Multithreading In C

Programming with POSIX Threads

Software -- Operating Systems.

C++ Concurrency in Action

C++ Concurrency in Action, Second Edition is the definitive guide to writing elegant multithreaded applications in C++. Updated for C++ 17, it carefully addresses every aspect of concurrent development, from starting new threads to designing fully functional multithreaded algorithms and data structures. Concurrency master Anthony Williams presents examples and practical tasks in every chapter, including insights that will delight even the most experienced developer. -- Provided by publisher.

Mastering C++ Multithreading

Master multithreading and concurrent processing with C++ About This Book Delve into the fundamentals of multithreading and concurrency and find out how to implement them Explore atomic operations to optimize code performance Apply concurrency to both distributed computing and GPGPU processing Who This Book Is For This book is for intermediate C++ developers who wish to extend their knowledge of multithreading and concurrent processing. You should have basic experience with multithreading and be comfortable using C++ development toolchains on the command line. What You Will Learn Deep dive into the details of the how various operating systems currently implement multithreading Choose the best multithreading APIs when designing a new application Explore the use of mutexes, spin-locks, and other synchronization concepts and see how to safely pass data between threads Understand the level of API support provided by various C++ toolchains Resolve common issues in multithreaded code and recognize common pitfalls using tools such as Memcheck, CacheGrind, DRD, Helgrind, and more Discover the nature of atomic operations and understand how they can be useful in optimizing code Implement a multithreaded application in a distributed computing environment Design a C++-based GPGPU application that employs multithreading In Detail Multithreaded applications execute multiple threads in a single processor environment, allowing developers achieve concurrency. This book will teach you the finer points of multithreading and concurrency concepts and how to apply them efficiently in C++. Divided into three modules, we start with a brief introduction to the fundamentals of multithreading and concurrency concepts. We then take an in-depth look at how these concepts work at the hardware-level as well as how both operating systems and frameworks use these low-level functions. In the next module, you will learn about the native multithreading and concurrency support available in C++ since the 2011 revision, synchronization and communication between threads, debugging concurrent C++ applications, and the best programming practices in C++. In the final module, you will learn about atomic operations before moving on to apply concurrency to distributed and GPGPU-based processing. The comprehensive coverage of essential multithreading concepts means you will be able to efficiently apply multithreading concepts while coding in C++. Style and approach This book is filled with examples that will help you become a master at writing robust concurrent and parallel applications in C++.

PThreads Programming

With threads programming, multiple tasks run concurrently within the same program. They can share a single CPU as processes do or take advantage of multiple CPUs when available. They provide a clean way to divide the tasks of a program while sharing data.

Modern Multithreading

Master the essentials of concurrent programming,including testingand debugging This textbook examines languages and libraries for multithreadedprogramming. Readers learn how to create threads in Java and C++,and develop essential concurrent programming and problem-solvingskills. Moreover, the textbook sets itself apart from othercomparable works by helping readers to become proficient in keytesting and debugging techniques. Among the topics covered, readersare introduced to the relevant aspects of Java, the POSIX Pthreadslibrary, and the Windows Win32 Applications ProgrammingInterface. The authors have developed and fine-tuned this book through theconcurrent programming courses they have taught for the past twentyyears. The material, which emphasizes practical tools andtechniques to solve concurrent programming problems, includesoriginal results from the authors' research. Chaptersinclude: * Introduction to concurrent programming * The critical section problem * Semaphores and locks * Monitors * Message-passing * Message-passing in distributed programs * Testing and debugging concurrent programs As an aid to both students and instructors, class libraries havebeen implemented to provide working examples of all the materialthat is covered. These libraries and the testing techniques theysupport can be used to assess student-written programs. Each chapter includes exercises that build skills in programwriting and help ensure that readers have mastered the chapter'skey concepts. The source code for all the listings in the text andfor the synchronization libraries is also provided, as well asstartup files and test cases for the exercises. This textbook is designed for upper-level undergraduates andgraduate students in computer science. With its abundance ofpractical material and inclusion of working code, coupled with anemphasis on testing and debugging, it is also a highly usefulreference for practicing programmers.

