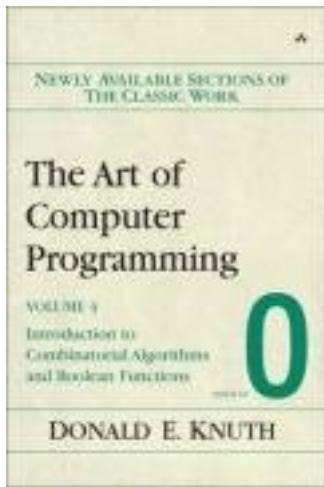# The Art of Computer Programming, Volume 4, Fascicle 0

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Product Description

This multivolume work on the analysis of algorithms has long been recognized as the definitive description of classical computer science. The three complete volumes published to date already comprise a unique and invaluable resource in programming theory and practice. Countless readers have spoken about the profound personal influence of Knuth's writings. Scientists have marveled at the beauty and elegance of his analysis, while practicing programmers have successfully applied his "cookbook" solutions to their day-to-day problems. All have admired Knuth for the breadth, clarity, accuracy, and good humor found in his books.

To begin the fourth and later volumes of the set, and to update parts of the existing three, Knuth has created a series of small books called fascicles, which will be published at regular intervals. Each fascicle will encompass a section or more of wholly

new or revised material. Ultimately, the content of these fascicles will be rolled up into the comprehensive, final versions of each volume, and the enormous undertaking that began in 1962 will be complete.

Volume 4, Fascicle 0

This fascicle introduces what will become by far the longest chapter in The Art of Computer Programming, a chapter on combinatorial algorithms that will itself fill three full-sized volumes. Combinatorial algorithms, informally, are techniques for the high-speed manipulation of extremely large quantities of objects, such as permutations or the elements of graphs. Combinatorial patterns or arrangements solve vast numbers of practical problems, and modern approaches to dealing with them often lead to methods that are more than a thousand times faster than the straightforward procedures of yesteryear. This fascicle primes the pump for everything that follows in the chapter, discussing first the essential ideas of combinatorics and then introducing fundamental ideas for dealing efficiently with 0s and 1s inside a machine, including Boolean basics and Boolean function evaluation. As always, the author's exposition is enhanced by hundreds of new exercises, arranged carefully for self-instruction, together with detailed answers.

About the Author

Donald E. Knuth is known throughout the world for his pioneering work on algorithms and programming techniques, for his invention of the TeX and Metafont systems for computer typesetting, and for his prolific and influential writing. Professor Emeritus of The Art of Computer Programming at Stanford University, he currently devotes his time to the completion of these fascicles and the seven volumes to which they belong.

作者介绍:

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