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KEY=TYPES - SHILOH LILLY

Java Collections An Introduction to Abstract Data Types, Data Structures and Algorithms [John Wiley & Sons Incorporated](#) **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.** **Abstract Data Types and Algorithms** [Springer](#) **Intended as a second course on programming with data structures, this book is based on the notion of an abstract data type which is defined as an abstract mathematical model with a defined set of operations.** **Abstract Data Types Specifications, Implementations, and Applications** [Jones & Bartlett Learning](#) **Since 1985 Nell Dale's texts have helped shape the way computer science is taught. Now she and Henry Walker, an accomplished instructor and author in his own right, are proposing a new focus for the junior/senior level data structures course. A timely response to the prevalence of object-oriented programming, this new text expands the focus of the advanced data structures course to examine not only the structure of a data object but also its type. This new focus gives students the opportunity to look at data objects from the point of view of both user and implementer.** **Data Structures with Abstract Data Types and Pascal** [PWS Publishing Company](#) **Data Structures and Algorithms Using Python Data Structures and**

Algorithms in Java [John Wiley & Sons](#) 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.

Problem Solving with Algorithms and Data Structures Using Python [Franklin Beedle & Assoc](#) THIS TEXTBOOK is about computer science. It is also about Python. However, there is much more. The study of algorithms and data structures is central to understanding what computer science is all about. Learning computer science is not unlike learning any other type of difficult subject matter. The only way to be successful is through deliberate and incremental exposure to the fundamental ideas. A beginning computer scientist needs practice so that there is a thorough understanding before continuing on to the more complex parts of the curriculum. In addition, a beginner needs to be given the opportunity to be successful and gain confidence. This textbook is designed to serve as a text for a first course on data structures and algorithms, typically taught as the second course in the computer science curriculum. Even though the second course is considered more advanced than the first course, this book assumes you are beginners at this level. You may still be struggling with some of the basic ideas and skills from a first computer science course and yet be ready to further explore the discipline and continue to practice problem solving. We cover abstract data types and data structures, writing algorithms, and solving problems. We look at a number of data structures and solve classic problems that arise. The tools and techniques that you learn here will be applied over and over as you continue your study of computer science.

Pro Vim [Apress](#) Pro Vim teaches you the real-world workflows, tips, and tricks of this powerful, terminal-based text editor. This book covers all the essentials, as well as lesser-known but equally powerful features that will ensure you become a top-level performant and professional user, able to jump between multiple sessions while manipulating and controlling with ease many different documents and programming files. With easy-to-digest chapters on all the areas you need to learn, this book is a key addition to your library that will enable you to become a fast, efficient user of Vim. Using this book, you will learn how to properly configure your terminal environment and work without even touching the mouse. You will become an expert in how Vim actually works: how buffers and sessions work, automation through Macros and shell scripting, real-world workflows, and how to work efficiently and fast with plugins and different themes. You will also learn practical, real-

world tips on how to best utilize Vim alongside the terminal multiplexer tmux; helping you to manage files across multiple servers and terminal sessions. Avoid common pitfalls and work with best practice ways to efficiently edit and control your files and sessions from the terminal interface. Vim is an advanced power tool that is commonly recognized as being difficult to learn, even for experienced developers. This book shows you how to become an expert by focusing on not only the fundamentals of how Vim works, but also by distilling the author's own experiences learning Vim into an easy-to-understand and follow guide. It's time to bring your programming, editing, and workflow skills up to the professional level - use Pro Vim today.

Genetic Programming and Data Structures: Genetic Programming + Data Structures = Automatic Programming! Springer Science & Business Media

Computers that 'program themselves' has long been an aim of computer scientists. Recently genetic programming (GP) has started to show its promise by automatically evolving programs. Indeed in a small number of problems GP has evolved programs whose performance is similar to or even slightly better than that of programs written by people. The main thrust of GP has been to automatically create functions. While these can be of great use they contain no memory and relatively little work has addressed automatic creation of program code including stored data. This issue is the main focus of Genetic Programming, and Data Structures: Genetic Programming + Data Structures = Automatic Programming!. This book is motivated by the observation from software engineering that data abstraction (e.g., via abstract data types) is essential in programs created by human programmers. This book shows that abstract data types can be similarly beneficial to the automatic production of programs using GP.

