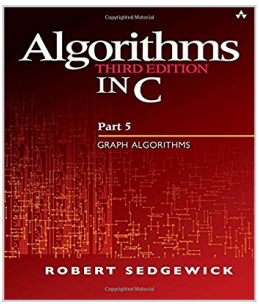

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5)

By Robert Sedgewick

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick

Once again, Robert Sedgewick provides a current and comprehensive introduction to important algorithms. The focus this time is on graph algorithms, which are increasingly critical for a wide range of applications, such as network connectivity, circuit design, scheduling, transaction processing, and resource allocation. In this book, Sedgewick offers the same successful blend of theory and practice with concise implementations that can be tested on real applications, which has made his work popular with programmers for many years.
Algorithms in C, Third Edition, Part 5: Graph Algorithms is the second book in Sedgewick's thoroughly revised and rewritten series. The first book, *Parts 1-4*, addresses fundamental algorithms, data structures, sorting, and searching. A forthcoming third book will focus on strings, geometry, and a range of advanced algorithms. Each book's expanded coverage features new algorithms and implementations, enhanced descriptions and diagrams, and a wealth of new exercises for polishing skills. A focus on abstract data types makes the programs more broadly useful and relevant for the modern object-oriented programming environment.
Coverage includes:

- A complete overview of graph properties and types
- Diagraphs and DAGs
- Minimum spanning trees
- Shortest paths
- Network flows
- Diagrams, sample C code, and detailed algorithm descriptions

The Web site for this book (http://www.cs.princeton.edu/~rs/) provides additional source code for programmers along with numerous support materials for educators.
A landmark revision, ***Algorithms in C, Third Edition, Part 5*** provides a complete tool set for programmers to implement, debug, and use graph algorithms across a wide range of computer applications.

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5)

By Robert Sedgewick

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick

Once again, Robert Sedgewick provides a current and comprehensive introduction to important algorithms. The focus this time is on graph algorithms, which are increasingly critical for a wide range of applications, such as network connectivity, circuit design, scheduling, transaction processing, and resource allocation. In this book, Sedgewick offers the same successful blend of theory and practice with concise implementations that can be tested on real applications, which has made his work popular with programmers for many years. ***Algorithms in C, Third Edition, Part 5: Graph Algorithms*** is the second book in Sedgewick's thoroughly revised and rewritten series. The first book, *Parts 1-4*, addresses fundamental algorithms, data structures, sorting, and searching. A forthcoming third book will focus on strings, geometry, and a range of advanced algorithms. Each book's expanded coverage features new algorithms and implementations, enhanced descriptions and diagrams, and a wealth of new exercises for polishing skills. A focus on abstract data types makes the programs more broadly useful and relevant for the modern object-oriented programming environment.
Coverage includes:

- A complete overview of graph properties and types
- Diagraphs and DAGs
- Minimum spanning trees
- Shortest paths
- Network flows
- Diagrams, sample C code, and detailed algorithm descriptions

The Web site for this book (http://www.cs.princeton.edu/~rs/) provides additional source code for programmers along with numerous support materials for educators.
A landmark revision, ***Algorithms in C, Third Edition, Part 5*** provides a complete tool set for programmers to implement, debug, and use graph algorithms across a wide range of computer applications.

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick Bibliography

- Sales Rank: #1138865 in Books
- Published on: 2001-08-26
- Released on: 2001-08-16
- Original language: English
- Number of items: 1
- Dimensions: 9.00" h x 1.10" w x 7.70" l, 1.75 pounds
- Binding: Paperback
- 512 pages

Editorial Review

From the Back Cover
Once again, Robert Sedgewick provides a current and comprehensive introduction to important algorithms. The focus this time is on graph algorithms, which are increasingly critical for a wide range of applications, such as network connectivity, circuit design, scheduling, transaction processing, and resource allocation. In this book, Sedgewick offers the same successful blend of theory and practice with concise implementations that can be tested on real applications, which has made his work popular with programmers for many years. "Algorithms in C, Third Edition, Part 5: Graph Algorithms" is the second book in Sedgewick's thoroughly revised and rewritten series. The first book, "Parts 1-4," addresses fundamental algorithms, data structures, sorting, and searching. A forthcoming third book will focus on strings, geometry, and a range of advanced algorithms. Each book's expanded coverage features new algorithms and implementations, enhanced descriptions and diagrams, and a wealth of new exercises for polishing skills. A focus on abstract data types makes the programs more broadly useful and relevant for the modern object-oriented programming environment. Coverage includes:

- A complete overview of graph properties and types
- Diagraphs and DAGs
- Minimum spanning trees
- Shortest paths
- Network flows
- Diagrams, sample C code, and detailed algorithm descriptions

The Web site for this book (http: //www.cs.princeton.edu/~rs/) provides additional source code for programmers along with numerous support materials for educators. A landmark revision, "Algorithms in C, Third Edition, Part 5" provides a complete tool set for programmers to implement, debug, and use graph algorithms across a wide range of computer applications.

