[PDF] Computer Science: An Interdisciplinary Approach

Robert Sedgewick, Kevin Wayne - pdf download free book

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Description:

Robert Sedgewick and Kevin Wayne's **Computer Science: An Interdisciplinary Approach** is the ideal modern introduction to computer science with Java programming for both students and professionals. Taking a broad, applications-based approach, Sedgewick and Wayne teach through important examples from science, mathematics, engineering, finance, and commercial computing.

The book demystifies computation, explains its intellectual underpinnings, and covers the essential elements of programming and computational problem solving in today's environments. The authors begin by introducing basic programming elements such as variables, conditionals, loops, arrays, and I/O. Next, they turn to functions, introducing key modular programming concepts, including components and reuse. They present a modern introduction to object-oriented programming, covering current programming paradigms and approaches to data abstraction.

Building on this foundation, Sedgewick and Wayne widen their focus to the broader discipline of computer science. They introduce classical sorting and searching algorithms, fundamental data structures and their application, and scientific techniques for assessing an implementation's performance. Using abstract models, readers learn to answer basic questions about computation, gaining insight for practical application. Finally, the authors show how machine architecture links the theory of computing to real computers, and to the field's history and evolution.

For each concept, the authors present all the information readers need to build confidence, together with examples that solve intriguing problems. Each chapter contains question-and-answer sections, self-study drills, and challenging problems that demand creative solutions.

Companion web site (introcs.cs.princeton.edu/java) contains

- Extensive supplementary information, including suggested approaches to programming assignments, checklists, and FAQs
- Graphics and sound libraries
- Links to program code and test data
- Solutions to selected exercises
- Chapter summaries
- Detailed instructions for installing a Java programming environment
- Detailed problem sets and projects

Companion 20-part series of video lectures is available at informit.com/title/9780134493831

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