

Mathematical Structures For Computer Science

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Discrete Mathematical Structures for Computer Scientists and Engineers Macmillan Stein/Drysdale/Bogart's Discrete Mathematics for Computer Scientists is ideal for computer science students taking the discrete math course. Written specifically for computer science students, this unique textbook directly addresses their needs by providing a foundation in discrete math while using motivating, relevant CS applications. This text takes an active-learning approach where activities are presented as exercises and the material is then fleshed out through explanations and extensions of the exercises.

Mathematical Structures for Computer Science Cambridge University Press Mathematics plays a key role in computer science, some researchers would consider computers as nothing but the physical embodiment of mathematical systems. And whether you are designing a digital circuit, a computer program or a new programming language, you need mathematics to be able to reason about the design -- its correctness, robustness and dependability. This book covers the foundational mathematics necessary for courses in computer science. The common approach to presenting mathematical concepts and operators is to define them in terms of properties they satisfy, and then based on these definitions develop ways of computing the result of applying the operators and prove them correct. This book is mainly written for computer science students, so here the author takes a different approach: he starts by defining ways of calculating the results of applying the operators and then proves that they satisfy various properties. After justifying his underlying approach the author offers detailed chapters covering propositional logic, predicate calculus, sets, relations, discrete structures, structured types, numbers, and reasoning about programs. The book contains chapter and section summaries, detailed proofs and many end-of-section exercises -- key to the learning process. The book is suitable for undergraduate and graduate students, and although the treatment focuses on areas with frequent applications in computer science, the book is also suitable for students of mathematics and engineering.

A Course In Discrete Mathematical Structures Alpha Science International, Limited Master the fundamentals of discrete mathematics with DISCRETE MATHEMATICS FOR COMPUTER SCIENCE with Student Solutions Manual CD-ROM! An increasing number of computer scientists from diverse areas are using discrete mathematical structures to explain concepts and problems and this mathematics text shows you how to express precise ideas in clear mathematical language. Through a wealth of exercises and examples, you will learn how mastering discrete mathematics will help you develop important reasoning skills that will continue to be useful throughout your career. Discrete Mathematics for Computer Science Jones & Bartlett Learning This book provides a broad introduction to some of the most fascinating and beautiful areas of discrete mathematical structures. It starts with a chapter on sets and goes on to provide examples in logic, applications of the principle of inclusion and exclusion and finally the pigeonhole principal. Computational techniques including the principle of mathematical induction are provided, as well as a study on elementary properties of graphs, trees and lattices. Some basic results on groups, rings, fields and vector spaces are also given, the treatment of which is

intentionally simple since such results are fundamental as a foundation for students of discrete mathematics. In addition, some results on solutions of systems of linear equations are discussed./a Discrete Mathematical Structures for Computer Science PHI Learning Pvt. Ltd. This text has been designed as a complete introduction to discrete mathematics, primarily for computer science majors in either a one or two semester course. The topics addressed are of genuine use in computer science, and are presented in a logically coherent fashion. The material has been organized and interrelated to minimize the mass of definitions and the abstraction of some of the theory. For example, relations and directed graphs are treated as two aspects of the same mathematical idea. Whenever possible each new idea uses previously encountered material, and then developed in such a way that it simplifies the more complex ideas that follow.

Discrete Mathematical Structures for Computer Science Pearson This is the only discrete math text that has a thread holding the various topics together. One of the shortest books on the market. New to this edition: stronger coverage of logic, graphs, and trees. Also includes special student projects. Mathematics of Discrete Structures for Computer Science CRC Press This textbook provides an engaging and motivational introduction to traditional topics in discrete mathematics, in a manner specifically designed to appeal to computer science students. The text empowers students to think critically, to be effective problem solvers, to integrate theory and practice, and to recognize the importance of abstraction. Clearly structured and interactive in nature, the book presents detailed walkthroughs of several algorithms, stimulating a conversation with the reader through informal commentary and provocative questions. Features: no university-level background in mathematics required; ideally structured for classroom-use and self-study, with modular chapters following ACM curriculum recommendations; describes mathematical processes in an algorithmic manner; contains examples and exercises throughout the text, and highlights the most important concepts in each section; selects examples that demonstrate a practical use for the concept in question.

