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Introduction to Programming with Java Dec 10 2020 "This book is of computer programming. This edition includes new chapters, reorganized chapter sections, new programming constructs, new program examples, and all new exercises and lots of problem-solving practice"--

Programming Languages Mar 01 2020 Programming Languages: An Active Learning Approach introduces students to three programming paradigms: object-oriented/imperative languages using C++ and Ruby, functional languages using Standard ML, and logic programming using Prolog. This interactive textbook is intended to be used in and outside of class. Each chapter follows a pattern of presenting a topic followed by a practice exercise or exercises that encourage students to try what they have just read. This textbook is best-suited for students with a 2-3 course introduction to imperative programming. Key Features: (1) Accessible structure guides the student through various programming languages. (2) Seamlessly integrated practice exercises. (3) Classroom-tested. (4) Online support materials. Advance praise: "The Programming Languages book market is overflowing with books, but none like this. In many ways, it is precisely the book I have been searching for to use in my own programming languages course. One of the main challenges I perpetually face is how to teach students to program in functional and logical languages, but also how to teach them about compilers. This book melds the two approaches very well." -- David Musicant, Carleton College

Create, Innovate, and Serve May 15 2021 Emphasizing an inclusive approach to programming that incorporates research-based theories and frameworks, this text will be a valuable orientation tool for LIS students as well as a holistic guide for current children and youth services professionals.

A Practical Approach to Data Structure and Algorithm with Programming in C Jul 05 2020 A Practical Approach to Data Structure and Algorithm with Programming in C discusses about how data structure and algorithm plays out with programming in C. This book comprises topics such as algorithm writing and array. This book sheds light on topics such as searching algorithms, searching algorithms and heap & heap sort in terms of data structure. Readers have also provided insights about basic as well as advanced level information about types of arrays, space complexity of recursive algorithm and primitive operations on array. There is also a discussion about the applications and implementation of the above-mentioned factors in this book.

Python Programming Jun 15 2021 Maintaining a practical perspective, Python Programming: A Practical Approach acquaints you with the wonderful world of programming. The book is a starting point for those who want to learn Python programming. The backbone of any programming, which is the data structure and components such as strings, lists, etc., have been illustrated with many examples and enough practice problems to instill a level of self-confidence in the reader. Drawing on knowledge gained directly from teaching Computer Science as a subject and working on a wide range of projects related to ML, AI, deep learning, and blockchain, the authors have tried their best to present the necessary skills for a Python programmer. Once the foundation of Python programming is built and the readers are aware of the exact structure, dimensions, processing, building blocks, and representation of data, they can readily take up their specific problems from the area of interest and solve them with the help of Python. These include, but are not limited to,

operators, control flow, strings, functions, module processing, object-oriented programming, exception and file handling, multithreading, synchronization, regular expressions, and Python database programming. This book on Python programming is specially designed to keep readers busy with learning fundamentals and generates a sense of confidence by attempting the assignment problems. We firmly believe that explaining any particular technology deviates from learning the fundamentals of a programming language. This book is focused on helping readers attempt implementation in their areas of interest through the skills imparted through this book. We have attempted to present the real essence of Python programming, which you can confidently apply in real life by using Python as a tool. Salient Features ? Based on real-world requirements and solution. ? Simple presentation without avoiding necessary details of the topic. ? Executable programs on almost every topic. ? Plenty of exercise questions, designed to test readers' skills and understanding. Purposefully designed to be instantly applicable, Python Programming: A Practical Approach provides implementation examples so that the described subject matter can be immediately implemented due to the well-known versatility of Python in handling different data types with ease.

Python Programming Jan 11 2021 Python Programming is designed as a textbook to fulfil the requirements of the first-level course in Python programming. It is suited for undergraduate degree students of computer science engineering, IT as well as computer applications. This book will enable students to apply the Python programming concepts in solving real-world problems. The book begins with an introduction to computers, problem solving approaches, programming languages, object oriented programming, and Python programming. Separate chapters dealing with the important constructs of Python language such as control statements, functions, strings, files, data structures, classes and objects, inheritance, operator overloading, and exceptions are provided in the book.