Genetic Programming and Data Structures: Genetic Programming + Data Structures = Automatic Programming! shows how abstract data types (stacks, queues and lists) can be evolved using genetic programming, demonstrates how GP can evolve general programs which solve the nested brackets problem, recognises a Dyck context free language, and implements a simple four function calculator. In these cases, an appropriate data structure is beneficial compared to simple indexed memory. This book also includes a survey of GP, with a critical review of experiments with evolving memory, and reports investigations of real world electrical network maintenance scheduling problems that demonstrate that Genetic Algorithms can find low cost viable solutions to such problems. Genetic Programming and Data Structures: Genetic Programming + Data Structures = Automatic Programming! should be of direct interest to computer scientists doing research on genetic programming, genetic algorithms, data structures, and artificial intelligence. In addition, this book will be of interest to practitioners working in all of these areas and to those interested in automatic programming.

Objects, Abstraction, Data Structures and Design Using C++ John Wiley & Sons "It is a practical book with emphasis on real problems the programmers encounter daily." --Dr.Tim H. Lin, California State Polytechnic

University, Pomona "My overall impressions of this book are excellent. This book emphasizes the three areas I want: advanced C++, data structures and the STL and is much stronger in these areas than other competing books." --Al Verbanec, Pennsylvania State University

Think, Then Code

When it comes to writing code, preparation is crucial to success. Before you can begin writing successful code, you need to first work through your options and analyze the expected performance of your design. That's why Elliot Koffman and Paul Wolfgang's **Objects, Abstraction, Data Structures, and Design: Using C++** encourages you to **Think, Then Code**, to help you make good decisions in those critical first steps in the software design process. The text helps you thoroughly understand basic data structures and algorithms, as well as essential design skills and principles. Approximately 20 case studies show you how to apply those skills and principles to real-world problems. Along the way, you'll gain an understanding of why different data structures are needed, the applications they are suited for, and the advantages and disadvantages of their possible implementations.

Key Features

- * Object-oriented approach.
- * Data structures are presented in the context of software design principles.
- * 20 case studies reinforce good programming practice.
- * Problem-solving methodology used throughout... "Think, then code!"
- * Emphasis on the C++ Standard Library.
- * Effective pedagogy.

Data Structures and Algorithms

[GRIN Verlag](#) Research paper from the year 2012 in the subject Computer Science - Applied, grade: A, Atlantic International University (School of Science and Engineering), course: Data Structures and Algorithms, language: English, abstract: This paper reviews the different ways of building data in computer systems, or aspiring to the data structure, as well as the searching methods in this data, which is known as algorithms. Data Structures and algorithms are integrated to form computer programs and in broader terms, explains what is generally known as programming abstraction. Data structures discuss the ways and mechanisms that we use to organize data in an integrated form in computers systems and exploitation of memory locations in an easy and structured ways such as arrays, stacks, queues, lists, linked lists and other. Algorithms, on the other hand, are the ways in which the instructions and operations are carried out to handle information and data on the different types of data structure. A Practical Introduction to Data Structures and Algorithm Analysis 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** [Technical Publications](#) The book has been developed to provide comprehensive and consistent coverage of both the

concepts of data structures as well as implementation of these concepts using C programming. The book utilizes a systematic approach wherein each data structure is explained using examples followed by its implementation using a programming language. It begins with the introduction to data types. In this, an overview of various types of data structures is given and asymptotic notations, best case, worst case and average case time complexity is discussed. The book then focuses on the linear data structures such as arrays, stacks, queues and linked lists. In these units each concept is followed by its implementation and logic explanation part. The book then covers the non-linear data structures such as trees and graphs. These data structures are very well explained with the help of illustrative diagrams, examples and implementations. The text book then covers two important topics - hashing and file structures. While explaining the hashing - various hashing methods, and collision handling techniques are explained with necessary illustrations and examples. File structures are demonstrated by implementing sequential, index sequential and random file organization. Finally searching and sorting algorithms, their implementation and time complexities are discussed. The sorting and searching methods are illustrated systematically with the help of examples. The explanation in this book is in a very simple language along with clear and concise form which will help the students to have clear-cut understanding of the subject. **Data Structures Using C** [Pearson Education India](#) **Data Structures Using C** brings together a first course on data structures and the complete programming techniques, enabling students and professionals implement abstract structures and structure their ideas to suit different needs. This book elaborates the standard data structures using C as the basic programming tool. It is designed for a one semester course on Data Structures. **Data Structures and Algorithm Analysis in Java, Third Edition** [Courier Corporation](#) **Comprehensive treatment** focuses on creation of efficient data structures and algorithms and selection or design of data structure best suited to specific problems. This edition uses Java as the programming language. **Data Structures and Algorithm Analysis in C++, Third Edition** [Courier Corporation](#) **Comprehensive treatment** focuses on creation of efficient data structures and algorithms and selection or design of data structure best suited to specific problems. This edition uses C++ as the programming language. **Data Structures Howto Winner** [Createspace Independent Publishing Platform](#) **In computer science, a data structure is a particular way of organizing data in a computer so that it can be used efficiently. Data structures can implement one or more particular abstract data types (ADT), which specify the operations that can be performed on a data structure and the computational complexity of those operations. In comparison, a data structure is a concrete implementation of the specification provided by an ADT. Different kinds of data structures are suited to different kinds of applications, and some are highly specialized to specific tasks. For example, relational databases commonly use B-tree indexes for data retrieval, while compiler implementations usually use**

