An Introduction To Data Structures And Algorithms

James A. Storer

BSP Books Exclusive
[Book] An Introduction To Data Structures And Algorithms

An Introduction to Data Structures with Applications-Jean-Paul Tremblay 1984
An Introduction to Data Structures and Algorithms-J.A. Storer 2012-12-06

Data structures and algorithms are presented at the college level in a highly accessible format that presents material with one-page displays in a way that will appeal to both teachers and students. The thirteen chapters cover: Models of Computation, Lists, Induction and Recursion, Trees, Algorithm Design, Hashing, Heaps, Balanced Trees, Sets Over a Small Universe, Graphs, Strings, Discrete Fourier Transform, Parallel Computation. Key features: Complicated concepts are expressed clearly in a single page with minimal notation and without the "clutter" of the syntax of a particular programming language; algorithms are presented with self-explanatory "pseudo-code." * Chapters 1-4 focus on elementary concepts, the exposition unfolding at a slower pace. Sample exercises with solutions are provided. Sections that may be skipped for an introductory course are starred. Requires only some basic mathematics background and some computer programming experience. * Chapters 5-13 progress at a faster pace. The material is suitable for undergraduates or first-year graduates who need only review Chapters 1 -4. * This book may be used for a one-semester introductory course (based on Chapters 1-4 and portions of the chapters on algorithm design, hashing, and graph algorithms) and for a one-semester advanced course that starts at Chapter 5. A year-long course may be based on the entire book. * Sorting, often perceived as rather technical, is not treated as a separate chapter, but is used in many examples (including bubble sort, merge sort, tree sort, heap sort, quick sort, and several parallel algorithms). Also, lower bounds on sorting by comparisons are included with the presentation of heaps in the context of lower bounds for comparison-based structures. * Chapter 13 on parallel models of computation is something of a mini-book itself, and a good way to end a course. Although it is not clear what parallel

An Intro To Data Stru 2E-Tremblay 2001
C++-Larry R. Nyhoff 1999

Emphasizing abstract data types (ADJs) throughout, this work covers the containers and algorithms from the Standard Template Library, introducing the most up-to-date and powerful tools in C++.

Introduction to Data Structures in C-Ashok N. Kamthane 2004
Introduction to Data Structures in C is an introductory book on the subject. The contents of the book are designed as per the requirement of the syllabus and the students and will be useful for students of B.E. (Computer/Electronics), MCA, BCA, M.S.

Open Data Structures-Pat Morin 2013
This textbook teaches introductory data structures.

Introduction to Data Structures and Algorithms with C++-Glenn W. Rowe 1997
This is a complete introduction to the critical topic of data structures, written from the object-oriented perspective most students and practitioners are adopting. The book introduces data structures using C++, a language whose classes and object-oriented constructs are specifically designed to efficiently implement data structures. The opening chapters introduce the ideas behind object-oriented programming and C++; once these ideas are explained, the book introduces data structures and algorithms from an O-O point of view. All standard data structures are described, including stacks, queues, sets, linked lists, trees and graphs. Searching and sorting algorithms are also studied. This book is for students and others working with data structures, especially object-oriented developers interested in ways data structures can enhance their effectiveness.

A Practical Introduction to Data Structures and Algorithm Analysis-Clifford A. Shaffer 2001
This practical text contains fairly "traditional" coverage of data structures with a clear and complete use of algorithm analysis, and some emphasis on file processing techniques as relevant to modern programmers. It fully integrates OO programming with these topics, as part of the detailed presentation of OO programming itself. Chapter topics include lists, stacks, and queues; binary and general trees; graphs; file processing and external sorting; searching; indexing; and limits to computation. For programmers who need a good reference on data structures.