Beginning Java Programming Apr 01 2020 A comprehensive Java guide, with samples, exercises, casestudies, and step-by-step instruction Beginning Java Programming: The Object Oriented Approachis a straightforward resource for getting started with one of theworld's most enduringly popular programming languages. Based onclasses taught by the authors, the book starts with the basics andgradually builds into more advanced concepts. The approach utilizesan integrated development environment that allows readers toimmediately apply what they learn, and includes step-by-stepinstruction with plenty of sample programs. Each chapter containsexercises based on real-world business and educational scenarios,and the final chapter uses case studies to combine several conceptsand put readers' new skills to the test. Beginning Java Programming: The Object Oriented Approachprovides both the information and the tools beginners need todevelop Java skills, from the general concepts of object-orientedprogramming. Learn to: Understand the Java language and object-oriented conceptimplementation Use Java to access and manipulate external data Make applications accessible to users with GUIs Streamline workflow with object-oriented patterns The book is geared for those who want to use Java in an appliedenvironment while learning at the same time. Useful as either acourse text or a stand-alone self-study program, Beginning JavaProgramming is a thorough, comprehensive guide.

An Object-oriented Approach to Programming Logic and Design Jul 29 2022 An Object-Oriented Approach to Programming Logic and Design, 3e, International Edition provides the beginning programmer with a guide to developing object-oriented program logic. This textbook assumes no programming language experience. The writing is nontechnical and emphasizes good programming practices. The examples are business examples; they do not assume mathematical background beyond high school business math. Additionally, the examples illustrate one or two major points; they do not contain so many features that students become lost following irrelevant and extraneous details.

Dynamic Programming for Coding Interviews Jul 17 2021 I wanted to compute 80th term of the Fibonacci series. I wrote the rampant recursive function, int fib(int n){ return (1==n || 2==n) ? 1 : fib(n-1) + fib(n-2); } and waited for the result. I wait… and wait… and wait… With an 8GB RAM and an Intel i5 CPU, why is it taking so long? I terminated the process and tried computing the 40th term. It took about a second. I put a check and was shocked to find that the above recursive function was called 204,668,309 times while computing the 40th term. More than 200 million times? Is it reporting function calls or scam of some government? The Dynamic Programming solution computes 100th Fibonacci term in less than fraction of a second, with a single function call, taking linear time and constant extra memory. A recursive solution, usually, neither pass all test cases in a coding competition, nor does it impress the interviewer in an interview of company like Google, Microsoft, etc. The most difficult questions asked in competitions and interviews, are from dynamic programming. This book takes Dynamic Programming head-on. It first explain the concepts with simple examples and then deep dives into complex DP problems.

Programming in C: A Practical Approach Nov 28 2019 Programming in C: A Practical Approach has a perfect blend of theory as well as practical knowledge. The presentation has been done in such a way that it helps the readers to learn the concepts through practice and programming.

Denotational Semantics Sep 18 2021 "First book-length exposition of the denotational (or `mathematical' or `functional') approach to the formal semantics of programming languages (in contrast to `operational' and `axiomatic' approaches). Treats various kinds of languages, beginning with the pure-lambda-calculus and progressing through languages with states, commands, jumps, and assignments. This somewhat discursive account is a valuable compilation of results not otherwise available in a single source." -- American Mathematical Monthly

Learning Functional Programming in Go Jan 23 2022 Function literals, Monads, Lazy evaluation, Currying, and more About This Book Write concise and maintainable code with streams and high-order functions Understand the benefits of currying your Golang functions Learn the most effective design patterns for functional programming and learn when to apply each of them Build distributed MapReduce solutions using Go Who This Book Is For This book is for Golang developers comfortable with OOP and interested in learning how to apply the functional paradigm to create robust and testable apps. Prior programming experience with Go would be helpful, but not mandatory. What You Will Learn Learn how to compose reliable applications using high-order functions Explore techniques to eliminate side-effects using FP techniques such as currying Use first-class functions to implement pure functions Understand how to implement a lambda expression in Go Compose a working application using the decorator pattern Create faster programs using lazy evaluation Use Go concurrency constructs to compose a functionality pipeline Understand category theory and what it has to do with FP In Detail Functional programming is a popular programming paradigm that is used to simplify many tasks and will help you write flexible and succinct code. It allows you to decompose your programs into smaller, highly reusable components, without applying conceptual restraints on how the software should be modularized. This book bridges the language gap

for Golang developers by showing you how to create and consume functional constructs in Golang. The book is divided into four modules. The first module explains the functional style of programming; pure functional programming (FP), manipulating collections, and using high-order functions. In the second module, you will learn design patterns that you can use to build FP-style applications. In the next module, you will learn FP techniques that you can use to improve your API signatures, to increase performance, and to build better Cloud-native applications. The last module delves into the underpinnings of FP with an introduction to category theory for software developers to give you a real understanding of what pure functional programming is all about, along with applicable code examples. By the end of the book, you will be adept at building applications the functional way. Style and approach This book takes a pragmatic approach and shows you techniques to write better functional constructs in Golang. We'll also show you how use these concepts to build robust and testable apps.