About the Author

Robert Sedgewick is the William O. Baker Professor of Computer Science at Princeton University. He is a Director of Adobe Systems and has served on the research staffs at Xerox PARC, IDA, and INRIA. He earned his Ph.D from Stanford University under Donald E. Knuth.

0201316633AB06262002

Graphs and graph algorithms are pervasive in modern computing applications. This book describes the most important known methods for solving the graph-processing problems that arise in practice. Its primary aim is to make these methods and the basic principles behind them accessible to the growing number of people in need of knowing them. The material is developed from first principles, starting with basic information and

working through classical methods up through modern techniques that are still under development. Carefully chosen examples, detailed figures, and complete implementations supplement thorough descriptions of algorithms and applications.

Algorithms

This book is the second of three volumes that are intended to survey the most important computer algorithms in use today. The first volume (Parts 1-4) covers fundamental concepts (Part 1), data structures (Part 2), sorting algorithms (Part 3), and searching algorithms (Part 4); this volume (Part 5) covers graphs and graph algorithms; and the (yet to be published) third volume (Parts 6-8) covers strings (Part 6), computational geometry (Part 7), and advanced algorithms and applications (Part 8).

The books are useful as texts early in the computer science curriculum, after students have acquired basic programming skills and familiarity with computer systems, but before they have taken specialized courses in advanced areas of computer science or computer applications. The books also are useful for self-study or as a reference for people engaged in the development of computer systems or applications programs because they contain implementations of useful algorithms and detailed information on these algorithms' performance characteristics. The broad perspective taken makes the series an appropriate introduction to the field.

Together the three volumes comprise the *Third Edition* of a book that has been widely used by students and programmers around the world for many years. I have completely rewritten the text for this edition, and I have added thousands of new exercises, hundreds of new figures, dozens of new programs, and detailed commentary on all the figures and programs. This new material provides both coverage of new topics and fuller explanations of many of the classic algorithms. A new emphasis on abstract data types throughout the books makes the programs more broadly useful and relevant in modern object-oriented programming environments. People who have read previous editions will find a wealth of new information throughout; all readers will find a wealth of pedagogical material that provides effective access to essential concepts.

These books are not just for programmers and computer-science students. Nearly everyone who uses a computer wants it to run faster or to solve larger problems. The algorithms that we consider represent a body of knowledge developed during the last 50 years that has become indispensable in the efficient use of the computer for a broad variety of applications. From N-body simulation problems in physics to genetic-sequencing problems in molecular biology, the basic methods described here have become essential in scientific research; and from database systems to Internet search engines, they have become essential parts of modern software systems. As the scope of computer applications becomes more widespread, so grows the impact of basic algorithms, particularly the fundamental graph algorithms covered in this volume. The goal of this book is to serve as a resource so that students and professionals can know and make intelligent use of graph algorithms as the need arises in whatever computer application they might undertake.

Scope

This book, *Algorithms in C, Third Edition, Part 5: Graph Algorithms*, contains six chapters that cover graph properties and types, graph search, directed graphs, minimal spanning trees, shortest paths, and networks. The descriptions here are intended to give readers an understanding of the basic properties of as broad a range of fundamental graph algorithms as possible.

You will most appreciate the material here if you have had a course covering basic principles of algorithm design and analysis and programming experience in a high-level language such as C, Java, or C++. *Algorithms in C, Third Edition, Parts 1-4* is certainly adequate preparation. This volume assumes basic knowledge about arrays, linked lists, and ADT design, and makes uses of priority-queue, symbol-table, and union-find ADTs--all of which are described in de-tail in Parts 1-4 (and in many other introductory texts on algorithms and data structures).

Basic properties of graphs and graph algorithms are developed from first principles, but full understanding of the properties of the algorithms can lead to deep and difficult mathematics. Although the discussion of advanced mathematical concepts is brief, general, and descriptive, you certainly need a higher level of mathematical maturity to appreciate graph algorithms than you do for the topics in Parts 1-4. Still, readers at various levels of mathematical maturity will be able to profit from this book. The topic dictates this approach: some elementary graph algorithms that should be understood and used by everyone differ only slightly from some advanced algorithms that are not understood by anyone. The primary intent here is to place important algorithms in context with other methods throughout the book, not to teach all of the mathematical material. But the rigorous treatment demanded by good mathematics often leads us to good programs, so I have tried to provide a balance between the formal treatment favored by theoreticians and the coverage needed by practitioners, without sacrificing rigor.

Use in the Curriculum

There is a great deal of flexibility in how the material here can be taught, depending on the taste of the instructor and the preparation of the students. The algorithms described have found widespread use for years, and represent an essential body of knowledge for both the practicing programmer and the computer science student. There is sufficient coverage of basic material for the book to be used in a course on data structures and algorithms, and there is sufficient detail and coverage of advanced material for the book to be used for a course on graph algorithms. Some instructors may wish to emphasize implementations and practical concerns; others may wish to emphasize analysis and theoretical concepts.

For a more comprehensive course, this book is also available in a special bundle with Parts 1-4; thereby instructors can cover fundamentals, data structures, sorting, searching, and graph algorithms in one consistent style. A complete set of slide masters for use in lectures, sample programming assignments, interactive exercises for students, and other course materials may be found by accessing the book's home page.