C in a Nutshell

Learning a language--any language--involves a process wherein you learn to rely less and less on instruction and more increasingly on the aspects of the language you've mastered. Whether you're learning French, Java, or C, at some point you'll set aside the tutorial and attempt to converse on your own. It's not necessary to know every subtle facet of French in order to speak it well, especially if there's a good dictionary available. Likewise, C programmers don't need to memorize every detail of C in order to write good programs. What they need instead is a reliable, comprehensive reference that they can keep nearby. C in a Nutshell is that reference. This long-awaited book is a complete reference to the C programming language and C runtime library. Its purpose is to serve as a convenient, reliable companion in your day-to-day work as a C programmer. C in a Nutshell covers virtually everything you need to program in C, describing all the elements of the language and illustrating their use with numerous examples. The book is divided into three distinct parts. The first part is a fast-paced description, reminiscent of the classic Kernighan & Ritchie text on which many C programmers cut their teeth. It focuses specifically on the C language and preprocessor directives, including extensions introduced to the ANSI standard in 1999. These topics and others are covered: Numeric constants Implicit and explicit type conversions Expressions and operators Functions Fixed-length and variable-length arrays Pointers Dynamic memory management Input and output The second part of the book is a comprehensive reference to the C runtime library; it includes an overview of the contents of the standard headers and a description of each standard library function. Part III provides the necessary knowledge of the C programmer's basic tools: the compiler, the make utility, and the debugger. The tools described here are those in the GNU software collection. C in a Nutshell is the perfect companion to K&R, and destined to be the most reached-for reference on your desk.

Multi-Threaded Programming in C++

This is a book about multi-threaded programming - it could well be subtitled 'How to write computer programs tllat do lots of different tlrings all at once'. A multi-threaded application contains many separate tlrreads of execution all running concurrently and each assigned to its own particular task - the individual tasks are typically simple but the combination can be very powerful. Multi-threading therefore engenders a 'divide-and-conquer' strategy which allows complex monoliths to be broken up into more manageable chunks. Indeed multi-threading is perhaps the most exciting addition to the software engineer's toolkit since

tlle advent of object-oriented programming, another topic about which tlris book has a lot to say. Multi-threading and object orientation are wonderful companions - e++ allows tlle basic building blocks for multi-threaded programming to be neatly packaged as objects whilst multi-threading techniques can be applied to transform objects from passive repositories of functionality into active entities that perform their own internal processing independently of external code. A general background in computing is assumed as well as familiarity with the C language and a basic knowledge of C++ would also be helpful - the more useful facets of the C++ language are introduced on a 'need-to-know' basis but for a fuller exposition than is possible here the reader is advised to rush out and buy the book 'Programming in C++' (ISBN 0859344355).

C in a Nutshell

The new edition of this classic O’Reilly reference provides clear, detailed explanations of every feature in the C language and runtime library, including multithreading, type-generic macros, and library functions that are new in the 2011 C standard (C11). If you want to understand the effects of an unfamiliar function, and how the standard library requires it to behave, you’ll find it here, along with a typical example. Ideal for experienced C and C++ programmers, this book also includes popular tools in the GNU software collection. You’ll learn how to build C programs with GNU Make, compile executable programs from C source code, and test and debug your programs with the GNU debugger. In three sections, this authoritative book covers: C language concepts and language elements, with separate chapters on types, statements, pointers, memory management, I/O, and more The C standard library, including an overview of standard headers and a detailed function reference Basic C programming tools in the GNU software collection, with instructions on how use them with the Eclipse IDE

Embedded Multitasking

In an embedded system, firmware is the software that directly interfaces with the microcontroller, controlling the system's function. The major forces driving the embedded firmware development process today are reduced development times, increased complexity, and the need to handle multiple tasks simultaneously. These forces translate into strenuous design requirements for embedded engineers and programmers. Many low-level embedded microcontroller designs have insufficient memory and/or architectural limitations that make the use of a real-time operating system impractical. The techniques presented in this book allow the design of robust multitasking firmware through the use of interleaved state machines. This book presents a complete overview of multitasking terminology and basic concepts. Practical criteria for task selection and state machine design are also discussed.Designing multitasking firmware is arduous, complex and fraught with potential for errors, and there is no one, \"standard way to do it. This book will present a complete and well-organized design approach with examples and sample source code that designers can follow. - Covers every aspect of design from the system level to the component level, including system timing, communicating with the hardware, integration and testing.