Python Programming Mar 13 2021 New To Python? Want a clear and straight forward guide to learning it? This comprehensive guide covers every beginner concept you should know!

Introduction to Programming in Python May 03 2020 Today, anyone in a scientific or technical discipline needs programming skills. Python is an ideal first programming language, and Introduction to Programming in Python is the best guide to learning it. Princeton University's Robert Sedgewick, Kevin Wayne, and Robert Dondero have crafted an accessible, interdisciplinary introduction to programming in Python that emphasizes important and engaging applications, not toy problems. The authors supply the tools needed for students to learn that programming is a natural, satisfying, and creative experience. This example-driven guide focuses on Python's most useful features and brings programming to life for every student in the sciences, engineering, and computer science. Coverage includes Basic elements of programming: variables, assignment statements, built-in data types, conditionals, loops, arrays, and I/O, including graphics and sound Functions, modules, and libraries: organizing programs into components that can be independently debugged, maintained, and reused Object-oriented programming and data abstraction: objects, modularity, encapsulation, and more Algorithms and data structures: sort/search algorithms, stacks, queues, and symbol tables Examples from applied math, physics, chemistry, biology, and computer science--all compatible with Python 2 and 3 Drawing on their extensive classroom experience, the authors provide Q&As, exercises, and opportunities for creative practice throughout. An extensive amount of supplementary information is available at introcs.cs.princeton.edu/python. With source code, I/O libraries, solutions to selected exercises, and much more, this companion website empowers people to use their own computers to teach and learn the material.

DATA STRUCTURES A PROGRAMMING APPROACH WITH C Sep 26 2019 This well-organized book, now in its second edition, discusses the fundamentals of various data structures using C as the programming language. Beginning with the basics of C, the discussion moves on to describe Pointers, Arrays, Linked lists, Stacks, Queues, Trees, Heaps, Graphs, Files, Hashing, and so on that form the base of data structure. It builds up the concept of Pointers in a lucid manner with suitable examples, which forms the crux of Data Structures. Besides updated text and additional multiple choice questions, the new edition deals with various classical problems such as 8-queens problem, towers of Hanoi, minesweeper, lift problem, tic-tac-toe and Knapsack problem, which will help students understand how the real-life problems can be solved by using data structures. The book exhaustively covers all important topics prescribed in the syllabi of Indian universities/institutes, including all the Technical Universities and NITs. Primarily intended as a text for the undergraduate students of Engineering (Computer Science/Information Technology) and postgraduate students of Computer Application (MCA) and Computer Science (M.Sc.), the book will also be of immense use to professionals engaged in the field of computer science and information technology. Key Features • Provides more than 160 complete programs for better understanding. • Includes over 470 MCQs to cater to the syllabus needs of GATE and other competitive exams. • Contains over 500 figures to explain various algorithms and concepts. • Contains solved examples and programs for practice. • Provides companion CD containing additional programs for students' use.

Algebraic Approaches to Program Semantics Jun 23 2019 In the 1930s, mathematical logicians studied the notion of "effective comput ability" using such notions as recursive functions, A-calculus, and Turing machines. The 1940s saw the construction of the first electronic computers, and the next 20 years saw the evolution of higher-level programming languages in which programs could be written in a convenient fashion independent (thanks to compilers and interpreters) of the architecture of any specific machine. The development of such languages led in turn to the general analysis of questions of syntax, structuring strings of symbols which could count as legal programs, and semantics, determining the "meaning" of a program, for example, as the function it computes in transforming input data to output results. An important approach to semantics, pioneered by Floyd, Hoare, and Wirth, is called assertion semantics: given a specification of which assertions (preconditions) on input data should guarantee that the results satisfy desired assertions (postconditions) on output data, one seeks a logical proof that the program satisfies its specification. An alternative approach, pioneered by Scott and Strachey, is called denotational semantics: it offers algebraic techniques for characterizing the denotation of (i. e. , the function computed by) a program-the properties of the program can then be checked by direct comparison of the denotation with the specification. This book is an introduction to denotational semantics. More specifically, we introduce the reader to two approaches to denotational semantics: the order semantics of Scott and Strachey and our own partially additive semantics.