hash tables to look up identifiers. Data structures provide a means to manage large amounts of data efficiently for uses such as large databases and internet indexing services. Usually, efficient data structures are key to designing efficient algorithms. Some formal design methods and programming languages emphasize data structures, rather than algorithms, as the key organizing factor in software design. Data structures can be used to organize the storage and retrieval of information stored in both main memory and secondary memory. This updated and expanded second edition of Book provides a user-friendly introduction to the subject, Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for all those interested in the subject . We hope you find this book useful in shaping your future career & Business. **Data Structures Using C** [Vikas Publishing House](#) **Data Structures using C** provides its readers a thorough understanding of data structures in a simple, interesting, and illustrative manner. Appropriate examples, diagrams, and tables make the book extremely student-friendly. It meets the requirements of students in various courses, at both undergraduate and postgraduate levels, including BTech, BE, BCA, BSc, PGDCA, MSc, and MCA. **Key Features** • Presentation for easy grasp through chapter objectives, suitable tables and diagrams and programming examples. • Examination-oriented approach through objective and descriptive questions at the end of each chapter • Large number of questions and exercises for practice **Data Structures Abstraction and Design Using Java** [Wiley](#) **Data Structures: Abstraction and Design Using Java, 3rd Edition**, combines a strong emphasis on problem solving and software design with the study of data structures. The authors discuss applications of each data structure to motivate its study. After providing the specification (interface) and the implementation (a Java class), case studies that use the data structure to solve a significant problem are introduced. **Data Structures in Java From Abstract Data Types to the Java Collections Framework** [Addison-Wesley](#) **Simon Gray's** consistent and coherent approach to data structures teaches students to focus on software design and testing as they learn to develop high-quality software programs. He introduces each collection as an abstract data type and then guides students through a design process. **Data Abstraction and Structures Using C++** [Jones & Bartlett Learning](#) **Open Data Structures An Introduction** [Athabasca University Press](#) **This textbook** teaches introductory data structures. **A Systematic Catalogue of Reusable Abstract Data Types** [Springer Science & Business Media](#) **This book** presents a comprehensive catalogue of elementary data types like sets, maps, orders, trees and lists, written in Ada. Such data types are often used in systems programming. The catalogue is easy to learn, to apply efficiently and to maintain effectively. **Fundamentals of Computer Programming with C#** **The Bulgarian C# Book** [Faber Publishing](#) **The free book "Fundamentals of**

