
Software Optimization Cookbook Second Edition

As recognized, adventure as well as experience virtually lesson, amusement, as without difficulty as arrangement can be gotten by just checking out a book **Software Optimization Cookbook Second Edition** after that it is not directly done, you could acknowledge even more just about this life, with reference to the world.

We manage to pay for you this proper as well as simple habit to acquire those all. We pay for Software Optimization Cookbook Second Edition and numerous books collections from fictions to scientific research in any way. along with them is this Software Optimization Cookbook Second Edition that can be your partner.



Convex Optimization Springer

The field of Chemical Engineering and its link to computer science is in constant evolution and new engineers have a variety of tools at their disposal to tackle their everyday problems. Introduction to Software for Chemical

Engineers, Second Edition provides a quick guide to the use of various computer packages for chemical engineering applications. It covers a range of software applications from Excel and general mathematical packages such as MATLAB and MathCAD to process simulators, CHEMCAD and ASPEN, equation-based modeling languages, gProms, optimization software such as GAMS and AIMS, and specialized software like CFD or DEM codes. The different packages are introduced and applied to solve typical problems in fluid

mechanics, heat and mass transfer, mass and energy balances, unit operations, reactor engineering, process and equipment design and control. This new edition offers a wider view of packages including open source software such as R, Python and Julia. It also includes complete examples in ASPEN Plus, adds ANSYS Fluent to CFD codes, Lingo to the optimization packages, and discusses Engineering Equation Solver. It offers a global idea of the capabilities of the software used in the chemical engineering field and provides examples for solving real-

world problems. Written by leading experts, this book is a must-have reference for chemical engineers looking to grow in their careers through the use of new and improving computer software. Its user-friendly approach to simulation and optimization as well as its example-based presentation of the software, makes it a perfect teaching tool for both undergraduate and master levels.

Handbook of Research on Computational Science and Engineering: Theory and Practice

John Wiley & Sons

A comprehensive introduction to the tools, techniques and applications of convex optimization.

C++ High Performance Packt Publishing Ltd

Modern computer architectures designed with high-performance microprocessors offer tremendous potential gains in performance over previous designs. Yet their very complexity makes it increasingly difficult to produce efficient code and to realize their full potential. This landmark text from two leaders in the field focuses on the pivotal role that compilers can play in addressing this critical issue. The basis for all the methods presented in this book is data dependence, a fundamental compiler analysis tool for optimizing programs on high-performance microprocessors and parallel architectures. It enables compiler designers to write compilers that

automatically transform simple, sequential programs into forms that can exploit special features of these modern architectures. The text provides a broad introduction to data dependence, to the many transformation strategies it supports, and to its applications to important optimization problems such as parallelization, compiler memory hierarchy management, and instruction scheduling. The authors demonstrate the importance and wide applicability of dependence-based compiler optimizations and give the compiler writer the basics needed to understand and implement them. They also offer cookbook explanations for transforming applications by hand to computational scientists and engineers who are driven to obtain the best possible performance of their complex applications. The approaches presented are based on research conducted over the past two decades, emphasizing the strategies implemented in research prototypes at Rice University and in several associated commercial systems. Randy Allen and Ken Kennedy have provided an indispensable resource for researchers, practicing professionals, and graduate students engaged in designing and optimizing compilers for modern computer architectures. * Offers a guide to the simple, practical algorithms and approaches that are most effective in real-world, high-performance microprocessor and parallel systems. * Demonstrates each transformation in worked examples. * Examines how two case study compilers implement the theories and practices described in each chapter. * Presents the most complete treatment of memory hierarchy issues of any compiler text. * Illustrates ordering

relationships with dependence graphs throughout the book. * Applies the techniques to a variety of languages, including Fortran 77, C, hardware definition languages, Fortran 90, and High Performance Fortran. * Provides extensive references to the most sophisticated algorithms known in research.

Business Optimization Using Mathematical Programming
"O'Reilly Media, Inc."

