Mastering Algorithms with C: Useful Techniques from Sorting to Encryption

By Kyle Loudon

Mastering Algorithms with C: Useful Techniques from Sorting to Encryption By Kyle Loudon

There are many books on data structures and algorithms, including some with useful libraries of C functions. *Mastering Algorithms with C* offers you a unique combination of theoretical background and working code. With robust solutions for everyday programming tasks, this book avoids the abstract style of most classic data structures and algorithms texts, but still provides all of the information you need to understand the purpose and use of common programming techniques.

Implementations, as well as interesting, real-world examples of each data structure and algorithm, are included.

Using both a programming style and a writing style that are exceptionally clean, Kyle Loudon shows you how to use such essential data structures as lists, stacks, queues, sets, trees, heaps, priority queues, and graphs. He explains how to use algorithms for sorting, searching, numerical analysis, data compression, data encryption, common graph problems, and computational geometry. And he describes the relative efficiency of all implementations. The compression and encryption chapters not only give you working code for reasonably efficient solutions, they offer explanations of concepts in an approachable manner for people who never have had the time or expertise to study them in depth.

Anyone with a basic understanding of the C language can use this book. In order to provide maintainable and extendible code, an extra level of abstraction (such as pointers to functions) is used in examples where appropriate. Understanding that these techniques may be unfamiliar to some programmers, Loudon explains them clearly in the introductory chapters.

Contents include:

- Pointers
- Recursion
- Analysis of algorithms
- Data structures (lists, stacks, queues, sets, hash tables, trees, heaps, priority queues, graphs)
- Sorting and searching
- Numerical methods
- Data compression

- Data encryption
- Grap

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Editorial Review

Amazon.com Review
Written with the intermediate to advanced C programmer in mind, *Mastering Algorithms with C* delivers a no-nonsense guide to the most common algorithms needed by real-world developers.

The highlight of the book has to be its concise and readable C functions for all the algorithms presented here, including basics like linked lists, stacks to trees, graphs, and sorting/searching algorithms. The C functions that implement these algorithms are clearly printed and remarkably easy to read. You can use this sample code directly or adapt it into your C/C++ code.

Although mathematical concepts like Big-O notation are discussed, the authors don't get bogged down in the computer science theory surrounding algorithms. Instead, they present the most tried-and-true algorithms available today in an efficient format. Besides introducing each algorithm, they describe how each is used in computing today, along with a short demo application. Some of these samples are quite low-level, such as a virtual memory manager implemented with linked lists. Most examples are more of general interest, such as a graphing example that counts network hops.

Each section ends with questions and answers about how the algorithms work, along with references to other algorithms (both in the book and from other sources). The authors concentrate on the most useful algorithms available today and don't try to cover every available variation. Busy readers will appreciate the intelligent selection--and efficient presentation--used here.

There are a number of books on C algorithms, but *Master Algorithms with C* is one of the most concise and immediately useful. It's a perfect choice for the working C/C++ programmer who's in a hurry to find just the right algorithm for writing real-world code. *--Richard Dragan*

Topics covered: Algorithm efficiency, pointer basics, arrays, recursion, Big-O Notation, linked lists, stacks, queues, sets, hash tables, trees and B-trees, searching, heaps and priority queues, graphs, sorting and searching algorithms, numerical methods, data compression, Huffman coding, LZ77, data encryption, DES, RSA, graph algorithms, minimum spanning trees, geometric algorithms, and convex hulls.

From Library Journal
Although older than some of the current languages, C still is one of the best general purpose programming languages around. Loudon's book discusses C pointers, recursion, data structures from lists and stacks to trees and graphs, sorting and searching, and encryption. This is not a beginner's manual but will work well for programmers wanting to refresh their C techniques and for those moving from another language to C. Copyright 1999 Reed Business Information, Inc.

Review
'This is an O'Reilly book, surely one of the best publishers of technical books areound. I love 'em, from the animal cover to the Colophon, and it is rare indeed that I come across an O'Reilly book that I regret buying....So, all in all, an enjoyable book and one I will move onto my Important Algorithm Book shelf, rather than on the floor in a pile with the also-rans. Recommended.' - Julian M Bucknall Developers Review, August 2000

Users Review

From reader reviews:

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