



# Algorithms

*Robert Sedgwick , Kevin Wayne*

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## **Algorithms** Robert Sedgewick , Kevin Wayne

This fourth edition of Robert Sedgewick and Kevin Wayne's Algorithms is the leading textbook on algorithms today and is widely used in colleges and universities worldwide. This book surveys the most important computer algorithms currently in use and provides a full treatment of data structures and algorithms for sorting, searching, graph processing, and string processing -- including fifty algorithms every programmer should know. In this edition, new Java implementations are written in an accessible modular programming style, where all of the code is exposed to the reader and ready to use.

The algorithms in this book represent a body of knowledge developed over the last 50 years that has become indispensable, not just for professional programmers and computer science students but for any student with interests in science, mathematics, and engineering, not to mention students who use computation in the liberal arts.

The companion web site, [algs4.cs.princeton.edu](http://algs4.cs.princeton.edu) contains An online synopsis Full Java implementations Test data Exercises and answers Dynamic visualizations Lecture slides Programming assignments with checklists Links to related material

The MOOC related to this book is accessible via the "Online Course" link at [algs4.cs.princeton.edu](http://algs4.cs.princeton.edu). The course offers more than 100 video lecture segments that are integrated with the text, extensive online assessments, and the large-scale discussion forums that have proven so valuable. Offered each fall and spring, this course regularly attracts tens of thousands of registrants.

Robert Sedgewick and Kevin Wayne are developing a modern approach to disseminating knowledge that fully embraces technology, enabling people all around the world to discover new ways of learning and teaching. By integrating their textbook, online content, and MOOC, all at the state of the art, they have built a unique resource that greatly expands the breadth and depth of the educational experience.

## **Algorithms Details**

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## From Reader Review Algorithms for online ebook

### Gabriel says

I read this textbook while taking Sedgewick's online Algorithms class on coursera.com. It covers the fundamental algorithms in searching, sorting, graphs, and string processing. There's a consistent focus on application examples, which really helps provide useful context. I found the explanations very clear and easy to follow.

A strength of the book is that all algorithms are given in real working Java code, and great care has been given to making the code concise and readable. This can also be seen as a weakness, as large portions of the book are devoted to introducing a basic Java programming model, and to discussing specific Java implementation details. As someone who writes code for a living, I really appreciated this aspect of the presentation, but I could understand if someone else found it distracting.

Overall, this is an excellent work for learning the fundamental algorithms of computer science from a very practical and applications oriented perspective. Highly recommended.

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### Ivan Atanasov says

The only reason not giving 5 starts is that the book is too much concentrated on Java programming language..

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### Tony Poerio says

A friend of mine calls Sedgewick his "CS Yoda". Not sure if I totally agree--BUT, I used this book for a class on Algorithms and would recommend. The material isn't easy (and some of it is dry), but Sedgewick is an extraordinarily clear writer, and his code snippets are instructive for gaining the necessary intuition to start using these algorithms in practice. There are many, many books on algorithms out there, and if you're not sure which to use, the choice can be kind of paralyzing. That said, you can't go wrong with this one. Would also recommend checking out his online materials for extra info: <http://algs4.cs.princeton.edu/home/>

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### David says

The second edition is very well written, doesn't get caught up in language specifics, and is a must read for anyone serious about programming or computer science.

Unfortunately future editions seem to devolve into the obsession with Java language implementation that is a plague on many modern algorithms textbooks. If you've found a second hand copy, flip through a bit and see if anyone is gushing over automated garbage collection, and run away if it's getting in the way of content.

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### Nguyen Minh Huy says

wonderful!

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### **Ahmed says**

A bunch of algorithms and data structures that are copied and pasted from his previous series books Algorithms in C, Java. There are no dedication to topics like designing algorithmic techniques like Greedy, Dynamic programming.

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### **Andrew Obrigewitsch says**

This book was OK. It's not really the best book for beginners, but it's good to review, see charts of algorithms or get code examples.

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### **Ruxandra says**

I bought this book for the course on coursera.org. I ordered it from informit and it arrived immediately. It is a beautiful hardback edition, with ~950 fine quality pages and typography.