Computer Programming with C#" is a comprehensive computer programming tutorial that teaches programming, logical thinking, data structures and algorithms, problem solving and high quality code with lots of examples in C#. It starts with the first steps in programming and software development like variables, data types, conditional statements, loops and arrays and continues with other basic topics like methods, numeral systems, strings and string processing, exceptions, classes and objects. After the basics this fundamental programming book enters into more advanced programming topics like recursion, data structures (lists, trees, hash-tables and graphs), high-quality code, unit testing and refactoring, object-oriented principles (inheritance, abstraction, encapsulation and polymorphism) and their implementation the C# language. It also covers fundamental topics that each good developer should know like algorithm design, complexity of algorithms and problem solving. The book uses C# language and Visual Studio to illustrate the programming concepts and explains some C# / .NET specific technologies like lambda expressions, extension methods and LINQ. The book is written by a team of developers lead by Svetlin Nakov who has 20+ years practical software development experience. It teaches the major programming concepts and way of thinking needed to become a good software engineer and the C# language in the meantime. It is a great start for anyone who wants to become a skillful software engineer. The books does not teach technologies like databases, mobile and web development, but shows the true way to master the basics of programming regardless of the languages, technologies and tools. It is good for beginners and intermediate developers who want to put a solid base for a successful career in the software engineering industry. The book is accompanied by free video lessons, presentation slides and mind maps, as well as hundreds of exercises and live examples. Download the free C# programming book, videos, presentations and other resources from <http://introprogramming.info>. Title: Fundamentals of Computer Programming with C# (The Bulgarian C# Programming Book) ISBN: 9789544007737 ISBN-13: 978-954-400-773-7 (9789544007737) ISBN-10: 954-400-773-3 (9544007733) Author: Svetlin Nakov & Co. Pages: 1132 Language: English Published: Sofia, 2013 Publisher: Faber Publishing, Bulgaria Web site: <http://www.introprogramming.info> License: CC-Attribution-Share-Alike Tags: free, programming, book, computer programming, programming fundamentals, ebook, book programming, C#, CSharp, C# book, tutorial, C# tutorial; programming concepts, programming fundamentals, compiler, Visual Studio, .NET, .NET Framework, data types, variables, expressions, statements, console, conditional statements, control-flow logic, loops, arrays, numeral systems, methods, strings, text processing, StringBuilder, exceptions, exception handling, stack trace, streams, files, text files, linear data structures, list, linked list, stack, queue, tree, balanced tree, graph, depth-first search, DFS, breadth-first search, BFS, dictionaries, hash tables, associative

arrays, sets, algorithms, sorting algorithm, searching algorithms, recursion, combinatorial algorithms, algorithm complexity, OOP, object-oriented programming, classes, objects, constructors, fields, properties, static members, abstraction, interfaces, encapsulation, inheritance, virtual methods, polymorphism, cohesion, coupling, enumerations, generics, namespaces, UML, design patterns, extension methods, anonymous types, lambda expressions, LINQ, code quality, high-quality code, high-quality classes, high-quality methods, code formatting, self-documenting code, code refactoring, problem solving, problem solving methodology, 9789544007737, 9544007733 R Data Structures and Algorithms [Packt Publishing Ltd](#) Increase speed and performance of your applications with efficient data structures and algorithms About This Book See how to use data structures such as arrays, stacks, trees, lists, and graphs through real-world examples Find out about important and advanced data structures such as searching and sorting algorithms Understand important concepts such as big-o notation, dynamic programming, and functional data structured Who This Book Is For This book is for R developers who want to use data structures efficiently. Basic knowledge of R is expected. What You Will Learn Understand the rationality behind data structures and algorithms Understand computation evaluation of a program featuring asymptotic and empirical algorithm analysis Get to know the fundamentals of arrays and linked-based data structures Analyze types of sorting algorithms Search algorithms along with hashing Understand linear and tree-based indexing Be able to implement a graph including topological sort, shortest path problem, and Prim's algorithm Understand dynamic programming (Knapsack) and randomized algorithms In Detail In this book, we cover not only classical data structures, but also functional data structures. We begin by answering the fundamental question: why data structures? We then move on to cover the relationship between data structures and algorithms, followed by an analysis and evaluation of algorithms. We introduce the fundamentals of data structures, such as lists, stacks, queues, and dictionaries, using real-world examples. We also cover topics such as indexing, sorting, and searching in depth. Later on, you will be exposed to advanced topics such as graph data structures, dynamic programming, and randomized algorithms. You will come to appreciate the intricacies of high performance and scalable programming using R. We also cover special R data structures such as vectors, data frames, and atomic vectors. With this easy-to-read book, you will be able to understand the power of linked lists, double linked lists, and circular linked lists. We will also explore the application of binary search and will go in depth into sorting algorithms such as bubble sort, selection sort, insertion sort, and merge sort. Style and approach This easy-to-read book with its fast-paced nature will improve the productivity of an R programmer and improve the performance of R applications. It is packed with real-world examples. Data Structures and Algorithms in Python [Wiley Global Education](#) Based on the authors' market leading data structures