DATA STRUCTURES IN C++-N. S. KUTTI 1998-01-01
This compact and comprehensive book provides an introduction to data structures from an object-oriented perspective using the powerful language C++ as the programming vehicle. It is designed as an ideal text for the students before they start designing algorithms in C++. The book begins with an overview of C++, then it goes on to analyze the basic concepts of data structures, and finally focuses the reader's attention on abstract data structures. In so doing, the text uses simple examples to explain the meaning of each data type. Throughout, an attempt has been made to enable students to progress gradually from simple object-oriented abstract data structures to more advanced data structures. A large number of worked examples and the end-of-chapter exercises help the students reinforce the knowledge gained. Intended as a one-semester course for undergraduate students in computer science and for those who offer this course in engineering and management, the book should also prove highly useful to
those IT professionals who have a keen interest in the subject.

JavaScript Data Structures and Algorithms-Sammie Bae 2019-01-23 Explore data structures and algorithm concepts and their relation to everyday JavaScript development. A basic understanding of these ideas is essential to any JavaScript developer wishing to analyze and build great software solutions. You’ll discover how to implement data structures such as hash tables, linked lists, stacks, queues, trees, and graphs. You’ll also learn how a URL shortener, such as bit.ly, is developed and what is happening to the data as a PDF is uploaded to a webpage. This book covers the practical applications of data structures and algorithms to encryption, searching, sorting, and pattern matching. It is crucial for JavaScript developers to understand how data structures work and how to design algorithms. This book and the accompanying code provide that essential foundation for doing so. With JavaScript Data Structures and Algorithms you can start developing your knowledge and applying it to your JavaScript projects today. What You’ll Learn Review core data structure fundamentals: arrays, linked-lists, trees, heaps, graphs, and hash-table Review core algorithm fundamentals: search, sort, recursion, breadth/depth first search, dynamic programming, bitwise operators Examine how the core data structure and algorithms knowledge fits into context of JavaScript explained using prototypical inheritance and native JavaScript objects/data types Take a high-level look at commonly used design patterns in JavaScript Who This Book Is For Existing web developers and software engineers seeking to develop or revisit their fundamental data structures knowledge; beginners and students studying JavaScript independently or via a course or coding bootcamp.

A Concise Introduction to Data Structures using Java-Mark J. Johnson 2013-11-18 A student-friendly text, A Concise Introduction to Data Structures Using Java takes a developmental approach, starting with simpler concepts first and then building toward greater complexity. Important topics, such as linked lists, are introduced gradually and revisited with increasing depth. More code and guidance are provided at the beginning, allowing students time to adapt to Java while also beginning to learn data structures. As students develop fluency in Java, less code is provided and more algorithms are outlined in pseudocode. The text is designed to support a second course in computer science with an emphasis on elementary data structures. The clear, concise explanations encourage students to read and engage with the material, while partial implementations of most data structures give instructors the flexibility to develop some methods as examples and assign others as exercises. The book also supplies an introductory chapter on Java basics that allows students who are unfamiliar with Java to quickly get up to speed. The book helps students become familiar with how to use, design, implement, and analyze data structures, an important step on the path to becoming skilled software developers.

Guide to Data Structures-James T. Streib 2018-01-22 This accessible and engaging textbook/guide provides a concise introduction to data structures and associated algorithms. Emphasis is placed on the fundamentals of data structures, enabling the reader to quickly learn the key concepts, and providing a strong foundation for later studies of more complex topics. The coverage includes discussions on stacks, queues, lists, (using both arrays and links), sorting, and elementary binary trees, heaps, and hashing. This content is also a natural continuation from the material provided in the separate Springer title Guide to Java by the same authors. Topics and features: reviews the preliminary concepts, and introduces stacks and queues using arrays, along with a discussion of array-based lists; examines linked lists, the implementation of stacks and queues using references, binary trees, a range of varied sorting techniques, heaps, and hashing; presents both primitive and generic data types in each chapter, and makes use of contour diagrams to illustrate object-oriented concepts; includes chapter summaries, and asks the reader questions to help them interact with the material; contains numerous examples and illustrations, and one or more complete program in every chapter; provides exercises at the end of each chapter, as well as solutions to selected exercises, and a glossary of important terms. This clearly-written work is an ideal classroom text for a second semester course in programming using the Java programming language, in preparation for a subsequent advanced course in data structures and algorithms. The book is also eminently suitable as a self-study guide in either academe or industry.

