The Art of Computer Programming: Volume 1: Fundamental Algorithms

Von Donald E. Knuth
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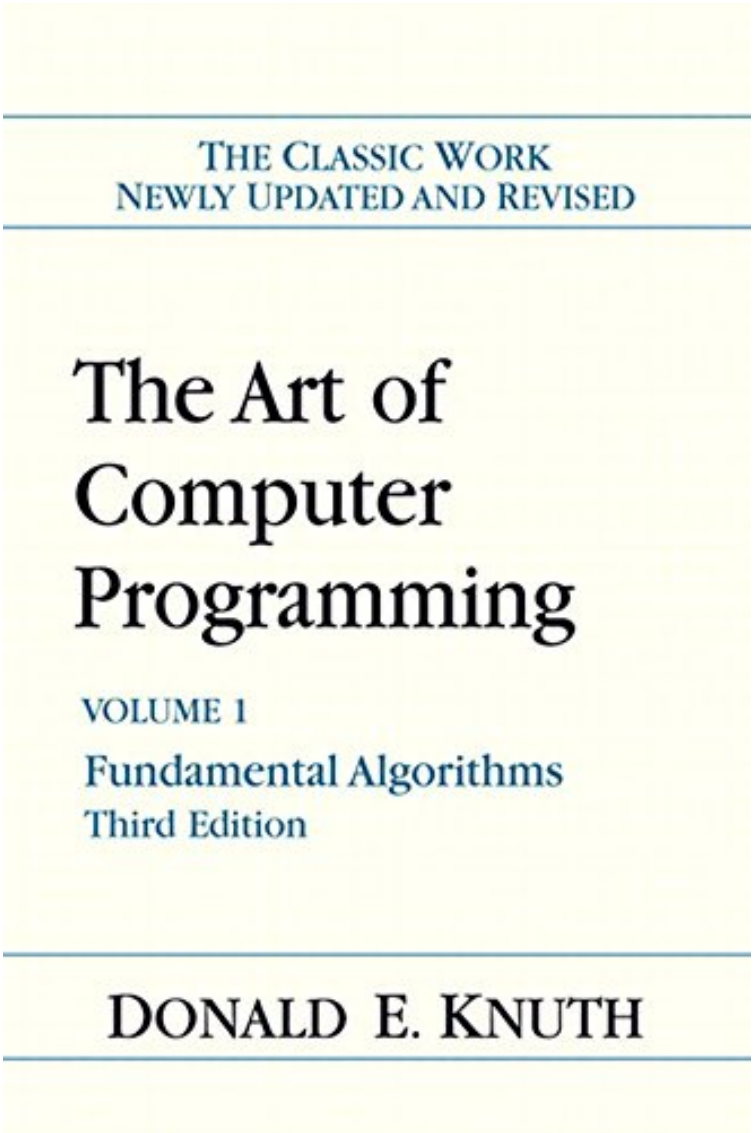

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Von Donald E. Knuth : The Art of Computer Programming: Volume 1: Fundamental Algorithms before purchasing it in order to gage whether or not it would be worth my time, and all praised The Art of Computer Programming: Volume 1: Fundamental Algorithms:

KundenrezensionenHilfreichste Kundenrezensionen4 von 4 Kunden fanden die folgende Rezension hilfreich. Excellent book for learning fundamental algorithms well.Von Noah Stein (NDStein@aol.com)I read this book when I

was a sophomore in high school and I thought it was excellent. Prior to reading the book, I had wanted for a long time to write a program to evaluate standard mathematical expressions. I had even tried once before, but I didn't know enough about what I was doing to be really successful. Somewhere in the second chapter in a discussion of lists, doubly-linked-lists, and binary trees, a good solution came to me, and I implemented it right after I finished reading the book. It worked very well. This book helped me to accomplish the major goal-project of my computer programming career so far, and I definately think it is worth reading for anyone wanting a really advanced understanding of fundamental algorithms. Now I know to many advanced means total [over]use of fully encapsulated C++ objects, which this book doesn't have, but this book gives an advanced understanding, which is infinitely more valuable than classes. If you understand OOP and you understand this book, you should be able to combine the two just fine. Lastly, I'd like to comment on the use of MIX. I read almost none of the MIX assembly code when I read this book. The little I looked at I looked at because I wanted to see what assembly was like in the 60's. But you can understand everything he's trying to say by his explanations of the algorithms, the assembly code is only for clarification, and you don't have to read it. I also believe that everyone who's been using fully encapsulated classes for their entire programming career should learn an assembly language sometime. Just like this book, it will teach you how to think.3 von 3 Kunden fanden die folgende Rezension hilfreich. Die Bibel fr Informatiker Teil 1Von Marc RuefDonald E. Knuth versteht es wie kein anderer, sich mathematisch mit einem Problem auseinanderzusetzen. Durch arithmetische Berechnungen nimmt er den Leser mit auf seine Reise durch die Welt der effizienten Algorithmen und seiner MIX-Architektur.Jeder, der seine Mathematik-Kenntnisse auffrischen, seine Algorithmen verbessern und die Grundlagen von Assembler lernen mchte, dem empfehle ich dieses Buch. In jedem Fall hat man lange daran zu knabbern - Aber es lohnt sich. Msste ich auf eine einsame Insel ziehen und drfte nur ein Buch mitnehmen, kme Band 1 von Knuths TAoCP in die engere Auswahl.2 von 2 Kunden fanden die folgende Rezension hilfreich. Subnormal thinks: "not bad book"Von Technical Review MaschineAlgorithms are useful to study because they come up frequently in the practice of programming, and thus I think that this book is most useful after or while you've dealt with actual programming. By then it is fairly obvious where the algorithms come from; they are merely attempts to solve problems.So don't kill yourself if you're new to real programming and all this sounds arbitrary. Knuth in effect has written a clearinghouse of ideas that have come up in computer science. This book at times comes to seem like The Art of Explaining.For those who hate the use of the MIX assembly language instead of some easier language such as C: You lose information that way. That is sufficient reason for not using C. You can't really time an algorithm using such a language (and a main reason for studying algorithms is speed) unless you carefully define the underlying hardware and C implementation... and once you do that, using C is pointless for pedagogy, since you will be using inline MIX for things that C is too general for.And you'd really hate it if you were programming in Lisp.There are quite a few good books on algorithms in C, though I haven't read them. If you're forced to read this book, consider changing your situation; Knuth has fallen on hard times if his text has become a torture device for some.