books in Java and C++, this textbook 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 the Python data structures course. 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++**. **Data Structures with Abstract Data Types and Modula-2** [PWS Publishing Company](#) **ADA Plus Data Structures An Object-oriented Approach** [Jones & Bartlett Learning](#) **Data Structures & Theory of Computation Fundamentals of OOP and Data Structures in Java** [Cambridge University Press](#) **A book for an undergraduate course on data structures which integrates the concepts of object-oriented programming and GUI programming.** **Data Structures Using C++** [Cengage Learning](#) **Now in its second edition, D.S. Malik brings his proven approach to C++ programming to the CS2 course. Clearly written with the student in mind, this text focuses on Data Structures and includes advanced topics in C++ such as Linked Lists and the Standard Template Library (STL). The text features abundant visual diagrams, examples, and extended Programming Examples, all of which serve to illuminate difficult concepts. Complete programming code and clear display of syntax, explanation, and example are used throughout the text, and each chapter concludes with a robust exercise set. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.** **Fundamentals of Algebraic Specification 1 Equations and Initial Semantics** [Springer Science & Business Media](#) **The aim of this book is to present fundamentals of algebraic specifications with respect to the following three aspects: fundamentals in the sense of a carefully motivated introduction to algebraic specifications, which is easy to understand for computer scientists and mathematicians; fundamentals in the sense of mathematical theories which are the basis for precise definitions, constructions, results, and correctness proofs; and fundamentals in the sense of concepts, which are introduced on a conceptual level and formalized in mathematical terms. The book is equally suitable as a text book for graduate courses and as a reference for researchers and system developers.** **Data Structures How to Part 1 for Techies** [Createspace Independent Publishing Platform](#) **In computer science, a data structure is a particular way of organizing data in a computer so that it can be used efficiently. Data structures can implement one or more particular abstract data types (ADT), which specify the operations that can be performed on a data structure and the computational complexity of those operations. In comparison, a data structure is a concrete implementation of the specification provided by an ADT. Different kinds of data structures are suited to different kinds of applications, and some are highly specialized to specific tasks. For example, relational databases commonly use B-tree indexes for data retrieval, while compiler implementations usually use**

hash tables to look up identifiers. Data structures provide a means to manage large amounts of data efficiently for uses such as large databases and internet indexing services. Usually, efficient data structures are key to designing efficient algorithms. Some formal design methods and programming languages emphasize data structures, rather than algorithms, as the key organizing factor in software design. Data structures can be used to organize the storage and retrieval of information stored in both main memory and secondary memory. This updated and expanded second edition of Book provides a user-friendly introduction to the subject, Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for all those interested in the subject . We hope you find this book useful in shaping your future career & Business. Data Structure for 'C' Programming [Firewall Media](#) Composing Software An Exploration of Functional Programming and Object Composition in JavaScript All software design is composition: the act of breaking complex problems down into smaller problems and composing those solutions. Most developers have a limited understanding of compositional techniques. It's time for that to change. In "Composing Software", Eric Elliott shares the fundamentals of composition, including both function composition and object composition, and explores them in the context of JavaScript. The book covers the foundations of both functional programming and object oriented programming to help the reader better understand how to build and structure complex applications using simple building blocks. You'll learn: Functional programming Object composition How to work with composite data structures Closures Higher order functions Functors (e.g., array.map) Monads (e.g., promises) Transducers Lenses All of this in the context of JavaScript, the most used programming language in the world. But the learning doesn't stop at JavaScript. You'll be able to apply these lessons to any language. This book is about the timeless principles of software composition and its lessons will outlast the hot languages and frameworks of today. Unlike most programming books, this one may still be relevant 20 years from now. This book began life as a popular blog post series that attracted hundreds of thousands of readers and influenced the way software is built at many high growth tech startups and fortune 500 companies Data Structures Using - C [Nitya Publications](#) Data Structure is an essential part of any computer system. Similarly, a course on Data Structure is main role of any computer-science education. We are introducing in this book different types of data structures such as Linear and Non-Linear data structures. In Linear data structures we are exploring basic data structures such as stacks and queues and Linked-List. Where as in Non-Linear data structures we are introducing and implementing of the trees like Binary search trees, AVL trees, Red-Black and Splay trees. And also exploring the knowledge of