Data Structures and Algorithms in Python-Michael T. Goodrich 2013-03-18 Based on the authors’ market leading data structures books in Java and C++, this book offers a comprehensive, definitive introduction to data structures in Python by authoritative authors. Data Structures and Algorithms in Python is the first authoritative object-oriented book available for Python data structures. Designed to provide a comprehensive introduction to data structures and algorithms, including their design, analysis, and implementation, the text will maintain the same general structure as Data Structures and Algorithms in Java and Data Structures and Algorithms in C++.
C++. Begins by discussing Python’s conceptually simple syntax, which allows for a greater focus on concepts. Employs a consistent object-oriented viewpoint throughout the text. Presents each data structure using ADTs and their respective implementations and introduces important design patterns as a means to organize those implementations into classes, methods, and objects. Provides a thorough discussion on the analysis and design of fundamental data structures. Includes many helpful Python code examples, with source code provided on the website. Uses illustrations to present data structures and algorithms, as well as their analysis, in a clear, visual manner. Provides hundreds of exercises that promote creativity, help readers learn how to think like programmers, and reinforce important concepts. Contains many Python-code and pseudo-code fragments, and hundreds of exercises, which are divided into roughly 40% reinforcement exercises, 40% creativity exercises, and 20% programming projects.

Introduction to Data Structures & Algorithms in Java- 2017 Enhance your programming skill set by learning how to use Java to write code to implement data structures and algorithms.

Introduction to Data Structures-Bhagat Singh 1985

Introduction to Data Structures with PASCAL-Thomas L. Naps 1986

An Introduction to Data Structures and Algorithms-J.A. Storer 2001-11-09 Data structures and algorithms are presented at the college level in a highly accessible format that presents material with one-page displays in a way that will appeal to both teachers and students. The thirteen chapters cover: Models of Computation, Lists, Induction and Recursion, Trees, Algorithm Design, Hashing, Heaps, Balanced Trees, Sets Over a Small Universe, Graphs, Strings, Discrete Fourier Transform, Parallel Computation. Key features: Complicated concepts are expressed clearly in a single page with minimal notation and without the "clutter" of the syntax of a particular programming language; algorithms are presented with self-explanatory "pseudo-code." * Chapters 1-4 focus on elementary concepts, the exposition unfolding at a slower pace. Sample exercises with solutions are provided. Sections that may be skipped for an introductory course are starred. Requires only some basic mathematics background and some computer programming experience. * Chapters 5-13 progress at a faster pace. The material is suitable for undergraduates or first-year graduates who need only review Chapters 1-4. * This book may be used for a one-semester introductory course (based on Chapters 1-4 and portions of the chapters on algorithm design, hashing, and graph algorithms) and for a one-semester advanced course that starts at Chapter 5. A year-long course may be based on the entire book. * Sorting, often perceived as rather technical, is not treated as a separate chapter, but is used in many examples (including bubble sort, merge sort, tree sort, heap sort, quick sort, and several parallel algorithms). Also, lower bounds on sorting by comparisons are included with the presentation of heaps in the context of lower bounds for comparison-based structures. * Chapter 13 on parallel models of computation is something of a mini-book itself, and a good way to end a course. Although it is not clear what parallel

An Introduction to Data Structures and Algorithms with Java-Glenn W. Rowe 1998 Assuming only fundamental programming skills in Java, this book begins by introducing the concept of object-oriented programming in Java. Windowing Toolkit (the AWT), is also introduced at an early stage, and it is used to develop object-oriented programs with graphical user interfaces (GUIs). After introducing the standard data structures and algorithms commonly studied in second year computing courses, the book concludes with a substantial case study that provides a hands-on experience with key concepts.