Programming multi-core and many-core computing systems Sabri Pllana, Linnaeus University, Sweden Fatos Xhafa, Technical University of Catalonia, Spain Provides state-of-the-art methods for programming multi-core and many-core systems The book comprises a selection of twenty two chapters covering: fundamental techniques and algorithms; programming approaches; methodologies and frameworks; scheduling and management; testing and evaluation methodologies; and case studies for programming multi-core and many-core systems. Program development for multi-core

processors, especially for heterogeneous multi-core processors, is significantly more complex than for single-core processors. However, programmers have been traditionally trained for the development of sequential programs, and only a small percentage of them have experience with parallel programming. In the past, only a relatively small group of programmers interested in High Performance Computing (HPC) was concerned with the parallel programming issues, but the situation has changed dramatically with the appearance of multi-core processors on commonly used computing systems. It is expected that with the pervasiveness of multi-core processors, parallel programming will become mainstream. The pervasiveness of multi-core processors affects a large spectrum of systems, from embedded and general-purpose, to high-end computing systems. This

book assists programmers in mastering the efficient programming of multi-core systems, which is of paramount importance for the software-intensive industry towards a more effective product-development cycle. Key features: Lessons, challenges, and roadmaps ahead. Contains real world examples and case studies. Helps programmers in mastering the efficient programming of multi-core and many-core systems. The book serves as a reference for a larger audience of practitioners, young researchers and graduate level students. A basic level of programming knowledge is required to use this book.

Write Great Code, Volume 2, 2nd Edition
Prentice Hall Professional

A comprehensive guide to help aspiring and professional C++ developers elevate the performance of their apps by allowing them to run faster and consume fewer resources
Key Features
Updated to C++20 with completely revised code and more content on error handling, benchmarking, memory allocators, and concurrent programming
Explore the latest C++20 features

including concepts, ranges, and coroutines
Utilize C++ constructs and techniques to carry out effective data structure optimization and memory management
Book Description
C++ High Performance, Second Edition guides you through optimizing the performance of your C++ apps. This allows them to run faster and consume fewer resources on the device they're running on without compromising the readability of your codebase. The book begins by introducing the C++ language and some of its modern concepts in brief. Once you are familiar with the fundamentals, you will be ready to measure, identify, and eradicate bottlenecks in your C++ codebase. By following this process, you will gradually improve your style of writing code. The book then explores data structure optimization, memory management, and how it can be used efficiently concerning CPU caches. After laying the foundation, the book trains you to leverage algorithms, ranges, and containers from the standard library to achieve faster execution, write readable code, and use customized iterators. It provides hands-on examples of C++ metaprogramming, coroutines, reflection to reduce boilerplate code, proxy objects to perform optimizations under the hood, concurrent programming, and lock-free data structures. The book concludes with an overview of parallel algorithms. By the end of this book, you will have the ability to use every tool as needed to boost the efficiency of your C++ projects. What you will learn
Write specialized data structures for performance-critical code
Use modern

metaprogramming techniques to reduce runtime calculations
Achieve efficient memory management using custom memory allocators
Reduce boilerplate code using reflection techniques
Reap the benefits of lock-free concurrent programming
Gain insights into subtle optimizations used by standard library algorithms
Compose algorithms using ranges library
Develop the ability to apply metaprogramming aspects such as `constexpr`, constraints, and concepts
Implement lazy generators and asynchronous tasks using C++20 coroutines
Who this book is for
If you're a C++ developer looking to improve the efficiency of your code or just keen to upgrade your skills to the next level, this book is for you.

Optimizing Compilers for Modern Architectures: A Dependence-Based Approach
John Wiley & Sons

Explains how compilers translate high-level language source code (like code written in Python) into low-level machine code (code that the computer can understand) to help readers understand how to produce the best low-level, computer readable machine code. In the beginning, most software was written in assembly, the CPU's low-level language, in order to achieve acceptable performance on relatively slow hardware. Early programmers were sparing in their use of high-level language code, knowing that a high-level language compiler would generate crummy, low-level machine code for their software. Today, however, many programmers write in high-level languages like Python,

C/C++/C#, Java, Swift. The result is often sloppy, inefficient code. But you don't need to give up the productivity and portability of high-level languages in order to produce more efficient software. In this second volume of the Write Great Code series, you'll learn:

- How to analyze the output of a compiler to verify that your code does, indeed, generate good machine code
- The types of machine code statements that compilers typically generate for common control structures, so you can choose the best statements when writing HLL code
- Just enough 80x86 and PowerPC assembly language to read compiler output
- How compilers convert various constant and variable objects into machine data, and how to use these objects to write faster and shorter programs

NEW TO THIS EDITION, COVERAGE OF:

- Programming languages like Swift and Java
- Code generation on modern 64-bit CPUs
- ARM processors on mobile phones and tablets
- Stack-based architectures like the Java Virtual Machine
- Modern language systems like the Microsoft Common Language Runtime

With an understanding of how compilers work, you'll be able to write source code that they can translate into elegant machine code. That understanding starts right here, with Write Great Code, Volume 2: Thinking Low-Level, Writing High-Level. The Software Optimization Cookbook Springer Nature
Widely considered one of the best practical guides to programming, Steve McConnell 's original CODE COMPLETE has been helping developers

write better software for more than a decade. Now this classic book has been fully updated and revised with leading-edge practices—and hundreds of new code samples—illustrating the art and science of software construction. Capturing the body of knowledge available from research, academia, and everyday commercial practice, McConnell synthesizes the most effective techniques and must-know principles into clear, pragmatic guidance. No matter what your experience level, development environment, or project size, this book will inform and stimulate your thinking—and help you build the highest quality code. Discover the timeless techniques and strategies that help you: Design for minimum complexity and maximum creativity
Reap the benefits of collaborative development
Apply defensive programming techniques to reduce and flush out errors
Exploit opportunities to refactor—or evolve—code, and do it safely
Use construction practices that are right-weight for your project
Debug problems quickly and effectively
Resolve critical construction issues early and correctly
Build quality into the beginning, middle, and end of your project
Embedded Computing for High Performance IGI Global
Power and Performance: Software Analysis and Optimization is a guide to solving performance problems in modern Linux systems. Power-efficient chips are no help if the software those chips run on is

inefficient. Starting with the necessary architectural background as a foundation, the book demonstrates the proper usage of performance analysis tools in order to pinpoint the cause of performance problems, and includes best practices for handling common performance issues those tools identify. Provides expert perspective from a key member of Intel ' s optimization team on how processors and memory systems influence performance Presents ideas to improve architectures running mobile, desktop, or enterprise platforms Demonstrates best practices for designing experiments and benchmarking throughout the software lifecycle Explains the importance of profiling and measurement to determine the source of performance issues

Engineering a Compiler Cambridge University Press

Written by high performance computing (HPC) experts, Introduction to High Performance Computing for Scientists and Engineers provides a solid introduction to current mainstream computer architecture, dominant parallel programming models, and useful optimization strategies for scientific HPC. From working in a scientific

computing center, the author

Introduction to High Performance Computing for Scientists and Engineers Packt Publishing Ltd

This book differs from traditional numerical analysis texts in that it focuses on the motivation and ideas behind the algorithms presented rather than on detailed analyses of them. It presents a broad overview of methods and software for solving mathematical problems arising in computational modeling and data analysis, including proper problem formulation, selection of effective solution algorithms, and interpretation of results.?

In the 20 years since its original publication, the modern, fundamental perspective of this book has aged well, and it continues to be used in the classroom. This Classics edition has been updated to include pointers to Python software and the Chebfun package, expansions on barycentric formulation for Lagrange polynomial interpretation and stochastic methods, and the availability of about 100 interactive educational modules that dynamically illustrate the concepts and algorithms in the book. Scientific

Computing: An Introductory Survey, Second Edition is intended as both a textbook and a reference for computationally oriented disciplines that need to solve mathematical problems.

Working Effectively with Legacy Code SIAM

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reactor engineering, process and equipment design and control. This new edition offers a wider view of packages including open source software such as R, Python and Julia. It also includes complete examples in ASPEN Plus, adds ANSYS Fluent to CFD codes, Lingo to the optimization packages, and discusses Engineering Equation Solver. It offers a global idea of the capabilities of the software used in the chemical engineering field and provides examples for solving real-world problems. Written by leading experts, this book is a must-have reference for chemical engineers looking to grow in their careers through the use of new and improving computer software. Its user-friendly approach to simulation and optimization as well as its example-based presentation of the software, makes it a perfect teaching tool for both undergraduate and master levels.