graphs and sorting techniques. **Data Structures I Essentials** [Research & Education Assoc.](#) REA's Essentials provide quick and easy access to critical information in a variety of different fields, ranging from the most basic to the most advanced. As its name implies, these concise, comprehensive study guides summarize the essentials of the field covered. Essentials are helpful when preparing for exams, doing homework and will remain a lasting reference source for students, teachers, and professionals. **Data Structures I** includes scalar variables, arrays and records, elementary sorting, searching, linked lists, queues, and appendices of binary notation and subprogram parameter passing. **The Design and Analysis of Computer Algorithms** [Pearson Education India](#) **Computational Intelligence for Decision Support** [CRC Press](#) Intelligent decision support relies on techniques from a variety of disciplines, including artificial intelligence and database management systems. Most of the existing literature neglects the relationship between these disciplines. By integrating AI and DBMS, **Computational Intelligence for Decision Support** produces what other texts don't: an explanation of how to use AI and DBMS together to achieve high-level decision making. Threading relevant disciplines from both science and industry, the author approaches computational intelligence as the science developed for decision support. The use of computational intelligence for reasoning and DBMS for retrieval brings about a more active role for computational intelligence in decision support, and merges computational intelligence and DBMS. The introductory chapter on technical aspects makes the material accessible, with or without a decision support background. The examples illustrate the large number of applications and an annotated bibliography allows you to easily delve into subjects of greater interest. The integrated perspective creates a book that is, all at once, technical, comprehensible, and usable. Now, more than ever, it is important for science and business workers to creatively combine their knowledge to generate effective, fruitful decision support. **Computational Intelligence for Decision Support** makes this task manageable. **Learning Functional Data Structures and Algorithms** [Packt Publishing Ltd](#) Learn functional data structures and algorithms for your applications and bring their benefits to your work now **About This Book** Moving from object-oriented programming to functional programming? This book will help you get started with functional programming. Easy-to-understand explanations of practical topics will help you get started with functional data structures. Illustrative diagrams to explain the algorithms in detail. Get hands-on practice of Scala to get the most out of functional programming. **Who This Book Is For** This book is for those who have some experience in functional programming languages. The data structures in this book are primarily written in Scala, however implementing the algorithms in other functional languages should be straight forward. **What You Will Learn** Learn to think in the functional paradigm Understand common data structures and the associated algorithms, as well as the context in which they are commonly used Take a look at the runtime and

space complexities with the O notation See how ADTs are implemented in a functional setting Explore the basic theme of immutability and persistent data structures Find out how the internal algorithms are redesigned to exploit structural sharing, so that the persistent data structures perform well, avoiding needless copying. Get to know functional features like lazy evaluation and recursion used to implement efficient algorithms Gain Scala best practices and idioms In Detail Functional data structures have the power to improve the codebase of an application and improve efficiency. With the advent of functional programming and with powerful functional languages such as Scala, Clojure and Elixir becoming part of important enterprise applications, functional data structures have gained an important place in the developer toolkit. Immutability is a cornerstone of functional programming. Immutable and persistent data structures are thread safe by definition and hence very appealing for writing robust concurrent programs. How do we express traditional algorithms in functional setting? Won't we end up copying too much? Do we trade performance for versioned data structures? This book attempts to answer these questions by looking at functional implementations of traditional algorithms. It begins with a refresher and consolidation of what functional programming is all about. Next, you'll get to know about Lists, the work horse data type for most functional languages. We show what structural sharing means and how it helps to make immutable data structures efficient and practical. Scala is the primary implementation languages for most of the examples. At times, we also present Clojure snippets to illustrate the underlying fundamental theme. While writing code, we use ADTs (abstract data types). Stacks, Queues, Trees and Graphs are all familiar ADTs. You will see how these ADTs are implemented in a functional setting. We look at implementation techniques like amortization and lazy evaluation to ensure efficiency. By the end of the book, you will be able to write efficient functional data structures and algorithms for your applications. Style and approach Step-by-step topics will help you get started with functional programming. Learn by doing with hands-on code snippets that give you practical experience of the subject. The Algorithm Design Manual: Text Springer Science & Business Media This volume helps take some of the "mystery" out of identifying and dealing with key algorithms. Drawing heavily on the author's own real-world experiences, the book stresses design and analysis. Coverage is divided into two parts, the first being a general guide to techniques for the design and analysis of computer algorithms. The second is a reference section, which includes a catalog of the 75 most important algorithmic problems. By browsing this catalog, readers can quickly identify what the problem they have encountered is called, what is known about it, and how they should proceed if they need to solve it. This book is ideal for the working professional who uses algorithms on a daily basis and has need for a handy reference. This work can also readily be used in an upper-division course or as a student reference guide. THE ALGORITHM DESIGN MANUAL comes with

a CD-ROM that contains:* a complete hypertext version of the full printed book.* the source code and URLs for all cited implementations.* over 30 hours of audio lectures on the design and analysis of algorithms are provided, all keyed to on-line lecture notes.