Practical Systems Programming with C

This book teaches systems programming with the latest versions of C through a set of practical examples and problems. It covers the development of a handful of programs, implementing efficient coding examples. Practical Systems Programming with C contains three main parts: getting your hands dirty with C programming; practical systems programming using concepts such as processes, signals, and inter-process communication; and advanced socket-based programming which consists of developing a network application for reliable communication. You will be introduced to a marvelous ecosystem of systems programming with C, from handling basic system utility commands to communicating through socket programming. With the help of socket programming you will be able to build client-server applications in no time. The “secret sauce” of this book is its curated list of topics and solutions, which fit together through a set of different pragmatic examples; each topic is covered from scratch in an easy-to-learn way. On that journey, you’ll focus on practical implementations and an outline of best practices and potential pitfalls. The book

also includes a bonus chapter with a list of advanced topics and directions to grow your skills. What You Will Learn Program with operating systems using the latest version of C Work with Linux Carry out multithreading with C Examine the POSIX standard Work with files, directories, processes, and signals Explore IPC and how to work with it Who This Book Is For Programmers who have an exposure to C programming and want to learn systems programming. This book will help them to learn about core concepts of operating systems with the help of C programming. .

Is Parallel Programming Hard

Windows NT is coming back as a subject. This book brings multithreading to the Windows NT operating system. It covers a specialized area of interest to programmers--multitasking computer operations. One current application that the authors cover is video on demand, bringing together the cable and movie industries.

Multithreaded Programming with Windows NT

Over 60 recipes to help you create ultra-fast multithreaded applications using C++ with rules, guidelines, and best practices Overview Create multithreaded applications using the power of C++ Upgrade your applications with parallel execution in easy-to-understand steps Stay up to date with new Windows 8 concurrent tasks Avoid classical synchronization problems Understand Windows API and concurrent execution What you will learn from this book Use an object-oriented programming model with inheritance, overloading, and polymorphism Solve common Interprocess Communication problems and avoid deadlocks or starvation problems in your application development Manage threads efficiently using the CThread class Explore .NET CLI/C++ features as well as synchronization objects and techniques Make use of parallel techniques in code design Use machine resources in concurrent execution Enable programs to work with each other using Message Passing Avoid classic synchronization problems In Detail Creating multithreaded applications is a present-day approach towards programming. With the power of C++, you can easily create various types of applications and perform parallelism and optimizations in your existing work. This book is a practical, powerful, and easy-to-understand guide to C++ multithreading. You will learn how to benefit from the multithreaded approach and enhance your development skills to build better applications. This book will not only help you avoid problems when creating parallel code, but also help you to understand synchronization techniques. The end goal of the book will be to impart various multithreading concepts that will enable you to do parallel computing and concurrent programming quickly and efficiently. Approach The book is an easy-to-follow guide for creating multi-threaded applications using C++. Each topic is thoroughly explained with multiple illustrations. Many algorithms, such as Dinning Philosophers Problem give you thorough explanations that will help you to understand and solve concurrent tasks. Who this book is for The book is intended for enterprise developers and programmers who wish to make use of C++ capabilities to learn the multithreaded approach. Knowledge of multithreading along with experience in C++ is an added advantage. However it is not a prerequisite.

C++ Multithreading Cookbook

Windowsreg; 95 and Windows NT & allow software developers to use the powerful programming technique of multithreading: dividing a single application into multiple \"threads \" that execute separately and get their own CPU time. This can result in significant performance gains, but also in programming headaches. Multithreading is difficult to do well, and previous coverage of the subject in Windows has been incomplete. In this book programmers will get hands-on experience in when and how to use multithreading, together with expert advice and working examples in C++ and MFC. The CD-ROM includes the code and sample applications from the book, including code that works with Internet Winsock.

Multithreading Applications in Win32

Particularly helpful for C programmers working with such platforms as UNIX, Windows NT, Windows 95, OS/2, and NextStep, this book has many unique features, including the first detailed look at SMP (symmetrical multiprocessing) and its role in successful parallel processing. Numerous illustrative examples are included throughout.