Introduction to Software for Chemical Engineers, Second Edition Prentice Hall Professional

The Software Optimization Cookbook
The Software Optimization Cookbook

High Performance MySQL Morgan Kaufmann
Performance Optimization of Numerically

Intensive Codes offers a comprehensive, tutorial-style, hands-on, introductory and intermediate-

level treatment of all the essential ingredients for achieving high performance in numerical computations on modern computers. The authors explain computer architectures, data traffic and issues related to performance of serial and parallel code optimization exemplified by actual programs written for algorithms of wide interest. The unique hands-on style is achieved by extensive case studies using realistic computational problems. The performance gain obtained by applying the techniques described in this book can be very significant. The book bridges the gap between the literature in system architecture, the one in numerical methods and the occasional descriptions of optimization topics in computer vendors' literature. It also allows readers to better judge the suitability of certain computer architecture to their computational requirements. In contrast to standard textbooks on computer architecture and on programming techniques the book treats these topics together at the level necessary for writing high-performance programs. The book facilitates easy access to these topics for computational scientists and engineers mainly interested in practical issues related to efficient code development.

Pyomo — Optimization Modeling in Python
CRC Press

Providing more than twice the content of the original edition, this new edition is the premier source on the selection, development, and provision of safe, high-quality, and cost-

effective electric utility distribution systems, and it promises vast improvements in system reliability and layout by spanning every aspect of system planning including load forecasting, scheduling, performance, and economics. Responding to the evolving needs of electric utilities, Power Distribution Planning Reference Book presents an abundance of real-world examples, procedural and managerial issues, and engineering and analytical methodologies that are crucial to efficient and enhanced system performance.

Embedded System Design Springer Science & Business Media

Full treatment, from model formulation to computational implementation, of optimization techniques that solve central problems in finance.

Performance Optimization of Numerically Intensive Codes No Starch Press

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of software applications from Excel and general mathematical packages such as MATLAB and MathCAD to process simulators, CHEMCAD and ASPEN, equation-based modeling languages, gProms, optimization software such as GAMS and AIMS, and specialized software like CFD or DEM codes. The different packages are introduced and applied to solve typical problems in fluid mechanics, heat and mass transfer, mass and energy balances, unit operations, reactor engineering, process and equipment design and control. This new edition offers a wider view of packages including open source software such as R, Python and Julia. It also includes complete examples in ASPEN Plus, adds ANSYS Fluent to CFD codes, Lingo to the optimization packages, and discusses Engineering Equation Solver. It offers a global idea of the capabilities of the software used in the chemical engineering field and provides examples for solving real-world problems. Written by leading experts, this book is a must-have reference for chemical engineers looking to grow in their careers through the use of new and improving computer software. Its user-friendly

approach to simulation and optimization as well as its example-based presentation of the software, makes it a perfect teaching tool for both undergraduate and master levels. The Software Optimization Cookbook SIAM Reflects the latest applied research and features state-of-the-art software for building and solving spreadsheet optimization models Thoroughly updated to reflect the latest topical and technical advances in the field, Optimization Modeling with Spreadsheets, Second Edition continues to focus on solving real-world optimization problems through the creation of mathematical models and the use of spreadsheets to represent and analyze those models. Developed and extensively classroom-tested by the author, the book features a systematic approach that equips readers with the skills to apply optimization tools effectively without the need to rely on specialized algorithms. This new edition uses the powerful software package Risk Solver Platform (RSP) for optimization, including its Evolutionary Solver, which employs many recently developed ideas for heuristic programming. The author provides expanded coverage of integer programming and discusses linear and nonlinear programming using a systematic approach that emphasizes the use of spreadsheet-based optimization tools. The Second Edition also features: Classifications for the various problem types, providing the reader with a broad framework for building and recognizing optimization models Network models that allow

for a more general form of mass balance A systematic introduction to Data Envelopment Analysis (DEA) The identification of qualitative patterns in order to meaningfully interpret linear programming solutions An introduction to stochastic programming and the use of RSP to solve problems of this type Additional examples, exercises, and cases have been included throughout, allowing readers to test their comprehension of the material. In addition, a related website features Microsoft Office® Excel files to accompany the figures and data sets in the book. With its accessible and comprehensive presentation, Optimization Modeling with Spreadsheets, Second Edition is an excellent book for courses on deterministic models, optimization, and spreadsheet modeling at the upper-undergraduate and graduate levels. The book can also serve as a reference for researchers, practitioners, and consultants working in business, engineering, operations research, and management science.

