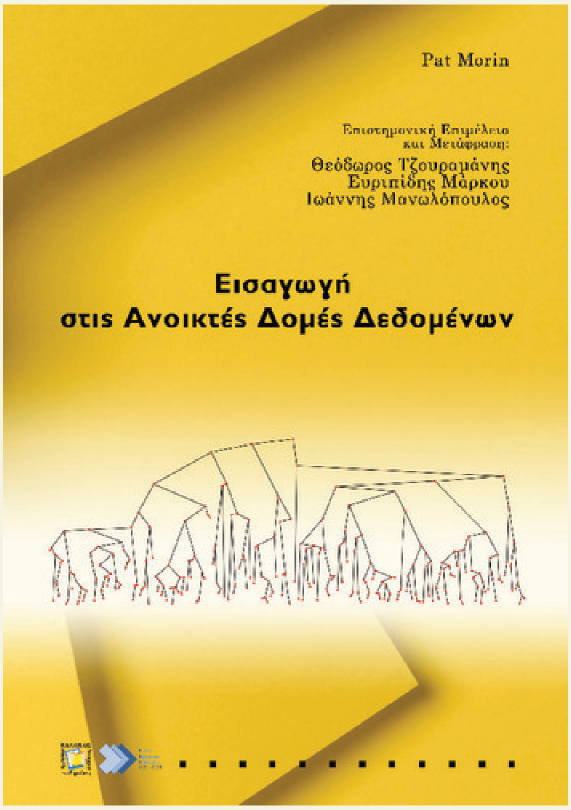

Pat Morin

Επιστημονική Επιμέλεια
και Μετάφραση:
Θεόδωρος Τζουραμάνης
Ευριπίδης Μάρκου
Ιωάννης Μανωλόπουλος

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Abstract

The book covers the design, implementation and analysis of some of the most well-known data structures in the literature of informatics and computer science, such as, for example, the stack, the queue, the deque, the list (implemented using an array or pointers), the skip list, several hash table methods, the binary tree (including the binary search tree, the treap, the scapegoat tree and the red-black tree), the heap (including the binary heap and the randomized meldable heap), the graph (including its representation by a matrix or as a collection of lists), some specialised data structures for integers (including various forms of binary digital trees), the B-tree, etc. The algorithms for implementing the data structures are given in pseudocode (on the basis of the Python programming language) and in the C++ and Java programming languages. The book is organised into 14 chapters and can adequately cover a 13-week academic semester for the "Data Structures" undergraduate course. In addition, some chapters of the book can be taught at a more advanced stage of the academic curriculum, including in the context of relevant postgraduate courses. The book provides the student with the necessary background for the effective use of the data structures in a wide range of application domains in informatics and computer science. The material of the book aims to enable students to analyse the performance of data structures, to compare their efficiency and suitability for solving various problems, to design complex and application-specific data structures, and to implement them with efficient algorithms in the programming language of their choice.

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