Programming Distributed Computing Systems Apr 25 2022 An introduction to fundamental theories of concurrent computation and associated programming languages for developing distributed and mobile computing systems. Starting from the premise that understanding the foundations of concurrent programming is key to developing distributed computing systems, this book first presents the fundamental theories of concurrent computing and then introduces the programming languages that help develop distributed computing systems at a high level of abstraction. The major theories of concurrent computation—including the ?-calculus, the actor model, the join calculus, and mobile ambients—are explained with a focus on how they help design and reason about distributed and mobile computing systems. The book then presents programming languages that follow the theoretical models already described, including Pict, SALSA, and JoCaml. The parallel structure of the chapters in both part one (theory) and part two (practice) enable the reader not only to compare the different theories but also to see clearly how a programming language supports a theoretical model. The book is unique in bridging the gap between the theory and the practice of programming distributed computing systems. It can be used as a textbook for graduate and advanced undergraduate students in computer science or as a reference for researchers in the area of programming technology for distributed computing. By presenting theory first, the book allows readers to focus on the essential components of concurrency, distribution, and mobility without getting bogged down in syntactic details of specific programming

languages. Once the theory is understood, the practical part of implementing a system in an actual programming language becomes much easier.

NUMERICAL ANALYSIS May 27 2022 Description:This book is Designed to serve as a text book for the undergraduate as well as post graduate students of Mathematics, Engineering, Computer Science.COVERAGE:Concept of numbers and their accuracy, binary and decimal number system, limitations of floating point representation.Concept of error and their types, propagation of errors through process graph.Iterative methods for finding the roots of algebraic and transcendental equations with their convergence, methods to solve the set of non-linear equations, methods to obtain complex roots.Concept of matrices, the direct and iterative methods to solve a system of linear algebraic equations.Finite differences, interpolation and extrapolation methods, cubic spline, concept of curve fitting.Differentiation and integration methods.Solution of ordinary and partial differential equations SALIENT FEATURES:Chapters include objectives, learning outcomes, multiple choice questions, exercises for practice and solutions.Programs are written in C Language for Numerical methods.Topics are explained with suitable examples.Arrangement (Logical order), clarity, detailed presentation and explanation of each topic with numerous solved and unsolved examples.Concise but lucid and student friendly presentation for derivation of formulas used in various numerical methods. Table Of Contents:Computer ArithmeticError Analysis Solution of Algebraic and Transcendental Equations Solution of System of Linear Equations and Eigen value Problems Finite Differences Interpolation Curve Fitting and Approximation Numerical Differentiation Numerical Integration Difference Equations Numerical Solution of Ordinary Differential Equations Numerical Solution of Partial Differential Equations Appendix - I Case Studies / Applications Appendix - II Synthetic Division Bibliography Index

Programming Fundamentals Jun 03 2020 Programming Fundamentals - A Modular Structured Approach using C++ is written by Kenneth Leroy Busbee, a faculty member at Houston Community College in Houston, Texas. The materials used in this textbook/collection were developed by the author and others as independent modules for publication within the Connexions environment. Programming fundamentals are often divided into three college courses: Modular/Structured, Object Oriented and Data Structures. This textbook/collection covers the rest of those three courses.

Interior Point Approach to Linear, Quadratic and Convex Programming Feb 09 2021 This book describes the rapidly developing field of interior point methods (IPMs). An extensive analysis is given of path-following methods for linear programming, quadratic programming and convex programming. These methods, which form a subclass of interior point methods, follow the central path, which is an analytic curve defined by the problem. Relatively simple and elegant proofs for polynomiality are given. The theory is illustrated using several explicit examples. Moreover, an overview of other classes of IPMs is given. It is shown that all these methods rely on the same notion as the path-following methods: all these methods use the central path implicitly or explicitly as a reference path to go to the optimum. For specialists in IPMs as well as those seeking an introduction to IPMs. The book is accessible to any mathematician with basic mathematical programming knowledge.