Discrete Mathematical Structures (Classic Version) John Wiley & Sons Readers will learn discrete mathematical abstracts as well as its implementation in algorithm and data structures shown in various programming languages, such as C, C++, PHP, Java, C#, Python and Dart. This book combines two major components of Mathematics and Computer Science under one roof. Without the core conceptions and tools derived from discrete mathematics, one cannot understand the abstract or the general idea involving algorithm and data structures in Computer Science. The objects of data structures are basically objects of discrete mathematics. This book tries to bridge the gap between two major components of Mathematics and Computer Science.In any computer science course, studying discrete mathematics is essential, although they are taught separately, except in a few cases. Yet, a comprehensive book, combining these two major components, is hard to find out; not only that, it is almost impossible to understand one without the help of other.Hope, this book will fill the gap. Readers will learn discrete mathematical abstracts as well as its implementation in algorithm and data structures shown in various programming language, such as C++, Java, C#, Python and Dart.1. Introduction to the Discourse Is Discrete Mathematics enough to study Computer Science? A short Introduction to Discrete Mathematics What is Discrete Mathematics What is the relationship between Discrete Mathematics and Computer Science Introducing necessary conceptions 2. Introduction to Programming Language and Boolean Algebra Logic, Mathematics, and Programming Language Introduction to Boolean Algebra 3. De Morgan's Laws on Boolean Algebra, Logical Expression, and Algorithm Logical Expression Short Circuit EvaluationSyntax, Semantics and Conditional ExecutionWhy we need Control Constructs Discrete Mathematical Notations and Algorithm 4. Data Structures in different Programming languages Mean, Median and Mode Array, the First Step to Data Structure Let us understand some Array features Set Theory, Probability and Array Skewed Mean, Maximized Median Complex Array Algorithm 5. Data Structures: Abstractions and Implementation How objects work with each other More Algorithm and Time Complexity Introducing Data Structures How Calculus and Linear Algebra are Related to this Discourse 6. Data Structures in Detail Frequently Asked Questions about Data Structures Abstract Data Type (ADT) Linear Data Structures Modeling of a Structure ArrayList to overcome limitations of Array ArrayList or LinkedList, which is faster? Collection Framework in programming languages Stack and Queue in Java Deque, a high-performance Abstract Data Type 7. Algorithm, Data Structure, Collection Framework and Standard Template Library (STL) Introducing Algorithm Library Different types of

Algorithms Binary Tree and Data Structure Collection Framework in Java Discrete Mathematical Abstractions and Implementation through Java Collection Comparator, Comparable and Iterator Standard Template Library in C++ 8. Time Complexity Order of n, or O(n) Big O Notation 9. Set, Symmetric Difference and Propositional Logic Why Set is important in Data Structures How Symmetric Difference and Propositional Logic combine 10. Combinatorics and Counting, Permutation and Combinations Permutation and CombinationWhat Next **Discrete Mathematics for Computer Scientists** Springer Science & Business Media Judith Gersting's Mathematical Structures for Computer Science has long been acclaimed for its clear presentation of essential concepts and its exceptional range of applications relevant to computer science majors. Now with this new edition, it is the first discrete mathematics textbook revised to meet the proposed new ACM/IEEE standards for the course. Discrete Mathematical Structures, 1/e Pearson Education India 'The presentation is modeled on the discursive style of the Bourbaki collective, and the coverage of topics is rich and varied. Grandis has provided a large selection of exercises and has sprinkled orienting comments throughout. For an undergraduate library where strong students seek an overview of a significant portion of mathematics, this would be an excellent acquisition. Summing up: Recommended.'CHOICESince the last century, a large part of Mathematics is concerned with the study of mathematical structures, from groups to fields and vector spaces, from lattices to Boolean algebras, from metric spaces to topological spaces, from topological groups to Banach spaces.More recently, these structured sets and their transformations have been assembled in higher structures, called categories.We want to give a structural overview of these topics, where the basic facts of the different theories are unified through the 'universal properties' that they satisfy, and their particularities stand out, perhaps even more.This book can be used as a textbook for undergraduate studies and for self-study. It can provide students of Mathematics with a unified perspective of subjects which are often kept apart. It is also addressed to students and researchers of disciplines having strong interactions with Mathematics, like Physics and Chemistry, Statistics, Computer Science, Engineering. Discrete Mathematical Structures with Applications to Computer Science Createspace Independent Publishing Platform 'Discrete Mathematical Structures' provides an introductory mathematical foundation for further advanced study in data structures, algorithms, compilers and theory of computation. *Mathematical Structures for Computer Science* WH Freeman This title is part of the Pearson Modern Classics series. Pearson Modern Classics are acclaimed titles at a value price. Please visit www.pearsonhighered.com/math-classics-series for a complete list of titles. Discrete Mathematical Structures, 6th Edition, offers a clear and concise presentation of the fundamental concepts of discrete mathematics. Ideal for a one-semester introductory course, this text contains more genuine computer science applications than any other text in the field. This book is written at an appropriate level for a wide variety of majors and non-majors, and assumes a college algebra course as a prerequisite. **Discrete Structures, Logic, and Computability** World Scientific Discrete Mathematics for Computer Science: An Example-Based Introduction is intended for a first- or second-year discrete mathematics course for computer science majors. It covers many important mathematical topics essential for future computer science majors, such as algorithms, number representations, logic, set theory, Boolean algebra, functions, combinatorics, algorithmic complexity, graphs, and trees. Features Designed to be especially useful for courses at the community-college level Ideal as a first- or second-year textbook for computer science majors, or as a general introduction to discrete mathematics Written to be accessible to those with a limited mathematics background, and to aid with the transition to abstract thinking Filled with over 200 worked examples, boxed for easy reference, and over 200 practice problems with answers Contains approximately 40 simple algorithms to aid students in becoming proficient with algorithm control structures and pseudocode Includes an appendix on basic circuit design which provides a real-world motivational example for computer science majors by drawing on multiple topics covered in the book to design a circuit that adds two eight-digit binary numbers Jon Pierre Fortney graduated from the University of Pennsylvania in 1996 with a BA in Mathematics and