An Introduction to Data Structures and Algorithms-James Andrew Storer 2002

Introduction to Data Structures and Algorithms for Dummies-Engr Michael David 2021-01-07 Data Structures are the programmatic way of storing data so that data can be used efficiently. Almost every enterprise application uses various types of data structures in one or the other way. This tutorial will give you a great understanding on Data Structures needed to understand the complexity of enterprise level applications and need of algorithms, and data structures. Why to Learn Data Structure and Algorithms? As applications are getting complex and data rich, there are three common problems that applications face now-a-days. - Data Search - Consider an inventory of 1 million (10^6) items of a store. If the application is to search an item, it has to search an item in 1 million (10^6) items every time slowing down the search. As data grows, search will become slower. - Processor speed - Processor speed although being very high, falls limited if the data grows to billion records. - Multiple requests - As thousands of users can search data simultaneously on a web server, even the fast server fails while searching the data. To solve the above-mentioned problems, data structures come to rescue. Data can be organized in a data structure in such a way that all items may not be required to be searched, and the required data can be searched almost instantly. Applications of Data Structure and Algorithms - Algorithm is a step-by-step procedure, which defines a set of instructions to be executed in a certain order to get the desired output. Algorithms are generally created independent of underlying languages, i.e. an algorithm can be implemented in more than one programming language. From the data structure point of view,
following are some important categories of algorithms -- Search - Algorithm to search an item in a data structure. - Sort - Algorithm to sort items in a certain order. - Insert - Algorithm to insert item in a data structure. - Update - Algorithm to update an existing item in a data structure. - Delete - Algorithm to delete an existing item from a data structure. The following computer problems can be solved using Data Structures -- Fibonacci number series-Knapsack problem-Tower of Hanoi-All pair shortest path by Floyd-Warshall-Shortest path by Dijkstra-Project scheduling/Audience

This book is designed for Computer Science graduates as well as Software Professionals who are willing to learn data structures and algorithm programming in simple and easy steps.

An Introduction to Data Structures-John Beidler 1982

Data Structure Programming-Joseph Bergin 2012-12-06 This textbook provides an introduction to data structures and the Standard Template Library (STL), which has been recently accepted by the C++ Standards Committee. It provides a carefully integrated discussion of general data structures together with their implementation and use in the STL, thus teaching readers the important features of abstraction whilst using the STL to develop applications.


Java: Data Structures and Programming-Liwu Li 2012-12-06 This introduction to the Java language integrates a discussion of object-oriented programming with the design and implementation of data structures. It covers the most important topics, including algorithm analysis; time and space complexities; Java built-in data structure classes; input and output, data, and access streams; and the persistency of data.

Fundamentals Of Data Structures In C++ (Pul)-Ellis Horowitz 2007 This new edition provides a comprehensive and technically rigorous introduction to data structures such as arrays, stacks, queues, linked lists, trees and graphs and techniques such as sorting hashing that form the basis of all software. In addition, this text presents advanced or specialized data structures such as priority queues, efficient binary search trees, multilway search trees and digital search structures. The book has been updated to include the latest features of the C++ language. Features such as exceptions and templates are now incorporated throughout the text along with limited exposure to STL. Treatment of queues, iterators and dynamic hashing has been improved. The book now discusses topics such as secure hashing algorithms, weightbiased leftist trees, pairing heaps, symmetric min max heaps, interval heaps, top-down splay trees, B+ trees and suffix trees. Red black trees have been made more accessible. The section on multiway tries has been significantly expanded and discusses several trie variations and their application to Internet packet forwarding.

