The Practice Of Computing Using Python 2nd Edition PDF

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Understand the nuances of programming traditional quantum computers and solve the challenges of the future while building and executing quantum programs on IBM Quantum hardware and simulators Key FeaturesWork your way up from writing a simple quantum program to programming complex quantum algorithmsExplore the probabilistic nature of qubits by performing quantum coin tosses and using random number generatorsDelve into quantum algorithms and their practical applications in various domainsBook Description IBM Quantum Experience® is a leading platform for programming quantum computers and implementing quantum solutions directly on the cloud. This book will help you get up to speed with programming quantum computers and provide solutions to the most common problems and challenges. You'll start with a high-level overview of IBM Quantum Experience® and Qiskit®, where you will perform the installation while writing some basic quantum programs. This introduction puts less emphasis on the theoretical framework and more emphasis on recent developments such as Shor's algorithm and Grover's algorithm. Next, you'll delve into Qiskit®, a quantum information science toolkit, and its constituent packages such as Terra, Aer, Ignis, and Aqua. You'll cover these packages in detail, exploring their benefits and use cases. Later, you'll discover various quantum gates that Qiskit® offers and even deconstruct a quantum program with their help, before going on to compare Noisy Intermediate-Scale Quantum (NISQ) and Universal Fault-Tolerant quantum computing using simulators and actual hardware. Finally, you'll explore quantum algorithms and understand how they differ from classical algorithms, along with learning how to use pre-packaged algorithms in Qiskit® Aqua. By the end of this quantum computing book, you'll be able to build and execute your own quantum programs using IBM Quantum Experience® and Qiskit® with Python. What you will learnVisualize a qubit in Python and understand the concept of superpositionInstall a local Qiskit® simulator and connect to actual quantum hardwareCompose quantum programs at the level of circuits using Qiskit® TerraCompare and contrast Noisy Intermediate-Scale Quantum computing (NISQ) and Universal Fault-Tolerant quantum computing using simulators and IBM Quantum® hardwareMitigate noise in quantum circuits and systems using Qiskit® IgnisUnderstand the difference between classical and quantum algorithms by implementing Grover's algorithm in Qiskit®Who this book is for This book is for developers, data scientists, machine learning researchers, or quantum computing enthusiasts who want to understand how to use IBM Quantum Experience® and Qiskit® to implement quantum solutions and gain practical quantum computing experience. Python programming experience is a must to grasp the concepts covered in the book more effectively. Basic knowledge of quantum computing will also be beneficial.

The Cultures of Computing Microsoft Press
This easy-to-understand textbook presents a modern approach to learning numerical methods (or scientific computing), with a unique focus on the modeling and applications of the mathematical content. Emphasis is placed on the need for, and methods of, scientific computing for a range of different types of problems, supplying the evidence and justification to motivate the reader. Practical guidance on coding the methods is also provided, through simple-to-follow examples using Python. Topics and features: provides an accessible and applications-oriented approach, supported by working Python code for many of the methods; encourages both problem- and project-based learning through extensive examples, exercises, and projects drawn from practical applications; introduces the main concepts in modeling, python programming, number representation, and errors; explains the essential details of numerical calculus, linear, and nonlinear equations, including the multivariable Newton method; discusses interpolation and the numerical solution of differential equations, covering polynomial interpolation, splines, and the Euler, Runge-Kutta, and shooting methods; presents largely self-contained chapters, arranged in a logical order suitable for an introductory course on scientific computing. Undergraduate students embarking on a first course on numerical methods or scientific computing will find this textbook to be an invaluable guide to the field, and to the application of these methods across such varied disciplines as computer science, engineering, mathematics, economics, the physical sciences, and social science.

Fundamentals of the Theory of Computation No Starch Press
The book introduces the reader to computer programming, i.e. algorithms and data structures. It covers many new programming concepts that have emerged in recent years including object-oriented programming and design patterns. The book emphasizes the practical aspects of software construction without neglecting their solid theoretical foundation.

The Practice of Programming "O'Reilly Media, Inc."
Perkovic's Introduction to Programming Using Python provides an imperative-first introduction to Python focusing on computer applications and the process of developing them. The text helps develop computational thinking skills by covering patterns of how problems can be broken down

and constructively solved to produce an algorithmic solution. The approach is hands-on and problem oriented. The book also introduces a subset of the Python language early on to help write small functions. Chapters include an introduction to problem solving techniques and classical algorithms, problem-solving and programming and ways to apply core skills to application development.

