The Art Of Computer Programming, Volume 4A: Combinatorial Algorithms, Part 1

THE CLASSIC WORK
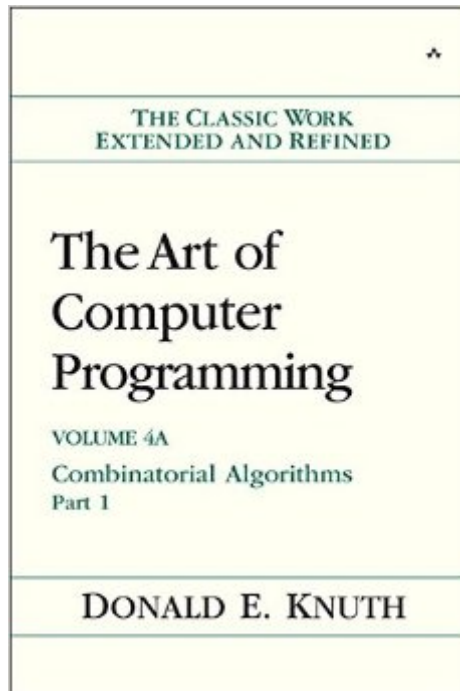EXTENDED AND REFINED

The Art of
Computer
Programming

VOLUME 4A

Combinatorial Algorithms
Part 1

DONALD E. KNUTH

Synopsis

The Art of Computer Programming, Volume 4A:Â Combinatorial Algorithms, Part 1 Â Knuthâ ™s multivolume analysis of algorithms is widely recognized as the definitive description of classical computer science. The first three volumes of this work have long comprised a unique and invaluable resource in programming theory and practice. Scientists have marveled at the beauty and elegance of Knuthâ ™s analysis, while practicing programmers have successfully applied his â œcookbookâ • solutions to their day-to-day problems. Â The level of these first three volumes has remained so high, and they have displayed so wide and deep a familiarity with the art of computer programming, that a sufficient â œreviewâ • of future volumes could almost be: â œKnuth, Volume n has been published.â • â "Data Processing Digest Â Knuth, Volume n has been published, where n = 4A. Â In this long-awaited new volume, the old master turns his attention to some of his favorite topics in broadword computation and combinatorial generation (exhaustively listing fundamental combinatorial objects, such as permutations, partitions, and trees), as well as his more recent interests, such as binary decision diagrams. Â The hallmark qualities that distinguish his previous volumes are manifest here anew: detailed coverage of the basics, illustrated with well-chosen examples; occasional forays into more esoteric topics and problems at the frontiers of research; impeccable writing peppered with occasional bits of humor; extensive collections of exercises, all with solutions or helpful hints; a careful attention to history; implementations of many of the algorithms in his classic step-by-step form. Â There is an amazing amount of information on each page. Knuth has obviously thought long and hard about which topics and results are most central and important, and then, what are the most intuitive and succinct ways of presenting that material. Since the areas that he covers in this volume have exploded since he first envisioned writing about them, it is wonderful how he has managed to provide such thorough treatment in so few pages. â "Frank Ruskey, Department of Computer Science, University of Victoria Â The book is Volume 4A, because Volume 4 has itself become a multivolume undertaking. Combinatorial searching is a rich and important topic, and Knuth has too much to say about it that is new, interesting, and useful to fit into a single volume, or two, or maybe even three. This book alone includes approximately 1500 exercises, with answers for self-study, plus hundreds of useful facts that cannot be found in any other publication. Volume 4A surely belongs beside the first three volumes of this classic work in every serious programmerâ ™s library. Â Finally, after a wait of more than thirty-five years, the first part of Volume 4 is at last ready for publication. Check out the boxed set that brings together Volumes 1 - 4A in one elegant case, and offers the purchaser a $50 discount off the price of buying the four volumes individually. Â Ebook (PDF version) produced by

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Customer Reviews

Question: Now that this is out, are all the items in the first 5 (part 4, 0-4) fascicles covered, or do I need them too?A careful reading and comparison of both shows that although most of the topics are covered in both, as this "IS" the final publication with corrections of the fascicles, the fascicles add important background as well as detail, whereas 4A is a MUST due to the incredible number of new problems and answers. As a compromise if you're on a budget, you could get 4A for all combinatorials, or, for example, get fascicle 0 if you're more into logic design, circuits, etc. rather than all combinatorics. Do NOT buy all 5 fascicles AND this book, or you'll be double paying. However, the fascicles, in the older form, are available as .pdfs free. THIS BOOK updates and corrects all of them, and is complete.I can't give all the contents for thousands of pages here, but if you go to Dr. Knuth's website, there are uncorrected .pdf copies of the whole series, and an index of all past and future versions. Just Bing or Google the title with Volume 4A and choose the link that starts with cs dot utsa dot edu (Dr. Don's site). The links come back here to for purchase, but give full uncorrected .pdfs to save you money on the previous fascicles as you compare them to this newer 2011 volume. That will also let you see in detail which, if any, of the previous fascicles you really want combined with 4A. Realize, though, that Dr. Knuth has corrected MANY sections in this

2011 combinatorial text, so even if you like the .pdfs of the previous sicles, you'll clearly want 4A.In fact, when you go to that site, there is even a "volume 5/part B" uncorrected fascicle available as an advance .pdf. The Stanford site even has a few more.

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