Introduction to Programming in Python Dec 22 2021 Today, anyone in a scientific or technical discipline needs programming skills. Python is an ideal first programming language, and Introduction to Programming in Python is the best guide to learning it. Princeton University's Robert Sedgewick, Kevin Wayne, and Robert Dondero have crafted an accessible, interdisciplinary introduction to programming in Python that emphasizes important and engaging applications, not toy problems. The authors supply the tools needed for students to learn that programming is a natural, satisfying, and creative experience. This example-driven guide focuses on Python's most useful features and brings programming to life for every student in the sciences, engineering, and computer science. Coverage includes Basic elements of programming: variables, assignment statements, built-in data types, conditionals, loops, arrays, and I/O, including graphics and sound Functions, modules, and libraries: organizing programs into components that can be independently debugged, maintained, and reused Object-oriented programming and data abstraction: objects, modularity, encapsulation, and more Algorithms and data structures: sort/search algorithms, stacks, queues, and symbol tables Examples from applied math, physics, chemistry, biology, and computer science—all compatible with Python 2 and 3 Drawing on their extensive classroom experience, the authors provide Q&As, exercises, and opportunities for creative practice throughout. An extensive amount of supplementary information is available at introcs.cs.princeton.edu/python. With source code, I/O libraries, solutions to selected exercises, and much more, this companion website empowers people to use their own computers to teach and learn the material.

Literate Programming Jan 29 2020 Literate programming is a programming methodology that combines a programming language with a documentation language, making programs more easily maintained than programs written only in a high-level language. A literate programmer is an essayist who writes programs for humans to understand. When programs are written in the recommended style they can be transformed into documents by a document compiler and into efficient code by an algebraic compiler. This anthology of essays includes Knuth's early papers on related topics such as structured programming as well as the Computer Journal article that launched literate programming. Many examples are given, including excerpts from the programs for TeX and METAFONT. The final essay is an example of CWEB, a system for literate programming in C and related languages. Index included.

Object-oriented Programming Aug 18 2021 Filmed work by students of the School of Design, Swinburne University of Technology.

Programming Beyond Practices Jul 25 2019 Writing code is the easy part of your work as a software developer. This practical book lets you explore the other 90%—everything from requirements discovery and rapid prototyping to business analysis and designing for maintainability. Instead of providing neatly packaged advice from on high, author Gregory Brown presents detailed examples of the many problems developers encounter, including the thought process it takes to solve them. He does this in an unusual and entertaining fashion by making you the main character in a series of chapter-length stories. As these stories progress, the examples become more complex, and your responsibilities increase. Together, these stories take you on a journey that will make you question and refine the way you think about, and work on, software projects. Steps in this unique journey include: Using prototypes to explore project ideas Spotting hidden dependencies in incremental changes Identifying the pain points of service integrations Developing a rigorous approach towards problem-solving Designing software from the bottom up Data modeling in an imperfect world Gradual process improvement as an antidote for over-commitment The future of software development

An Object-Oriented Approach to Programming Logic and Design Mar 25 2022 Provide beginning programmers with a guide to developing object-oriented program logic with Farrell's AN OBJECT-ORIENTED APPROACH TO PROGRAMMING LOGIC AND DESIGN, 4E. This text takes a unique, language-independent approach to ensure students develop a strong foundation in traditional

programming principles and object-oriented concepts before learning the details of a specific programming language. The author presents object-oriented programming terminology without highly technical language, making the book ideal for students with no previous programming experience. Common business examples clearly illustrate key points. The book begins with a strong object-oriented focus in updated chapters that make even the most challenging programming concepts accessible. A wealth of updated programming exercises in every chapter provide diverse practice opportunities, while new Video Lessons by the author clarify and expand on key topics. Use this text alone or with a language-specific companion text that emphasizes C++, Java or Visual Basic for the solid introduction to object-oriented programming logic your students need for success. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Fundamentals of Programming in SAS Dec 30 2019 Unlock the essentials of SAS programming! Fundamentals of Programming in SAS: A Case Studies Approach gives a complete introduction to SAS programming. Perfect for students, novice SAS users, and programmers studying for their Base SAS certification, this book covers all the basics, including: working with data creating visualizations data validation good programming practices Experienced programmers know that real-world scenarios require practical solutions. Designed for use in the classroom and for self-guided learners, this book takes a novel approach to learning SAS programming by following a single case study throughout the text and circling back to previous concepts to reinforce material. Readers will benefit from the variety of exercises, including both multiple choice questions and in-depth case studies. Additional case studies are also provided online for extra practice. This approach mirrors the way good SAS programmers develop their skills—through hands-on work with an eye toward developing the knowledge necessary to tackle more difficult tasks. After reading this book, you will gain the skills and confidence to take on larger challenges with the power of SAS.

