BOOK REVIEWS


1. These books are the first two of eight volumes on the construction and analysis of computer algorithms. The entire set, consisting of twelve chapters and a compendium volume covering the first ten chapters, will provide comprehensive coverage of "nonnumerical programming", computer programming which relies but very little on classical numerical analysis. This area of computing is surprisingly broad and accommodates not only the fundamentals but also many of the active research problems of modern computing. The first seven volumes have the following outline:

Volume 1. Fundamental Algorithms
   Chapter 1. Basic Concepts
   Chapter 2. Information Structures

Volume 2. Seminumerical Algorithms
   Chapter 3. Random Numbers
   Chapter 4. Arithmetic

Volume 3. Sorting and Searching
   Chapter 5. Sorting Techniques
   Chapter 6. Searching Techniques

Volume 4. Combinatorial Algorithms
   Chapter 7. Combinatorial Searching
   Chapter 8. Recursion

Volume 5. Syntactical Algorithms
   Chapter 9. Lexical Scanning
   Chapter 10. Parsing Techniques

Volume 6. Theory of Languages
   Chapter 11. Mathematical Linguistics

Volume 7. Compilers
   Chapter 12. Programming Language Translation

These are important books. They are written by a computer scientist and mathematician who has performed high-level research in both fields (e.g. [1] and [2]). As he says in the preface to Volume 1, "... parts of these books may be thought of as 'a pure mathematician's view of computers'." He is concerned with the application of mathematical tools to programming and with the use of computers in exploring mathematical conjectures. "I wish to show that the connection between computers and mathematics is far deeper than ... traditional relationships would imply."

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