Python for Data Analysis Praeger

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. For courses in Python Programming Introduces Python programming with an emphasis on problem-solving Now in its Third Edition, Practice of Computing Using Python continues to effectively introduce readers to computational thinking using Python, with a strong emphasis on problem solving through computer science. The authors have chosen Python for its simplicity, powerful built-in data structures, advanced control constructs, and practicality. The text is built from the ground up for Python programming, rather than having been translated from Java or C++. Focusing on data manipulation and analysis as a theme, the text allows readers to work on real problems using Internet-sourced or self-generated data sets that represent their own work and interests. The authors also emphasize program development and provide readers of all backgrounds with a practical foundation in programming that suit their needs. Among other changes, the Third Edition incorporates a switch to the Anaconda distribution, the SPYDER IDE, and a focus on debugging and GUIs. Also available with MyProgrammingLab™ MyProgrammingLab is an online learning system designed to engage students and improve results. MyProgrammingLab consists of a set of programming exercises correlated to specific Pearson CS1/Intro to Programming textbooks. Through practice exercises and immediate, personalized feedback, MyProgrammingLab improves the programming competence of beginning students who often struggle with the basic concepts of programming languages. Note: You are purchasing a standalone product; MyLab™ & Mastering™ does not come packaged with this content. Students, if interested in purchasing this title with MyLab & Mastering, ask your instructor for the correct package ISBN and Course ID. Instructors, contact your Pearson representative for more information. If you would like to purchase both the physical text and MyLab & Mastering, search for: 0134520513 / 9780134520513 The Practice of Computing Using Python plus MyProgrammingLab with Pearson eText -- Access Card Package, 3/e Package consists of: 0134381327 / 9780134381329 MyProgrammingLab with Pearson eText -- Access Card Package 0134379764 / 9780134379760 The Practice of Computing Using Python, 3/e

Algorithmics Franklin Beedle & Associates

This innovative textbook presents the key foundational concepts that can be covered in a one semester undergraduate course in the theory of computation. It offers the most accessible and motivational course material available for undergraduate computer theory classes and is directed at the typical undergraduate who may have difficulty understanding the relevance of the course to their future careers. The text helps make students more comfortable with techniques required for the deeper study of computer science. This text is a bridge between theory and practice. It shows how theory is motivated by practical problems, and in turn how theory influences the practice of computing. Simple tools like string matchers, complex tools like compilers, and general notions like cryptographic security all lie at the interface between principles and practice. * Contains coverage of contemporary topics: languages and problems, machine models, grammars, reductions, resource consumption, syntax vs. semantics, sequential vs. parallel computation, feasible vs. intractable problems * Motivates students by clarifying complex theory with many examples, exercises, and detailed proofs * Offers an integrated review of discrete math concepts, defining each concept where it is first used * Unifies notation for describing machine models * Emphasizes computational complexity

Reinventing Technology, Rediscovering Community Springer

Easy to understand and fun to read, this updated edition of Introducing Python is ideal for beginning programmers as well as those new to the language. Author Bill Lubanovic takes you from the basics to more involved and varied topics, mixing tutorials with cookbook-style code recipes to explain concepts in Python 3. End-of-chapter exercises help you practice what you've learned. You'll gain a strong foundation in the language, including best practices for testing, debugging, code reuse, and other development tips. This book also shows you how to use Python for applications in business, science, and the arts, using various Python tools and open source packages.

The Elements of Computing Systems Packt Publishing Ltd

Thes book has three key features: fundamental data structures and algorithms; algorithm analysis in terms of Big-O running time in introducied early and applied throught; pytohn is used to facilitates the success in using and mastering data strucutes and algorithms.

Practice of Computing Using Python, The, Student Value Edition Packt Publishing Ltd

Leverage this example-packed, comprehensive guide for all your Python computational needs Key Features: Learn the first steps within Python to highly specialized concepts Explore examples and code snippets taken from typical programming situations within scientific computing. Delve into essential computer science concepts like iterating, object-oriented programming, testing, and MPI presented in strong connection to applications within scientific computing. Book Description: Python has tremendous potential within the scientific computing domain. This updated edition of Scientific Computing with Python features new chapters on graphical user interfaces, efficient data processing, and parallel computing to help you perform mathematical and scientific computing efficiently using Python. This book will help you to explore new Python syntax features and create different models using scientific computing principles. The book presents Python alongside mathematical applications and demonstrates how to apply Python concepts in computing with the help of examples involving Python 3.8. You'll use pandas for basic data analysis to understand the modern needs of scientific computing, and cover data module improvements and built-in features. You'll also explore numerical computation modules such as NumPy and SciPy, which enable fast access to highly efficient numerical algorithms. By learning to use the plotting module Matplotlib, you will be able to represent your computational results in talks and publications. A special chapter is devoted to SymPy, a tool for bridging symbolic and numerical computations. By the end of this Python book, you'll have gained a solid understanding of task automation and how to implement and test mathematical algorithms within the realm of scientific computing. What You Will Learn: Understand the building blocks of computational mathematics, linear algebra, and related Python objects Use Matplotlib to create high-quality figures and graphics to draw and visualize results Apply object-oriented programming (OOP) to scientific computing in Python Discover how to use pandas to enter the world of data processing Handle exceptions for writing reliable and usable code Cover manual and automatic aspects of testing for scientific programming Get to grips with parallel computing to increase computation speed Who this book is for: This book is for students with a mathematical background, university teachers designing modern courses in programming, data scientists, researchers, developers, and anyone who wants to perform scientific computation in Python.