Introduction to R for Social Scientists Sep 06 2020 Introduction to R for Social Scientists: A Tidy Programming Approach introduces the Tidy approach to programming in R for social science research to help quantitative researchers develop a modern technical toolbox. The Tidy approach is built around consistent syntax, common grammar, and stacked code, which contribute to clear, efficient programming. The authors include hundreds of lines of code to demonstrate a suite of techniques for developing and debugging an efficient social science research workflow. To deepen the dedication to teaching Tidy best practices for conducting social science research in R, the authors include numerous examples using real world data including the American National Election Study and the World Indicators Data. While no prior experience in R is assumed, readers are expected to be acquainted with common social science research designs and terminology. Whether used as a reference manual or read from cover to cover, readers will be equipped with a deeper understanding of R and the Tidyverse, as well as a framework for how best to leverage these powerful tools to write tidy, efficient code for solving problems. To this end, the authors provide many suggestions for additional readings and tools to build on the concepts covered. They use all covered techniques in their own work as scholars and practitioners.

C Programming Nov 08 2020 C++ was written to help professional C# developers learn modern C++ programming. The aim of this book is to leverage your existing C# knowledge in order to expand your skills. Whether you need to use C++ in an upcoming project, or simply want to learn a new language (or reacquaint yourself with it), this book will help you learn all of the fundamental pieces of C++ so you can begin writing your own C++ programs.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.

Beginning Java Programming Nov 20 2021 A comprehensive Java guide, with samples, exercises, casestudies, and step-by-step instruction Beginning Java Programming: The Object Oriented Approachis a straightforward resource for getting started with one of theworld's most enduringly popular programming languages. Based onclasses taught by the authors, the book starts with the basics andgradually builds into more advanced concepts. The approach utilizesan integrated development environment that allows readers toimmediately apply what they learn, and includes step-by-stepinstruction with plenty of sample programs. Each chapter containsexercises based on real-world business and educational scenarios,and the final chapter uses case studies to combine several conceptsand put readers' new skills to the test. Beginning Java Programming: The Object Oriented Approachprovides both the information and the tools beginners need todevelop Java skills, from the general concepts of object-orientedprogramming. Learn to: Understand the Java language and object-oriented conceptimplementation Use Java to access and manipulate external data Make applications accessible to users with GUIs Streamline workflow with object-oriented patterns The book is geared for those who want to use Java in an appliedenvironment while learning at the same time. Useful as either acourse text or a stand-alone self-study program, Beginning JavaProgramming is a thorough, comprehensive guide.

Erlang Programming Oct 08 2020 This book is an in-depth introduction to Erlang, a programming language ideal for any situation where concurrency, fault tolerance, and fast response is essential. Erlang is gaining widespread adoption with the advent of multi-core processors and their new scalable approach to concurrency. With this guide you'll learn how to write complex concurrent programs in Erlang, regardless of your programming background or experience. Written by leaders of the international Erlang community -- and based on their training material -- Erlang Programming focuses on the language's syntax and semantics, and explains pattern matching, proper lists, recursion, debugging, networking, and concurrency. This book helps you: Understand the strengths of Erlang and why its designers included specific features Learn the concepts behind concurrency and Erlang's way of handling it Write efficient Erlang programs while keeping code neat and readable Discover how Erlang fills the requirements for distributed systems Add simple graphical user interfaces with little effort Learn Erlang's tracing mechanisms for debugging concurrent and distributed systems Use the built-in Mnesia database and other table storage features Erlang Programming provides exercises at the end of each chapter and simple examples throughout the book.

A Programming Approach to Computability Feb 21 2022 Computability theory is at the heart of theoretical computer science. Yet, ironically, many of its basic results were discovered by mathematical logicians prior to the development of the first stored-program computer. As a result, many texts on computability theory strike today's computer science students as far removed from their concerns. To remedy this, we base our approach to computability on the language of while-programs, a lean subset of PASCAL, and postpone consideration of such classic models as Turing machines, string-rewriting systems, and p. -recursive functions till the final chapter.

