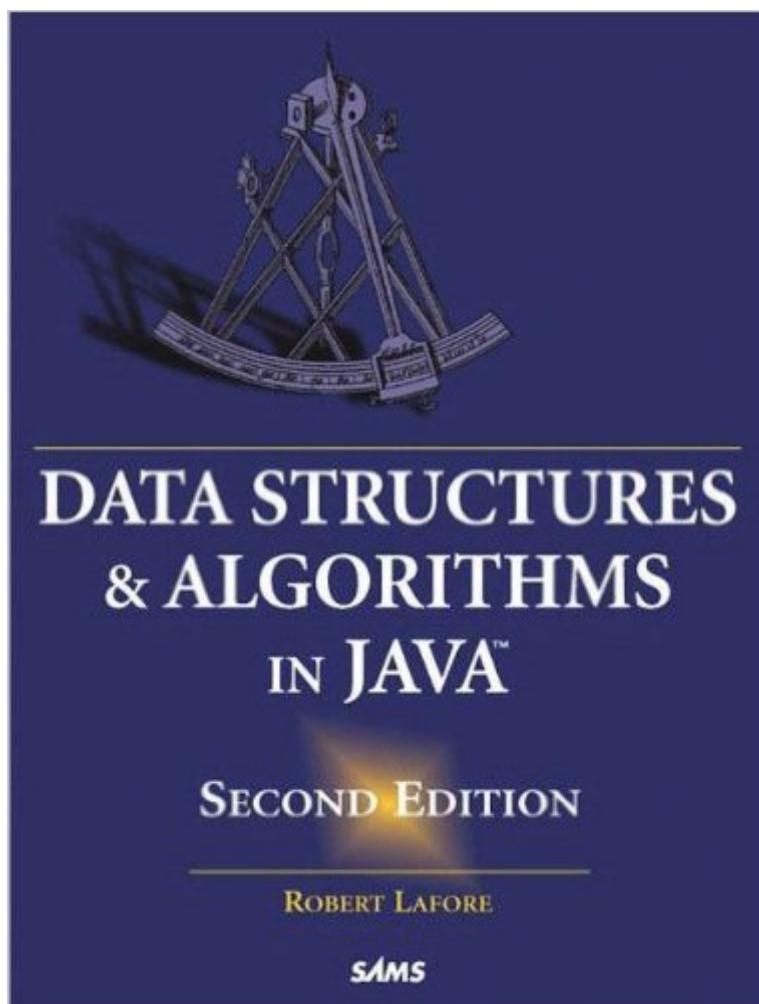


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# Data Structures And Algorithms In Java (2nd Edition)



## **Synopsis**

Data Structures and Algorithms in Java, Second Edition is designed to be easy to read and understand although the topic itself is complicated. Algorithms are the procedures that software programs use to manipulate data structures. Besides clear and simple example programs, the author includes a workshop as a small demonstration program executable on a Web browser. The programs demonstrate in graphical form what data structures look like and how they operate. In the second edition, the program is rewritten to improve operation and clarify the algorithms, the example programs are revised to work with the latest version of the Java JDK, and questions and exercises will be added at the end of each chapter making the book even more useful. Educational Supplement Suggested solutions to the programming projects found at the end of each chapter are made available to instructors at recognized educational institutions. This educational supplement can be found at [www.prenhall.com](http://www.prenhall.com), in the Instructor Resource Center.

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## **Customer Reviews**

"Data Structures and Algorithms in Java, Second Edition" is designed to be easy to read and understand although the topic itself is complicated. Algorithms are the procedures that software programs use to manipulate data structures. Besides clear and simple example programs, the author includes a workshop as a small demonstration program executable on a Web browser. The programs demonstrate in graphical form what data structures look like and how they operate. In the second edition, the program is rewritten to improve operation and clarify the algorithms, the example

programs are revised to work with the latest version of the Java JDK, and questions and exercises will be added at the end of each chapter making the book even more useful. Educational Supplement Suggested solutions to the programming projects found at the end of each chapter are made available to instructors at recognized educational institutions. This educational supplement can be found at [www.prenhall.com](http://www.prenhall.com), in the Instructor Resource Center.

Robert Lafore has degrees in Electrical Engineering and Mathematics, has worked as a systems analyst for the Lawrence Berkeley Laboratory, founded his own software company, and is a best-selling writer in the field of computer programming. Some of his current titles are C++ Interactive Course and Object-Oriented Programming in C++. Earlier best-selling titles include Assembly Language Primer for the IBM PC and XT and (back at the beginning of the computer revolution) Soul of CP/M.

As someone who does not come from a computer science background but works as a software engineer, I've had learning data structures and algorithms on my bucket list for quite some time. Working within the Ruby on Rails and SQL worlds has had me heavily shielded from the ideas and concepts of DS&A. My primary goal was to learn enough to pass the stereotypical Google//Microsoft/Yahoo coding exam as well as conduct a similar engineering interview from the opposite end of the table. Since textbooks are my preferred way of learning, I set out in search of the DS&A book that would allow me to reach that goal. Most guru lists will tell you that "Introduction to Algorithms" aka "CLRS" is the book to buy in this field. I would strongly disagree with this notion unless the reader is already very savvy in DS&A as well as mathematics. From my experience interviewing dozens of engineers over the last few months, a very small percentage of engineers are actually at that level. Similar lists recommend Skiena's book as an alternative to CLRS since it is slightly more accessible. Although I didn't look at Skiena's book as thoroughly as I did CLRS, it didn't seem to be much more beginner friendly. I initially ended up buying the "DS&A Made Easy" book--the reviews were good, the pages available via preview looked good, the book focused on DS&A from an interview perspective rather than mathematical proofs, and I also liked the author's stated approach (get something working, even if it's terribly inefficient...then work on efficiency). Then the book came in the mail. After a week of browsing through the text, I actually threw the book in the trash. The English was bad, the code examples weren't well written, and there was a lot of hand waving where there shouldn't have been. Then I found LaFore. His writing is extremely clear and never pretentious. The order in which he tackles DS&A topics is much more logical than the