Introduction to Data Structures-Brian Boffey 1989-10-01

Introduction to Data Structures and Algorithms in Java-Kotiyan 2018-12-30 Introduction to Data Structures and Algorithms in Java, 2019 Edition This book is designed to be easy to read and understand although the topic itself is complicated. Algorithms are the procedures that software programs use to manipulate data structures. Besides clear and simple example programs, the author includes a workshop as a small demonstration program executable on an integrated development environment like Netbeans. Take your first step towards a career in software development with this Introduction to Data Structures and Algorithms made easy in Java, one of the most in-demand programming languages and the foundation of the Android. Designed for beginners, this book will provide you with a basic foundation in syntax, which is the first step towards becoming a successful Java developer. You'll learn how computers make decisions and how Java keeps track of information through variables and data types. You'll learn to create conditional statements, functions, and loops to process information and solve problems. This book is for you! You no longer have to waste your time and money trying to learn Java from boring Amazon Java books that are 1000 pages long, expensive Java online courses or complicated Java tutorials that just leave you more confused and frustrated. What this book offers Are you looking for a deeper understanding of the programming so that you can write code that is clearer, more correct, more robust, and more reusable? Look no further! This Kindle Programming book was written as an answer for anyone to pick up Programming Language and be productive. How is this book different? You will be able to start from scratch without having any previous exposure to programming. By the end of this book, you will have the skills to be a capable programmer, or at least know what is involved with how to read and write code. Afterward you should be armed with the knowledge required to feel confident in learning more. You should have general computer skills before you get started. After this you'll know what it takes to at least look at code without your head spinning. It is the best data structures and algorithms book for beginners. What You Will Learn in This book? [Introduction] Getting Started & Setting Programming Environment [Basic of Programming Terms [Basic of Program Structures [Variables, Data Types and
all algorithms (unless otherwise stated) were designed by me, using the theory of the algorithm in question as a "user" and a "builder" perspective using data types to solve problems and building new data types.

Data Structures and Algorithms: Rudolph Russell 2018-05-08

DATA STRUCTURES AND ALGORITHMS

Buy the Paperback version of this book, and get the Kindle eBook version included for FREE! Do You Want to Become An Expert Of Data Structures and Algorithms?? Start Getting this Book and Follow My Step by Step Explanations! Click Add To Cart Now! This book is meant for anyone who wants to learn how to write efficient programs and use the proper data structures and algorithms. In this book, you'll learn the basics of the C++ programming language and object-oriented design concepts. After that, you'll learn about the most important data structures, including linked lists, arrays, queues, and stacks. You will learn also learn about searching and sorting algorithms. This book contains some illustrations and step-by-step explanations with bullet points and exercises for easy and enjoyable learning.

Benefits of reading this book that you're not going to find anywhere else:

- Introduction to C++
- C++ Data Types
- Control Flow Functions
- Overloading and Inlining Classes
- Access Control
- Constructors and Destructors
- Classes and Memory Allocation
- Class and Interface Hierarchies
- Polymorphism
- Member Functions
- Polymorphism
- Interfaces and Abstract Classes
- Templates
- Exceptions
- Convenience and efficiency
- Interoperability
- Correctness and analysis required for understanding them.

Java Collections: David A. Watt 2001-03-30

A unique, practical approach to working with collection classes in Java 2 Software developers new to Java will find the practical, software-engineering based approach taken by this book extremely refreshing. With an emphasis more on software design and less on theory, Java Collections explores in detail Java 2 collection classes, helping programmers choose the best collection classes for each application they work on. Watt and Brown explore abstract data types (ADTs) that turn up again and again in software design, using them to provide context for the data structures required for their implementation and the algorithms associated with the data structures. Numerous worked examples, several large case studies, and end-of-chapter exercises are also provided.