Moreover, we balance the presentation of un solvability results such as the unsolvability of the Halting Problem with a presentation of the positive results of modern programming methodology, including the use of proof rules, and the denotational semantics of programs. Computer science seeks to provide a scientific basis for the study of information processing, the solution of problems by algorithms, and the design and programming of computers. The last 40 years have seen increasing sophistication in the science, in the microelectronics which has made machines of staggering complexity economically feasible, in the advances in programming methodology which allow immense programs to be designed with increasing speed and reduced error, and in the develop ment of mathematical techniques to allow the rigorous specification of program, process, and machine.

The Correctness-by-Construction Approach to Programming Apr 13 2021 The focus of this book is on bridging the gap between two extreme methods for developing software. On the one hand, there are texts and approaches that are so formal that they scare off all but the most dedicated theoretical computer scientists. On the other, there are some who believe that any measure of formality is a waste of time, resulting in software that is developed by following gut feelings and intuitions. Kourie and Watson advocate an approach known as "correctness-by-construction," a technique to derive algorithms that relies on formal theory, but that requires such theory to be deployed in a very systematic and pragmatic way. First they provide the key theoretical background (like first-order predicate logic or refinement laws) that is needed to understand and apply the method. They then detail a series of graded examples ranging from binary search to lattice cover graph construction and finite automata minimization in order to show how it can be applied to increasingly complex algorithmic problems. The principal purpose of this book is to change the way software developers approach their task at programming-in-the-small level, with a view to improving code quality. Thus it coheres with both the IEEE's Guide to the Software Engineering Body of Knowledge (SWEBOK) recommendations, which identifies themes covered in this book as part of the software engineer's arsenal of tools and methods, and with the goals of the Software Engineering Method and Theory (SEMAT) initiative, which aims to "refound software engineering based on a solid theory."

Game Programming Algorithms and Techniques Oct 20 2021 Game Programming Algorithms and Techniques is a detailed overview of many of the important algorithms and techniques used in video game programming today. Designed for programmers who are familiar with object-oriented programming and basic data structures, this book focuses on practical concepts that see actual use in the game industry. Sanjay Madhav takes a unique platform- and framework-agnostic approach that will help develop virtually any game, in any genre, with any language or framework. He presents the fundamental techniques for working with 2D and 3D graphics, physics, artificial intelligence, cameras, and much more. Each concept is illuminated with pseudocode that will be intuitive to any C#, Java, or C++ programmer, and has been refined and proven in Madhav's game programming courses at the University of Southern California. Review questions after each chapter help solidify the most important concepts before moving on. Madhav concludes with a detailed analysis of two complete games: a 2D iOS side-scroller (written in Objective-Cusing cocos2d) and a 3D PC/Mac/Linux tower defense game (written in C# using XNA/ MonoGame). These games illustrate many of the algorithms and techniques covered in the earlier chapters, and the full source code is available at gamealgorithms.net. Coverage includes Game time management, speed control, and ensuring consistency on diverse hardware Essential 2D graphics techniques for modern mobile gaming Vectors, matrices, and linear algebra for 3D games 3D graphics including coordinate spaces, lighting and shading, z-buffering, and quaternions Handling today's wide array of digital and analog inputs Sound systems including sound events, 3D audio, and digital signal processing Fundamentals of game physics, including collision detection and numeric integration Cameras: first-person, follow, spline, and more Artificial intelligence: pathfinding, state-based behaviors, and strategy/planning User interfaces including menu systems and heads-up displays Scripting and text-based data files: when, how, and where to use them Basics of networked games including protocols and network topology

Computer Science Jun 27 2022

Algorithms Aug 30 2022 A student introduction to the design of algorithms for problem solving. Written from a functional programming perspective, the text should appeal to anyone studying algorithms. Included are end-of-chapter exercises and bibliographic references.

The Correctness-by-Construction Approach to Programming Sep 30 2022 The focus of this book is on bridging the gap between two extreme methods for developing software. On the one hand, there are texts and approaches that are so formal that they scare off all but the most dedicated theoretical computer scientists. On the other, there are some who believe that any measure of formality is a waste of time, resulting in software that is developed by following gut feelings and intuitions. Kourie and Watson advocate an approach known as "correctness-by-construction," a technique to derive algorithms that relies on formal theory, but that requires such theory to be deployed in a very systematic and pragmatic way. First they provide the key theoretical background (like first-order predicate logic or refinement laws) that is needed to understand and apply the method. They then detail a series of graded examples ranging from binary search to lattice cover graph construction and finite automata minimization in order to show how it can be applied to increasingly complex algorithmic problems. The principal purpose of this book is to change the way software developers approach their task at programming-in-the-small level, with a view to improving code quality. Thus it coheres with both the IEEE's Guide to the Software Engineering Body of Knowledge (SWEBOK) recommendations, which identifies themes covered in this book as part of the software engineer's arsenal of tools and methods, and with the goals of the Software Engineering Method and Theory (SEMAT) initiative, which aims to "refound software engineering based on a solid theory."