Multithreading Programming Techniques

In-depth coverage is given of the emerging POSIX Threads library for UNIX and how to code with it. These pages explain the concepts and foundations of threads programming, including real-life constructions. The book compares and contrasts the Pthreads library with those for OS/2 and Windows NT throughout.

Multithreaded Programming with Pthreads

Unlock the full potential of your C++ programming skills with \"Mastering Concurrency and Multithreading in C++: Unlock the Secrets of Expert-Level Skills.\" This indispensable guide delves deep into the world of concurrency, offering seasoned developers advanced techniques to handle complex computing tasks. With a focus on modern C++ standards, you'll explore the intricacies of memory management, synchronization, and performance optimization, all crafted to elevate your proficiency in crafting efficient multithreaded applications. Each chapter provides a comprehensive exploration of essential topics such as thread lifecycle management, parallel algorithms, debugging techniques, and the utilization of the C++ Standard Library for concurrency. Through detailed explanations and practical examples, you'll gain a profound understanding of advanced thread management and sophisticated parallel patterns, ensuring your applications are prepared to meet the demands of modern computing environments. Embark on a journey through real-world applications and insightful case studies, where theory transitions seamlessly into practice. Whether you're designing high-performance web servers or optimizing financial systems, this book imparts invaluable strategies and lessons learned from industry successes. Elevate your C++ expertise to unmatched heights with insights from leading software professionals, and confidently tackle the challenges of concurrency in today's dynamic technological landscape.

Mastering Concurrency and Multithreading in C++: Unlock the Secrets of Expert-Level Skills

“When you begin using multi-threading throughout an application, the importance of clean architecture and design is critical. . . . This places an emphasis on understanding not only the platform’s capabilities but also emerging best practices. Joe does a great job interspersing best practices alongside theory throughout his book.” – From the Foreword by Craig Mundie, Chief Research and Strategy Officer, Microsoft Corporation Author Joe Duffy has risen to the challenge of explaining how to write software that takes full advantage of concurrency and hardware parallelism. In Concurrent Programming on Windows, he explains how to design, implement, and maintain large-scale concurrent programs, primarily using C# and C++ for Windows. Duffy aims to give application, system, and library developers the tools and techniques needed to write efficient, safe code for multicore processors. This is important not only for the kinds of problems where concurrency is inherent and easily exploitable—such as server applications, compute-intensive image manipulation, financial analysis, simulations, and AI algorithms—but also for problems that can be speeded up using parallelism but require more effort—such as math libraries, sort routines, report generation, XML manipulation, and stream processing algorithms. Concurrent Programming on Windows has four major sections: The first introduces concurrency at a high level, followed by a section that focuses on the fundamental platform features, inner workings, and API details. Next, there is a section that describes common patterns, best practices, algorithms, and data structures that emerge while writing concurrent software. The final section covers many of the common system-wide architectural and process concerns of concurrent programming. This is the only book you’ll need in order to learn the best practices and common patterns for programming with concurrency on Windows and .NET.

Concurrent Programming on Windows

Threads (Computer programs).

Java Threads

If you're one of the many developers uncertain about concurrent and multithreaded development, this practical cookbook will change your mind. With more than 75 code-rich recipes, author Stephen Cleary demonstrates parallel processing and asynchronous programming techniques, using libraries and language features in .NET 4.5 and C# 5.0. Concurrency is becoming more common in responsive and scalable application development, but it's been extremely difficult to code. The detailed solutions in this cookbook show you how modern tools raise the level of abstraction, making concurrency much easier than before. Complete with ready-to-use code and discussions about how and why the solution works, you get recipes for using: async and await for asynchronous operations Parallel programming with the Task Parallel Library The TPL Dataflow library for creating dataflow pipelines Capabilities that Reactive Extensions build on top of LINQ Unit testing with concurrent code Interop scenarios for combining concurrent approaches Immutable, threadsafe, and producer/consumer collections Cancellation support in your concurrent code Asynchronous-friendly Object-Oriented Programming Thread synchronization for accessing data

Concurrency in C# Cookbook

Disc includes the Mcl and Mcl4Mfc class libraries and help files, along with all sample programs from the book.

