Quickly identify the most appropriate data structure or algorithm for your application

A Practical Guide to Data Structures and Algorithms using Java

NEW!

Sally Goldman and Ken Goldman • Washington University, St. Louis, Missouri, USA

An Integrated Applications-Centered Alternative

A fresh alternative to conventional data structures and algorithms texts and reference books, **A Practical Guide to Data Structures and Algorithms using Java** presents comprehensive coverage of fundamental data structures and algorithms in a unifying framework with full implementation details. Complete and thoroughly integrated Java implementations use object-oriented design principles to expose key differences among a wide range of important data structures, including many useful abstract data types not provided in standard Java libraries. Fundamental algorithms appear within the context of their supporting data structures. Case studies, examples, decision trees, and comparison charts throughout the stylized presentation illustrate and support an efficient methodology for the careful selection and application of data structures and algorithms. Appendices summarize major features of the Java programming language, introduce asymptotic notation and complexity analysis, and discuss design patterns applied in the book. Practitioners and students will reach for this book often to quickly identify the best data structure or algorithm for their applications.

Online Teaching Supplement Available December 2007!

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"This is no ordinary textbook on algorithms and data structures. … ***It is perhaps the most thorough and complete catalog of fundamental algorithms that I have ever seen.*** *The book is extremely well organized, and has been carefully designed to provide* ***practical help for a student or developer with a specific problem at hand who is seeking the most appropriate data structure or abstract data type.*** *Everything that one might wish for with this goal in mind has been provided, including a top-down guide that provides* ***an organizational map*** *of the myriad data structures to choose from,* ***comparisons*** *between competing choices, short descriptions for* ***quick reference****, longer explanations for* ***detailed understanding****, performance analyses, correctness arguments, plus a* ***CD with full Java implementations****. This is a* ***tremendously valuable practical resource****."*

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"The Goldmans' new book is a ***tour de force of data structures and associated algorithms****, accomplishing far more than any single author could hope to achieve. Theory and practice are represented in complementary fashion, with* ***clever mechanisms such as 'correctness highlights' and tables illustrating space and time complexity tradeoffs between different implementation options****. … I can imagine that the decision tree inside the front cover will be placed in a prominent location in many graduate student and developer work spaces.* ***I intend to make sure my students consult it before launching into any significant implementation****."*

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"In this impressive book, [the authors] combine practical guidance on how to select and use important ADTs and data structures with a clear presentation of the underlying theory. ***I do not know of any other book that is able to simultaneously address both application and theory so well****. One of my favorite features of this book is that for each data structure given, there is a presentation of competing data structures and how they compare. This* ***allows the reader to quickly place the new data structure into context as well as to find the best data structure for a given application****."*

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"This is the first book I know of that teaches the theory and practice of algorithm and data structure design in a clear and comprehensive way. ***For each topic it presents a motivating example, a clear ADT, various implementations, and a guide for comparing different implementations****. Each implementation is followed by a detailed and clear theoretical analysis, a complete Java implementation, and a discussion of the used design patterns. This book is* ***a thorough textbook*** *…"*

—Monika Henzinger, Research Director, Google, and Professor of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne, Switzerland

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