Cloud Computing Springer Science & Business Media

This is a textbook that teaches the bridging topics between numerical analysis, parallel computing, code performance, large scale applications.

The Practice of Computing Using Python Franklin, Beedle & Associates, Inc.

Get complete instructions for manipulating, processing, cleaning, and crunching datasets in Python.

Updated for Python 3.6, the second edition of this hands-on guide is packed with practical case studies that show you how to solve a broad set of data analysis problems effectively. You'll learn the latest versions of pandas, NumPy, IPython, and Jupyter in the process. Written by Wes McKinney, the creator of the Python pandas project, this book is a practical, modern introduction to data science tools in Python. It's ideal for analysts new to Python and for Python programmers new to data science and scientific computing. Data files and related material are available on GitHub. Use the IPython shell and Jupyter notebook for exploratory computing Learn basic and advanced features in NumPy (Numerical Python) Get started with data analysis tools in the pandas library Use flexible tools to load, clean, transform, merge, and reshape data Create informative visualizations with matplotlib Apply the pandas groupby facility to slice, dice, and summarize datasets Analyze and manipulate regular and irregular time series data Learn how to solve real-world data analysis problems with thorough, detailed examples

Introducing Python Packt Publishing Ltd

Computing is revolutionizing the practice of biology. This book, which assumes no prior computing experience, provides students with the tools to write their own Python programs and to understand fundamental concepts in computational biology and bioinformatics. Each major part of the book begins with a compelling biological question, followed by the algorithmic ideas and programming tools necessary to explore it: the origins of pathogenicity are examined using gene finding, the evolutionary history of sex determination systems is studied using sequence alignment, and the origin of modern humans is addressed using phylogenetic methods. In addition to providing general programming skills, this book explores the design of efficient algorithms, simulation, NP-hardness, and the maximum likelihood method, among other key concepts and methods. Easy-to-read and designed to equip students with the skills to write programs for solving a range of biological problems, the book is accompanied by numerous programming exercises, available at www.cs.hmc.edu/CFB.

Introduction to Computing Using Python Springer

Cloud Computing: Theory and Practice provides students and IT professionals with an in-depth analysis of the cloud from the ground up. Beginning with a discussion of parallel computing and architectures and distributed systems, the book turns to contemporary cloud infrastructures, how they are being deployed at leading companies such as Amazon, Google and Apple, and how they can be applied in fields such as healthcare, banking and science. The volume also examines how to successfully deploy a cloud application across the enterprise using virtualization, resource management and the right amount of networking support, including content delivery networks and storage area networks. Developers will find a complete introduction to application development provided on a variety of platforms. Learn about recent trends in cloud computing in critical areas such as: resource management, security, energy consumption, ethics, and complex systems Get a detailed hands-on set of practical recipes that help simplify the deployment of a cloud based system for practical use of computing clouds along with an in-depth discussion of several projects Understand the evolution of cloud computing and why the cloud computing paradigm has a better chance to succeed than previous efforts in large-scale distributed computing

The Practice of Computing Using Python John Wiley & Sons

This is an authoritative introduction to Computing Education research written by over 50 leading researchers from academia and the industry.

Introduction to Computing and Programming in Python Plus My Programming Lab -- Access Card Package Pearson