KurzbeschreibungThe bible of all fundamental algorithms and the work that taught many of today's software developers most of what they know about computer programming. Byte, September 1995 I can't begin to tell you how many pleasurable hours of study and recreation they have afforded me! I have pored over them in cars, restaurants, at work, at home... and even at a Little League game when my son wasn't in the line-up. Charles Long If you think you're a really good programmer... read [Knuth's] Art of Computer Programming... You should definitely send me a resume if you can read the whole thing. Bill Gates It's always a pleasure when a problem is hard enough that you have to get the Knuths off the shelf. I find that merely opening one has a very useful terrorizing effect on computers. Jonathan Laventhol This first volume in the series begins with basic programming concepts and techniques, then focuses more particularly on information structuresthe representation of information inside a computer, the structural relationships between data elements and how to deal with them efficiently. Elementary applications are given to simulation, numerical methods, symbolic computing, software and system design. Dozens of simple and important algorithms and techniques have been added to those of the previous edition. The section on mathematical preliminaries has been extensively revised to match present trends in research. Ebook (PDF version) produced by Mathematical Sciences Publishers (MSP),http://msp.org .deThis magnificent tour de force presents a comprehensive overview of a wide variety of algorithms and the analysis of them. Now in its third edition, The Art of Computer Programming, Volume I: Fundamental Algorithms contains substantial revisions by the author and includes numerous new exercises. Although this book was conceived several decades ago, it is still a timeless classic. One of the book's greatest strengths is the wonderful collection of problems that accompany each chapter. The author has chosen problems carefully and indexed them according to difficulty. Solving a substantial number of these problems will help you gain a solid understanding of the issues surrounding the given topic. Furthermore, the exercises feature a variety of classic problems. Fundamental Algorithms begins with mathematical preliminaries. The first section offers a good grounding in a variety of useful mathematical tools: proof techniques, combinatorics, and elementary number theory. Knuth then

details the MIX processor, a virtual machine architecture that serves as the programming target for subsequent discussions. This wonderful section comprehensively covers the principles of simple machine architecture, beginning with a register-level discussion of the instruction set. A later discussion of a simulator for this machine includes an excellent description of the principles underlying the implementation of subroutines and co-routines. Implementing such a simulator is an excellent introduction to computer design. In the second section, Knuth covers data structures--stacks, queues, lists, arrays, and trees--and presents implementations (in MIX assembly) along with techniques for manipulating these structures. Knuth follows many of the algorithms with careful time and space analysis. In the section on tree structures, the discussion includes a series of interesting problems concerning the combinatorics of trees (counting distinct trees of a particular form, for example) and some particularly interesting applications. Also featured is a discussion of Huffmann encoding and, in the section on lists, an excellent introduction to garbage collection algorithms and the difficult challenges associated with such a task. The book closes with a discussion of dynamic allocation algorithms. The clear writing in Fundamental Algorithms is enhanced by Knuth's dry humor and the historical discussions that accompany the technical matter. Overall, this text is one of the great classics of computer programming literature--it's not an easy book to grasp, but one that any true programmer will study with pleasure.KurzbeschreibungThe bible of all fundamental algorithms and the work that taught many of today's software developers most of what they know about computer programming. Byte, September 1995 I can't begin to tell you how many pleasurable hours of study and recreation they have afforded me! I have pored over them in cars, restaurants, at work, at home... and even at a Little League game when my son wasn't in the line-up. Charles Long If you think you're a really good programmer... read [Knuth's] Art of Computer Programming... You should definitely send me a resume if you can read the whole thing. Bill Gates It's always a pleasure when a problem is hard enough that you have to get the Knuths off the shelf. I find that merely opening one has a very useful terrorizing effect on computers. Jonathan Laventhol This first volume in the series begins with basic programming concepts and techniques, then focuses more particularly on information structuresthe representation of information inside a computer, the structural relationships between data elements and how to deal with them efficiently. Elementary applications are given to simulation, numerical methods, symbolic computing, software and system design. Dozens of simple and important algorithms and techniques have been added to those of the previous edition. The section on mathematical preliminaries has been extensively revised to match present trends in research. Ebook (PDF version) produced by Mathematical Sciences Publishers (MSP),http://msp.org