Algorithms and Data Structures in Python: Srinivasan Jagannathan 2014-11-10

This book covers a wide breadth of important and useful subject matter without sacrificing depth. It introduces the reader to the Python programming language, but does not assume deep prior knowledge of computer science or computer programming. The book also provides an in-depth introduction to a variety of algorithms and data structures that are used throughout the industry. In addition, it introduces the reader to important basic concepts in computer science, networking, cryptography, numerical analysis, and computational geometry. The authors provide many illustrative examples written in Python. Python source code of examples used throughout the book can be obtained from: https://github.com/pythonbook/pythonbook


The design and analysis of efficient data structures has long been recognized as a key component of the Computer Science curriculum. Goodrich, Tomassia and Goldwasser's approach to this classic topic is based on the object-oriented paradigm as the framework of choice for the design of data structures. For each ADT presented in the text, the authors provide an associated Java interface. Concrete data structures realizing the ADTs are provided as Java classes implementing the interfaces. The Java code implementing fundamental data structures in this book is organized in a single Java package, net.datastructures. This package forms a coherent library of data structures and algorithms in Java specifically designed for educational purposes in a way that is complimentary with the Java Collections Framework.

Simply In Depth Data Structure & Algorithm: Ajit Singh 2018-05-04

This text is an introduction to the complex world of the Data Structure & Algorithm. A key factor of this book and its associated implementations is that all algorithms (unless otherwise stated) were designed by me, using the theory of the algorithm in question as a "user" and a "builder" perspective using data types to solve problems and building new data types.

An Introduction To Data Structures And Algorithms

This book is meant for anyone who wants to learn how to write efficient programs and use the proper data structures and algorithms. In this book, you'll learn the basics of the C++ programming language and object-oriented design concepts. After that, you'll learn about the most important data structures, including linked lists, arrays, queues, and stacks. You will learn also learn about searching and sorting algorithms. This book contains some illustrations and step-by-step explanations with bullet points and exercises for easy and enjoyable learning.

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- Polymorphism
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- Templates
- Exceptions
- Convenience and efficiency
- Interoperability
- Correctness and analysis required for understanding them.
a guideline (for which we are eternally grateful to their original creators). Therefore they may sometimes turn out to be worse than the normal implementations and sometimes not. Through this book I hope that you will see the absolute necessity of understanding which data structure or algorithm to use for a certain scenario. In all projects, especially those that are concerned with performance (here we apply an even greater emphasis on real-time systems) the selection of the wrong data structure or algorithm can be the cause of a great deal of performance pain.

Data Structures, Algorithms, and Software Principles in C-Thomas A. Standish 1995 Text develops the concepts and theories of data structures and algorithm analysis in a gradual, step-by-step fashion, proceeding from concrete examples to abstract principles. The author discusses many contemporary programming topics in the C language, including risk-based software life cycle models, rapid prototyping, and reusable software components. Also provides an introduction to object oriented programming using C++. Annotation copyright by Book News, Inc., Portland, OR

Data Structures in Java-Thomas A. Standish 1998 Using Java(TM) 1.1, Professor Thomas A. Standish teaches the fundamentals of data structures and algorithms. With this exciting new language, Standish takes a fresh look at the subject matter. New challenges arise any time a new language is used, and the author meets these challenges. For example, although Java is a language without explicit pointers, this book offers pointer diagrams to help students visualize, reason about, and understand this major Data Structures topic. Standish's clear presentation helps readers tie the many concepts of data structures together with recurring themes. Central ideas - such as modularity, levels of abstraction, efficiency, and tradeoffs - serve as integrators in the book in order to tie the material together conceptually and to reveal its underlying unity and interrelationships. Highlights Reviews the fundamentals of object-oriented programming and Java in Chapter 2 and Appendix A, allowing students with no prior knowledge of Java to get up and running quickly. Creates a Java applet with a simple GUI in Chapter 2. Covers recursion early and carefully in Chapter 4 to help students grasp this challenging concept. Includes an introduction to modularity and data abstraction concepts in Chapter 5, and coverage of key software engineering concepts and skills in Appendix C. Contains common pitfall sections at the end of each chapter to help students recognize and avoid potential dangers. ** Instructors materials are available from your sales rep. If you do not know your local sales representative, please call 1-800-552-2499 for assistance, or use the Addison Wesley Longman rep-locator at http://hepg.awl.com/rep-locator. 020130564XB04062001

Introduction to Data Structures and Algorithm Analysis with Pascal-Thomas L. Naps 1992

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