Win32 Multithreaded Programming

The Comprehensive, Expert Guide to C# Language Programming “This book has been a classic for years, and remains one of the most venerable and trusted titles in the world of C# content, and probably far beyond! . . . Mark is super smart, insists on understanding everything to the core, and has phenomenal insight into how things affect real developers. . . . He goes right to the essence and communicates with great integrity—no sugarcoating—and has a keen eye for practical value and real-world problems.” –Mads Torgersen, C# Program Manager, Microsoft Essential C# 7.0 is a well-organized, no-fluff guide to C# 7.0 for programmers at all levels of experience. Reflecting the most important C# features from 3.0 through 7.0 and including modern programming patterns, it will help you write code that’s simple, powerful, robust, secure, and maintainable. Author Mark Michaelis is a world-class C# expert: a long-time Microsoft MVP and Regional Director who also has served on Microsoft’s C# design review team. He presents a comprehensive tutorial and reference for the entire language, including expert coverage of key C# 7.0 enhancements, C# 7.0’s use with .NET Core/.NET Standard, and cross-platform compilation. He illustrates key C# constructs with succinct examples, and presents best-practice coding guidelines. To help you maintain existing code, separate indexes provide version-specific answers for C# 5.0, 6.0, and 7.0, and visual icons show when each language innovation was introduced. Make the most of C# 7.0 enhancements, including tuples, deconstructors, pattern matching, local functions, and ref returns Work efficiently with C# data types, operators, control flow, methods, and parameters Write more robust code with C# object-oriented constructs Implement reliable, effective exception handling Reduce code complexity with generics, delegates, lambda expressions, and events Leverage advanced dynamic and declarative programming techniques Query diverse data collections using LINQ with query expressions Create custom collections that operate against business objects Access .NET collections via collection interfaces and standard query operators Master multithreading and synchronization, including the async/await paradigm Optimize performance and interoperability with P/Invoke and unsafe code Run your code on Linux or macOS with C# 7.0 cross-platform compilation Includes C# 7.1, 7.2, and 7.3 language enhancements This guide offers you a complete foundation for successful development with modern versions of the C# language in any project or environment.

Essential C# 7.0

If you're looking to take full advantage of multi-core processors with concurrent programming, this practical book provides the knowledge and hands-on experience you need. The Art of Concurrency is one of the few resources to focus on implementing algorithms in the shared-memory model of multi-core processors, rather than just theoretical models or distributed-memory architectures. The book provides detailed explanations and usable samples to help you transform algorithms from serial to parallel code, along with advice and analysis for avoiding mistakes that programmers typically make when first attempting these computations. Written by an Intel engineer with over two decades of parallel and concurrent programming experience, this book will help you: Understand parallelism and concurrency Explore differences between programming for shared-memory and distributed-memory Learn guidelines for designing multithreaded applications, including testing and tuning Discover how to make best use of different threading libraries, including Windows threads, POSIX threads, OpenMP, and Intel Threading Building Blocks Explore how to implement concurrent algorithms that involve sorting, searching, graphs, and other practical computations The Art of Concurrency shows you how to keep algorithms scalable to take advantage of new processors with even more cores. For developing parallel code algorithms for concurrent programming, this book is a must.

The Art of Concurrency

Providing an overview of the Solaris and POSIX multithreading architectures, this book explains threads at a level that is completely accessible to programmers and system architects with no previous knowledge of threads. It covers the business and technical benefits of threaded programs, along with discussions of third party software that is threaded, pointing out the benefits. It also describes the design of the Solaris MT API, with references to distinctions in POSIX, contains a set of example programs which illustrate the usage of the Solaris and POSIX APIs, and explains the use of programming tools: Thread Analyzer, LockLint, LoopTool and Debugger.

Threads Primer

\"The bulk of the book is a complete ordered reference to the Delphi language set. Each reference item includes: the syntax, using standard code conventions; a description; a list of arguments, if any, accepted by the function or procedure; tips and tricks of usage - practical information on using the language feature in real programs; a brief example; and a cross-reference to related keywords.\"--Jacket.