A Systematic Approach to Learning Robot Programming with ROS Aug 06 2020 A Systematic Approach to Learning Robot Programming with ROS provides a comprehensive, introduction to the essential components of ROS through detailed explanations of simple code examples along with the corresponding theory of operation. The book explores the organization of ROS, how to understand ROS packages, how to use ROS tools, how to incorporate existing ROS packages into new applications, and how to develop new packages for robotics and automation. It also facilitates continuing education by preparing the reader to better understand the existing on-line documentation. The book is organized into six parts. It begins with an introduction to ROS foundations, including writing ROS nodes and ROS tools. Messages, Classes, and Servers are also covered. The second part of the book features simulation and visualization with ROS, including coordinate transforms. The next part of the book discusses perceptual processing in ROS. It includes coverage of using cameras in ROS, depth imaging and point clouds, and point cloud processing. Mobile robot control and navigation in ROS is featured in the fourth part of the book The fifth section of the book contains coverage of robot arms in ROS. This

section explores robot arm kinematics, arm motion planning, arm control with the Baxter Simulator, and an object-grabber package. The last part of the book focuses on system integration and higher-level control, including perception-based and mobile manipulation. This accessible text includes examples throughout and C++ code examples are also provided at https://github.com/wsnewman/learning_ros

The Functional Approach to Programming Nov 01 2022 Advanced text on how to program in the functional way; has exercises, solutions and code.

Programming the Finite Element Method Aug 25 2019 Many students, engineers, scientists and researchers have benefited from the practical, programming-oriented style of the previous editions of Programming the Finite Element Method, learning how to develop computer programs to solve specific engineering problems using the finite element method. This new fifth edition offers timely revisions that include programs and subroutine libraries fully updated to Fortran 2003, which are freely available online, and provides updated material on advances in parallel computing, thermal stress analysis, plasticity return algorithms, convection boundary conditions, and interfaces to third party tools such as ParaView, METIS and ARPACK. As in the previous editions, a wide variety of problem solving capabilities are presented including structural analysis, elasticity and plasticity, construction processes in geomechanics, uncoupled and coupled steady and transient fluid flow and linear and nonlinear solid dynamics. Key features: • Updated to take into account advances in parallel computing as well as new material on thermal stress analysis • Programs use an updated version of Fortran 2003 • Includes exercises for students • Accompanied by website hosting software Programming the Finite Element Method, Fifth Edition is an ideal textbook for undergraduate and postgraduate students in civil and mechanical engineering, applied mathematics and numerical analysis, and is also a comprehensive reference for researchers and practitioners. Further information and source codes described in this text can be accessed at the following web sites: • www.inside.mines.edu/~vgriffit /PFEM5 for the serial programs from Chapters 4-11 • www.parafem.org.uk for the parallel programs from Chapter 12

Python Projects for Beginners Oct 27 2019 Immerse yourself in learning Python and introductory data analytics with this book's project-based approach. Through the structure of a ten-week coding bootcamp course, you'll learn key concepts and gain hands-on experience through weekly projects. Each chapter in this book is presented as a full week of topics, with Monday through Thursday covering specific concepts, leading up to Friday, when you are challenged to create a project using the skills learned throughout the week. Topics include Python basics and essential intermediate concepts such as list comprehension, generators and iterators, understanding algorithmic complexity, and data analysis with pandas. From beginning to end, this book builds up your abilities through exercises and challenges, culminating in your solid understanding of Python. Challenge yourself with the intensity of a coding bootcamp experience or learn at your own pace. With this hands-on learning approach, you will gain the skills you need to jumpstart a new career in programming or further your current one as a software developer. What You Will Learn Understand beginning and more advanced concepts of the Python languageBe introduced to data analysis using pandas, the Python Data Analysis libraryWalk through the process of interviewing and answering technical questionsCreate real-world applications with the Python languageLearn how to use Anaconda, Jupyter Notebooks, and the Python Shell Who This Book Is For Those trying to jumpstart a new career into programming, and those already in the software development industry and would like to learn Python programming.

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