Julia Programming for Operations Research CRC Press

High Performance MySQL is the definitive guide to building fast, reliable systems with MySQL. Written by noted experts with years of real-world experience building very large systems, this book covers every aspect of MySQL performance in detail, and focuses on robustness, security, and data

integrity. High Performance MySQL teaches you advanced techniques in depth so you can bring out MySQL's full power. Learn how to design schemas, indexes, queries and advanced MySQL features for maximum performance, and get detailed guidance for tuning your MySQL server, operating system, and hardware to their fullest potential. You'll also learn practical, safe, high-performance ways to scale your applications with replication, load balancing, high availability, and failover. This second edition is completely revised and greatly expanded, with deeper coverage in all areas. Major additions include:

- Emphasis throughout on both performance and reliability
- Thorough coverage of storage engines, including in-depth tuning and optimizations for the InnoDB storage engine
- Effects of new features in MySQL 5.0 and 5.1, including stored procedures, partitioned databases, triggers, and views
- A detailed discussion on how to build very large, highly scalable systems with MySQL
- New options for backups and replication
- Optimization of advanced querying features, such as full-text searches
- Four new appendices

The book also includes chapters

on benchmarking, profiling, backups, security, and tools and techniques to help you measure, monitor, and manage your MySQL installations.

Programming Multicore and Many-core Computing Systems Cambridge University Press

This book provides a complete and comprehensive reference/guide to Pyomo (Python Optimization Modeling Objects) for both beginning and advanced modelers, including students at the undergraduate and graduate levels, academic researchers, and practitioners. The text illustrates the breadth of the modeling and analysis capabilities that are supported by the software and support of complex real-world applications. Pyomo is an open source software package for formulating and solving large-scale optimization and operations research problems. The text begins with a tutorial on simple linear and integer programming models. A detailed reference of Pyomo's modeling components is illustrated with extensive examples, including a discussion of how to load data from data sources like spreadsheets and databases. Chapters describing advanced modeling capabilities for nonlinear and stochastic optimization are also included. The Pyomo software provides familiar modeling features within Python, a powerful dynamic programming language that has a very clear, readable syntax and intuitive object orientation. Pyomo includes Python classes for defining sparse sets, parameters, and variables, which can be used to formulate

algebraic expressions that define objectives and constraints. Moreover, Pyomo can be used from a command-line interface and within Python's interactive command environment, which makes it easy to create Pyomo models, apply a variety of optimizers, and examine solutions. The software supports a different modeling approach than commercial AML (Algebraic Modeling Languages) tools, and is designed for flexibility, extensibility, portability, and maintainability but also maintains the central ideas in modern AMLs.

Morgan Kaufmann Publishers

Today ' s embedded devices and sensor networks are becoming more and more sophisticated, requiring more efficient and highly flexible compilers. Engineers are discovering that many of the compilers in use today are ill-suited to meet the demands of more advanced computer architectures. Updated to include the latest techniques, The Compiler Design Handbook, Second Edition offers a unique opportunity for designers and researchers to update their knowledge, refine their skills, and prepare for emerging innovations. The completely revised handbook includes 14 new chapters addressing topics such as worst case execution time estimation, garbage collection, and energy aware compilation. The editors take special care to consider the growing proliferation of embedded devices, as well as the need for efficient techniques to debug faulty code. New contributors provide additional insight to chapters on register allocation, software pipelining, instruction scheduling, and

type systems. Written by top researchers and designers from around the world, *The Compiler Design Handbook, Second Edition* gives designers the opportunity to incorporate and develop innovative techniques for optimization and code generation.