Delphi

Become a better programmer with performance improvement techniques such as concurrency, lock-free programming, atomic operations, parallelism, and memory management Key Features Learn proven techniques from a heavyweight and recognized expert in C++ and high-performance computing Understand the limitations of modern CPUs and their performance impact Find out how you can avoid writing inefficient code and get the best optimizations from the compiler Learn the tradeoffs and costs of writing high-performance programs Book DescriptionThe great free lunch of \"performance taking care of itself\" is over. Until recently, programs got faster by themselves as CPUs were upgraded, but that doesn't happen anymore. The clock frequency of new processors has almost peaked, and while new architectures provide small improvements to existing programs, this only helps slightly. To write efficient software, you now have to know how to program by making good use of the available computing resources, and this book will teach you how to do that. The Art of Efficient Programming covers all the major aspects of writing efficient programs, such as using CPU resources and memory efficiently, avoiding unnecessary computations, measuring performance, and how to put concurrency and multithreading to good use. You'll also learn about compiler optimizations and how to use the programming language (C++) more efficiently. Finally, you'll understand how design decisions impact performance. By the end of this book, you'll not only have enough knowledge of processors and compilers to write efficient programs, but you'll also be able to understand

which techniques to use and what to measure while improving performance. At its core, this book is about learning how to learn.What you will learn Discover how to use the hardware computing resources in your programs effectively Understand the relationship between memory order and memory barriers Familiarize yourself with the performance implications of different data structures and organizations Assess the performance impact of concurrent memory accessed and how to minimize it Discover when to use and when not to use lock-free programming techniques Explore different ways to improve the effectiveness of compiler optimizations Design APIs for concurrent data structures and high-performance data structures to avoid inefficiencies Who this book is for This book is for experienced developers and programmers who work on performance-critical projects and want to learn new techniques to improve the performance of their code. Programmers in algorithmic trading, gaming, bioinformatics, computational genomics, or computational fluid dynamics communities will get the most out of the examples in this book, but the techniques are fairly universal. Although this book uses the C++ language, the concepts demonstrated in the book can be easily transferred or applied to other compiled languages such as C, Java, Rust, Go, and more.

The Art of Writing Efficient Programs

Over 70 recipes to get you writing powerful and efficient multithreaded, asynchronous, and parallel programs in C# 6.0About This Book- Rewritten and updated to take advantage of the latest C# 6 features- Learn about multithreaded, asynchronous, and parallel programming through hands-on, code-first examples- Use these recipes to build fast, scalable, and reliable applications in C#Who This Book Is ForThis book is aimed at those who are new to multithreaded programming, and who are looking for a quick and easy way to get started. It is assumed that you have some experience in C# and .NET already, and you should also be familiar with basic computer science terminology and basic algorithms and data structures.What You Will Learn- Use C# 6.0 asynchronous language features- Work with raw threads, synchronize threads, and coordinate their work- Develop your own asynchronous API with Task Parallel Library- Work effectively with a thread pool- Scale up your server application with I/O threads- Parallelize your LINQ queries with PLINQ- Use common concurrent collections- Apply different parallel programming patterns- Use Reactive Extensions to run asynchronous operations and manage their optionsIn DetailMulti-core processors are synonymous with computing speed and power in today's world, which is why multithreading has become a key concern for C# developers. Multithreaded code helps you create effective, scalable, and responsive applications.This is an easy-to-follow guide that will show you difficult programming problems in context. You will learn how to solve them with practical, hands-on, recipes. With these recipes, you'll be able to start creating your own scalable and reliable multithreaded applications. Starting from learning what a thread is, we guide you through the basics and then move on to more advanced concepts such as task parallel libraries, C# asynchronous functions, and much more.Rewritten to the latest C# specification, C# 6, and updated with new and modern recipes to help you make the most of the hardware you have available, this book will help you push the boundaries of what you thought possible in C#.Style and approach This is an easy-to-follow guide full of hands-on examples of real-world multithreading tasks. Each topic is explained and placed in context, and for the more inquisitive, there are also more in-depth details of the concepts used.