Actuarial Science and a BSE in Chemical Engineering. Prior to returning to graduate school, he worked as both an environmental engineer and as an actuarial analyst. He graduated from Arizona State University in 2008 with a PhD in Mathematics, specializing in Geometric Mechanics. Since 2012, he has worked at Zayed University in Dubai. This is his second mathematics textbook.

[Discrete Mathematics - Proof Techniques And Mathematical Structures](#) Springer Science & Business Media

For one/two-term, freshman/sophomore-level courses in Discrete Mathematics. More than any other book in the field, this text ties together discrete topics with a theme. Written at an appropriate level of rigor with a strong pedagogical focus it limits depth of coverage and areas covered to topics of genuine use in computer science. An emphasis on both basic theory and applications provides students with a firm foundation for more advanced courses.

[FUNDAMENTALS OF DISCRETE MATHEMATICAL STRUCTURES](#) McGraw-Hill Companies
This edition offers a pedagogically rich and intuitive introduction to discrete mathematics structures. It meets the needs of computer science majors by being both comprehensive and accessible.

Mathematical Structures for Computer Science CRC Press
Discrete Mathematical Structures provides comprehensive, reasonably rigorous and simple explanation of the concepts with the help of numerous applications from computer science and engineering. Every chapter is equipped with a good number of solved examples that elucidate the definitions and theorems discussed. Chapter-end exercises are graded, with the easier ones in the beginning and then the complex ones, to help students for easy solving.

[Discrete Mathematics](#) McGraw-Hill Companies
This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, counting principles; discrete probability. Further selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.

[Discrete Mathematical Structures with Applications to Computer Science](#) World Scientific Publishing Company
This book contains fundamental concepts on discrete mathematical structures in an easy to understand style so that the reader can grasp the contents and explanation easily. The concepts of discrete mathematical structures have application to computer science, engineering and information technology including in coding techniques, switching circuits, pointers and linked allocation, error corrections, as well as in data networking, Chemistry, Biology and many other scientific areas. The book is for undergraduate and graduate levels learners and educators associated with various courses and programmes in Mathematics, Computer Science, Engineering and Information Technology. The book should serve as a text and reference guide to many undergraduate and graduate programmes offered by many institutions including colleges and universities. Readers will find solved examples and end of chapter exercises to enhance reader comprehension. Features Offers comprehensive coverage of basic ideas of Logic, Mathematical Induction, Graph Theory, Algebraic Structures and Lattices and Boolean Algebra Provides end of chapter solved examples and practice problems Delivers materials on valid arguments and rules of inference with illustrations Focuses on algebraic structures to enable the reader to work with discrete structures

[Discrete Mathematical Algorithm, and Data Structures](#) Cengage Learning
Note: This is a custom edition of Levin's full Discrete Mathematics text, arranged specifically for use in a discrete math course for future elementary and middle school teachers. (It is NOT a new and updated edition of the main text.)This gentle introduction to discrete mathematics is written for first and second year math majors, especially those who intend to teach. The text began as a set of lecture notes for the discrete mathematics course at the University of Northern Colorado. This course serves both as an introduction to topics in discrete math and as the "introduction to proof" course for math majors. The course is usually taught with a large amount of student inquiry, and this text is written to help facilitate this.Four main topics are covered: counting, sequences, logic, and graph theory. Along the way proofs are introduced, including proofs by contradiction, proofs by induction, and combinatorial proofs.While there are many fine discrete math textbooks available, this text has the following advantages: - It is written to be used in an inquiry rich course.- It is written to be used in a course for future math teachers.- It is open source, with low cost print editions and free electronic editions.

Elements of discrete mathematical structures in computer science CRC Press

Teaches students the mathematical foundations of computer science, including logic, Boolean algebra, basic graph theory, finite state machines, grammars and algorithms, and helps them understand mathematical reasoning for reading, comprehension and construction of mathematical arguments.