The exercises--nearly all of which are new to this edition--fall into several types. Some are intended to test understanding of material in the text, and simply ask readers to work through an example or to apply concepts described in the text. Others involve implementing and putting together the algorithms, or running empirical studies to compare variants of the algorithms and to learn their properties. Still other exercises are a repository for important information at a level of detail that is not appropriate for the text. Reading and thinking about the exercises will pay dividends for every reader.

Algorithms of Practical Use

Anyone wanting to use a computer more effectively can use this book for reference or for self-study. People with programming experience can find information on specific topics throughout the book. To a large extent,

you can read the individual chapters in the book independently of the others, although, in some cases, algorithms in one chapter make use of methods from a previous chapter.

The orientation of the book is to study algorithms likely to be of practical use. The book provides information about the tools of the trade to the point that readers can confidently implement, debug, and put to work algorithms to solve a problem or to provide functionality in an application. Full implementations of the methods discussed are included, as are descriptions of the operations of these programs on a consistent set of examples. Because we work with real code, rather than write pseudo-code, the programs can be put to practical use quickly. Program listings are available from the book's home page. Indeed, one practical application of the algorithms has been to produce the hundreds of figures throughout the book. Many algorithms are brought to light on an intuitive level through the visual dimension provided by these figures.

Characteristics of the algorithms and of the situations in which they might be useful are discussed in detail. Although not emphasized, connections to the analysis of algorithms and theoretical computer science are developed in context. When appropriate, empirical and analytic results are presented to illustrate why certain algorithms are preferred. When interesting, the relationship of the practical algorithms being discussed to purely theoretical results is described. Specific information on performance characteristics of algorithms and implementations is synthesized, encapsulated, and discussed throughout the book.

Programming Language

The programming language used for all of the implementations is C (versions of the book in C++ and Java are under development). Any particular language has advantages and disadvantages; we use C in this book because it is widely available and provides the features needed for the implementations here. The programs can be translated easily to other modern programming languages because relatively few constructs are unique to C. We use standard C idioms when appropriate, but this book is not intended to be a reference work on C programming.

We strive for elegant, compact, and portable implementations, but we take the point of view that efficiency matters, so we try to be aware of the code's performance characteristics at all stages of development. There are many new programs in this edition, and many of the old ones have been reworked, primarily to make them more readily useful as abstract-data-type implementations. Extensive comparative empirical tests on the programs are discussed throughout the book.

A goal of this book is to present the algorithms in as simple and direct a form as possible. The style is consistent whenever possible so that similar programs look similar. For many of the algorithms, the similarities remain regardless of which language is used: Dijkstra's algorithm (to pick one prominent example) is Dijkstra's algorithm, whether expressed in Algol-60, Basic, Fortran, Smalltalk, Ada, Pascal, C, C++, Modula-3, PostScript, Java, or any of the countless other programming languages and environments in which it has proved to be an effective graph-processing method.

0201316633P09182001

Users Review

From reader reviews:

Thelma Price:

Do you have favorite book? If you have, what is your favorite's book? E-book is very important thing for us to be aware of everything in the world. Each guide has different aim or goal; it means that publication has different type. Some people feel enjoy to spend their a chance to read a book. These are reading whatever they take because their hobby is reading a book. Think about the person who don't like studying a book? Sometime, man feel need book once they found difficult problem or perhaps exercise. Well, probably you'll have this Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5).

Larry Swartz:

Have you spare time for a day? What do you do when you have considerably more or little spare time? Yeah, you can choose the suitable activity for spend your time. Any person spent their own spare time to take a move, shopping, or went to typically the Mall. How about open or maybe read a book entitled Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5)? Maybe it is to become best activity for you. You recognize beside you can spend your time together with your favorite's book, you can wiser than before. Do you agree with its opinion or you have some other opinion?

Evelyn Wiley:

The book Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) can give more knowledge and also the precise product information about everything you want. Why then must we leave a good thing like a book Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5)? Several of you have a different opinion about e-book. But one aim which book can give many details for us. It is absolutely proper. Right now, try to closer using your book. Knowledge or information that you take for that, you may give for each other; you can share all of these. Book Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) has simple shape however, you know: it has great and large function for you. You can look the enormous world by start and read a guide. So it is very wonderful.

Wayne Joseph:

As we know that book is important thing to add our information for everything. By a reserve we can know everything we want. A book is a set of written, printed, illustrated or blank sheet. Every year had been exactly added. This publication Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) was filled about science. Spend your extra time to add your knowledge about your scientific research competence. Some people has distinct feel when they reading some sort of book. If you know how big advantage of a book, you can truly feel enjoy to read a reserve. In the modern era like now, many ways to get book which you wanted.

Read Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick for online ebook

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick books to read online.

Online Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick ebook PDF download

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick Doc

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick Mobipocket

Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick EPub

FWUVSHXDJC8: Algorithms in C, Part 5: Graph Algorithms (3rd Edition) (Pt.5) By Robert Sedgewick