other texts I've seen. The Java code in each of the in-chapter exercises works perfectly. The charts and drawings are very helpful. The author knows exactly how far to take the discussion so that the reader is learning a concept thoroughly but not being beaten over the head with it or taken too far down the rabbit hole. I became more comfortable with the Java language itself working through the coding problems in this book than I did using a pure "Learn Java"-type book in the past. I read this book cover to cover over the course of a few months and can't say enough good things about it. No longer are DS&A intimidating to me. The chapters are as follows:

- 1 Overview
- 2 Arrays
- 3 Simple Sorting
- 4 Stack and Queues
- 5 Linked Lists
- 6 Recursion
- 7 Advanced Sorting
- 8 Binary Trees
- 9 Red-Black Trees
- 10 2-3-4 Trees
- 11 Hash Tables
- 12 Heaps
- 13 Graphs
- 14 Weighted Graphs
- 15 When to Use What

For me, the most difficult subjects by far were recursion and red-black trees. In fact, unlike any of the other topics listed above, coding a red-black tree is beyond the scope of this book. In summary, this book may be the best technical text I have ever read (and I usually read 3-4 per year). I've read a handful of technical textbooks that were about simpler topics, were more complex reads, and I would still consider them good to great books. In fact, LaFore's DS&A book is so exceptional that I even considered buying his 11 year old C++ book to learn C++, even though learning C++ isn't on my bucket list. My recommendation list for DS&A related works is as follows:

- If you are a DS&A beginner, choose LaFore's DS&A in Java book (most people fall into this category).
- If you are looking for more formal technical interview prep, buy one of Gayle Laakman's books as a companion piece. Laakman's works typically don't teach you DS&A themselves but prepare you for how you'll typically see them in an interview.
- If you are already very strong in DS&A and are looking for something beyond what you'd see in a typical technical interview, look into CLRS, Skiena, Sedgewick (who LaFore strongly recommends for further reading) or if you're really an expert--(gulp) Donald Knuth.

This book exceeded my expectations. It is very well written and easy to pick up on the concepts of even the more complex data structures. The chapters are laid out in a progressive manner so that the simple ones are explained, the downfalls shown, and then the next chapter explains a solution to it. I really like the problem-solution orientation. You will get more than programming knowledge from this book. There are problem solving skills involved. The Stream API takes care a lot of these details in Java, but understanding how they actually work will make your use of it that much better.

This is the book that will teach one the fundamentals of data structures in such a way that even people with little programming experience can follow through and understand. It also launches one

into the proper settings for developing algorithms through thinking about efficiency. My recommendation would be to study this book first before any advanced algorithms book. It's easy to read and understand. Also try to do the review questions and the programming projects as they help to reinforce the topics discussed.

Easily the best introduction book for learning Data Structures and Algorithms. While there are superior books about DS&A, most of them require a deeper knowledge of general Computer Science and Discrete Mathematics to really grok. I found Mr. Lafore's book gets the point across in a manner that allows a developer to effectively use DS&A's without all the ceremony. I read this book ahead of taking formal classes in Data Structures and Algorithms and made these courses a breeze.

Absolute must read for software developers that do not have a CS undergrad. You won't learn everything you should know, but you'll get a good start and will get an idea of what you should read and learn next. This book is easy to read, has good examples, and is way more approachable than the free PDFs that can be found.

I have never attended Computer Science classes at a university level. For a long time, I never felt that I've been left out of something mythical. As the time passed I became more and more addicted to continuous improvement, and eventually I stumbled upon job interviews that were requiring basic knowledge of common algorithms like quicksort, or answers to questions like what a heap was. So I bought the book and now I'm through a successful job interview where I could show off my recursive graph theory knowledge. And I learned it from this book. The language is straight-forward with down-to-earth examples and code. The applets provided to help the understanding clearly achieve this goal. It's a 5/5.

This is a gentle introduction to data structure for absolute beginners who only have a little bit background in programming. There's no math rigor at all, and materials covered are pretty basic. The code in the book isn't that bad compared with many other DS&A books, there are some minor errors but the readability is pretty decent, most of the time you don't have to make great efforts to decipher the code. If all you want is some basic ideas about data structure and you can't wait to get started by implementing them in Java code, this book is a great start. However, for more advanced topics and rigorous math, you need to read other DS&A books. Unlike CLRS, this is by no means a

complete guide to DS&A, but I doubt how many beginners feel comfortable with way things are explained in CLRS.

This is an excellent book on Data Structures and Algorithms, for some reason my teach chose a book that isn't nearly as good, but this one really helped me to understand what the different algorithms are doing. Especially some of the more abstract ones like Hash Tables and Graphs.

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