I love it, I used it a lot in my assignments and exercises, it is really clear and helpful, the index makes it very easy to find the answer to your questions.

The first part of the course covered half of it, and I will take the other part too, because the professor makes it really pleasant to study algorithms.

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### **Taj Bortz says**

This book is a great book for not only algorithms, but it takes the time to give you a much greater understanding of many basics of programming. I loved the writing style, the pace, the content. They build up, so you will profit most by reading it cover-to-cover.

This is mostly using Java, so it is especially wonderful for a Java developer. But the topics are generally universal, so don't let that keep you from reading it.

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### **Kasra says**

One of the bests in this realm.

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### **Brain Weng says**

Fundamental basic algorithm book. Must read for new programmers that want to get more advanced.

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Definitely a classic book for starters and one of the most traditional stepping stones to bigger things.

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## **Borys says**

First of all, the book has excellent and free site with exercises, presentations, and examples at <http://algs4.cs.princeton.edu/> which is great ! Then, there are 2 courses by prof. Sedgewick at Coursera, which is great also. There are lots of diagrams, and algorithm traces, and also lots of useful exercises to do by yourself.

Well, and what I don't like is that there are passages that go like 'this should be obvious from ...' and you're like 'What? Why this is obvious, it is not obvious for me at all !!!' But I think every book on algorithm has such passages. Other than that I like this text very much.

There are also minor drawbacks like, for instance, Java code doesn't always follow Java code style conventions, and maybe some other issues but they are not very important for me.

Of course, reading the book, and not doing any exercises is not very helpful but overall I got myself acquainted with lots of very elegant and beautiful ideas in the field of computer science and that was amazing.

P.S. And by the way, Kindle version has some errors and typos in it. Overall it's good, and it has nice code images that fit into one screen, but sometimes it's hard to identify errors, that's all.

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## **Murray Cumming says**

This is far more approachable than CLRS, yet more thorough than Skiena's The Algorithm Design Manual. It doesn't cover as much ground - certainly not when compared to CLRS. For instance, there is no mention of dynamic programming and no general discussion of greedy algorithms.

But what it does discuss is thoughtfully presented in a meaningful sequence so this can, and should, be read cover to cover. It seems like the product of someone who has considered the material deeply from several angles over many years. I knew most of the material already, but this book gave me several fresh perspectives and unexpected new insights.

The source code is Java, which I much prefer to the pseudo code in CLRS or the C in Skiena's book. However, the first 200 pages or so are a rather dry introduction to Java which doesn't really belong in an algorithms book and which most people can skip. The Java in the book is very simple and it's not unreasonable to expect everyone to know that much Java already.

Oddly, the authors avoid using big-O notation, often discussing constant factors that don't seem like they could be particularly relevant compared to how CPU memory cache behaviour (data locality) would affect efficient implementations of different algorithms, particularly as the code is in Java.

Though the graph section mentions the Ford-Fulkerson Max-Flow algorithm, it doesn't mention the all-pairs shortest paths algorithms such as Floyd-Warshall, usually dealt with first - maybe because it belongs in a discussion of dynamic programming.

It does have some excellent explanations of the Knuth-Morris-Pratt, Boyer-Moore and Rabin-Karp

algorithms for substring search, explaining them in terms of deterministic finite state automata. That leads to a really good section on implementing regular expression searches with non-deterministic finite state automata. These really expanding my mind.

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### **Nimrod Daniel says**

It's a great comprehensive book about algorithms. The book contains a full implementation in java code, plus there's also a book site where you can find more code and supplemental material.

The explanations are clear and accompanied by examples that demonstrates how the algorithms work.

It's a long book, though it can be read in a very reasonable time. I was ~80% through after about a month or two (more like two I believe), but then I barely touched that for a long time.

A very informative and practical book which is highly recommended to anyone who's interested in CS.  
4.5-4.75

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### **?? ? says**

The best introduction book of algorithms which I have seen. It is easy to understand and has many exercises—so many that I wanted to finish them at begin, then sadly realized It was a daydreaming. The transmission from 2-3 tree to red-black tree is pretty good makes me fully understand the red-black tree. I like the book. lol.

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