The book serves as a first introduction to computer programming of scientific applications, using the high-level Python language. The exposition is example and problem-oriented, where the applications are taken from mathematics, numerical calculus, statistics, physics, biology and finance. The book teaches "Matlab-style" and procedural programming as well as object-oriented programming. High school mathematics is a required background and it is advantageous to study classical and numerical one-variable calculus in parallel with reading this book. Besides learning how to program computers, the reader will also learn how to solve mathematical problems, arising in various branches of science and engineering, with the aid of numerical methods and programming. By blending programming, mathematics and scientific applications, the book lays a solid foundation for practicing computational science. From the reviews: Langtangen ... does an excellent job of introducing programming as a set of skills in problem solving. He guides the reader into thinking properly about producing program logic and data structures for modeling real-world problems using objects and functions and embracing the object-oriented paradigm. ... Summing Up: Highly recommended. F. H. Wild III, Choice, Vol. 47 (8), April 2010 Those of us who have learned scientific programming in Python 'on the streets' could be a little jealous of students who have the opportunity to take a course out of Langtangen's Primer." John D. Cook, The Mathematical Association of America, September 2011 This book goes through Python in particular, and programming in general, via tasks that scientists will likely perform. It contains valuable information for students new to scientific computing and would be the perfect bridge between an introduction to programming and an advanced course on numerical methods or computational science. Alex Small, IEEE, CiSE Vol. 14 (2), March /April 2012 "This fourth edition is a wonderful, inclusive textbook that covers pretty much everything one needs to know to go from zero to fairly sophisticated scientific programming in Python..." Joan Horvath, Computing Reviews, March 2015

Computing Fundamentals MIT Press

This book has been developed with an intellectual framework to focus on the challenges and specific qualities applicable to graduates on the threshold of their careers. Young professionals have to establish their competence in complying with multifaceted sets of ethical, environmental, social, and technological parameters. This competence has a vital impact on the curricula of higher education programs, because professional bodies today rely on accredited degrees as the main route for membership. Consequently, this four-part book makes a suitable resource for a two-semester undergraduate course in professional practice and career development in universities and colleges. With its comprehensive coverage of a large variety of topics, each part of the book can be used as a reference for other related courses where sustainability, leadership, systems thinking and professional practice are evident and increasingly visible. Features Identifies the values that are unique to the engineering and computing professions, and promotes a general understanding of what it means to be a member of a profession Explains how ethical and legal considerations play a role in engineering practice Discusses the importance of professional communication and reflective practice to a range of audiences Presents the practices of leadership, innovation, entrepreneurship, safety and sustainability in engineering design Analyzes and discusses the contemporary practices of project management, artificial intelligence, and professional career development.

Code Pearson Higher Ed

This book presents computer programming as a key method for solving mathematical problems. There are two versions of the book, one for MATLAB and one for Python. The book was inspired by the Springer book TCSE 6: A Primer on Scientific Programming with Python (by Langtangen), but the style is more accessible and concise, in keeping with the needs of engineering students. The book outlines the shortest possible path from no previous experience with programming to a set of skills that allows the students to write simple programs for solving common mathematical problems with numerical methods in engineering and science courses. The emphasis is on generic algorithms, clean design of programs, use of functions, and automatic tests for verification.

Introduction to Computing Using Python: An Application Development Focus Cambridge University Press

This book addresses how computers affect people's everyday lives. Using actual situations and problems that people have encountered with current software applications, this book offers academics ways to examine how new situations are created through computer use. It contains some of the very first papers on very important topics including the AEGIS disaster, the intriguing new world of MUD environments, and community networks, including a study of Community Memory in Berkeley, possibly the world's first community computer system. The first half contains critical studies, in which the authors explain ways of describing real situations where people are already using computers. This situations are often problematic and much more complicated than the scenarios that the designers envisioned when designing the system. The second half of the book contains constructive studies, reporting experiences in trying to build systems in new ways, with a fully developed consciousness of what people need and the interactions between computer systems and social systems.

Python Programming Addison-Wesley Longman

The new edition of an introductory text that teaches students the art of computational problem solving, covering topics ranging from simple algorithms to information visualization. This book introduces students with little or no prior programming experience to the art of computational problem solving using Python and various Python libraries, including PyLab. It provides students with skills that will enable them to make productive use of computational techniques, including some of the tools and techniques of data science for using computation to model and interpret data. The book is based on an MIT course (which became the most popular course offered through MIT's OpenCourseWare) and was developed for use not only in a conventional classroom but in in a massive open online course (MOOC). This new edition has been updated for Python 3, reorganized to make it easier to use for courses that cover only a subset of the material, and offers additional material including five new chapters. Students are introduced to Python and the basics of programming in the context of such computational concepts and techniques as exhaustive enumeration, bisection search, and efficient approximation algorithms. Although it covers such traditional topics as computational complexity and simple algorithms, the book focuses on a wide range of topics not found in most introductory texts, including information visualization, simulations to model randomness, computational techniques to understand data, and statistical techniques that inform (and misinform) as well as two related but relatively advanced topics: optimization problems and dynamic programming. This edition offers expanded material on statistics and machine learning and new chapters on Frequentist and Bayesian statistics.

Programming for Computations - Python Morgan Kaufmann

This title gives students an integrated and rigorous picture of applied computer science, as it comes to play in the construction of a simple yet powerful computer system.