Multithreading with C# Cookbook Second Edition

'Downright revolutionary... the title is a major understatement... 'Quantum Programming' may ultimately change the way embedded software is designed.' -- Michael Barr, Editor-in-Chief, Embedded Systems Programming magazine (Click here

Practical Statecharts in C/C++

In today’s fast and competitive world, a program’s performance is just as important to customers as the features it provides. This practical guide teaches developers performance-tuning principles that enable optimization in C++. You’ll learn how to make code that already embodies best practices of C++ design run faster and consume fewer resources on any computer—whether it’s a watch, phone, workstation,

supercomputer, or globe-spanning network of servers. Author Kurt Guntheroth provides several running examples that demonstrate how to apply these principles incrementally to improve existing code so it meets customer requirements for responsiveness and throughput. The advice in this book will prove itself the first time you hear a colleague exclaim, “Wow, that was fast. Who fixed something?” Locate performance hot spots using the profiler and software timers Learn to perform repeatable experiments to measure performance of code changes Optimize use of dynamically allocated variables Improve performance of hot loops and functions Speed up string handling functions Recognize efficient algorithms and optimization patterns Learn the strengths—and weaknesses—of C++ container classes View searching and sorting through an optimizer’s eye Make efficient use of C++ streaming I/O functions Use C++ thread-based concurrency features effectively

Optimized C++

Accompanying CD-ROM contains practical information including all the code examples discussed in the book.

Thread Time

\"Solutions and examples for C++ programmers\"--Cover.

Java Concurrency in Practice

This book shows experienced game developers how to apply multi-thread techniques to game programming technology to improve game performance. Using Direct3D and C++, a sample game engine is created step-by-step throughout the course of the book, and numerous examples illustrate the concepts presented.

C++ Cookbook

Teaching the science and the technology of programming as a unified discipline that shows the deep relationships between programming paradigms. This innovative text presents computer programming as a unified discipline in a way that is both practical and scientifically sound. The book focuses on techniques of lasting value and explains them precisely in terms of a simple abstract machine. The book presents all major programming paradigms in a uniform framework that shows their deep relationships and how and where to use them together. After an introduction to programming concepts, the book presents both well-known and lesser-known computation models (\"programming paradigms\"). Each model has its own set of techniques and each is included on the basis of its usefulness in practice. The general models include declarative programming, declarative concurrency, message-passing concurrency, explicit state, object-oriented programming, shared-state concurrency, and relational programming. Specialized models include graphical user interface programming, distributed programming, and constraint programming. Each model is based on its kernel language—a simple core language that consists of a small number of programmer-significant elements. The kernel languages are introduced progressively, adding concepts one by one, thus showing the deep relationships between different models. The kernel languages are defined precisely in terms of a simple abstract machine. Because a wide variety of languages and programming paradigms can be modeled by a small set of closely related kernel languages, this approach allows programmer and student to grasp the underlying unity of programming. The book has many program fragments and exercises, all of which can be run on the Mozart Programming System, an Open Source software package that features an interactive incremental development environment.

Multi-threaded Game Engine Design

Summary Functional Programming in C++ teaches developers the practical side of functional programming

and the tools that C++ provides to develop software in the functional style. This in-depth guide is full of useful diagrams that help you understand FP concepts and begin to think functionally. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Well-written code is easier to test and reuse, simpler to parallelize, and less error prone. Mastering the functional style of programming can help you tackle the demands of modern apps and will lead to simpler expression of complex program logic, graceful error handling, and elegant concurrency. C++ supports FP with templates, lambdas, and other core language features, along with many parts of the STL. About the Book Functional Programming in C++ helps you unleash the functional side of your brain, as you gain a powerful new perspective on C++ coding. You'll discover dozens of examples, diagrams, and illustrations that break down the functional concepts you can apply in C++, including lazy evaluation, function objects and invokables, algebraic data types, and more. As you read, you'll match FP techniques with practical scenarios where they offer the most benefit. What's inside Writing safer code with no performance penalties Explicitly handling errors through the type system Extending C++ with new control structures Composing tasks with DSLs About the Reader Written for developers with two or more years of experience coding in C++. About the Author Ivan ?uki? is a core developer at KDE and has been coding in C++ since 1998. He teaches modern C++ and functional programming at the Faculty of Mathematics at the University of Belgrade. Table of Contents Introduction to functional programming Getting started with functional programming Function objects Creating new functions from the old ones Purity: Avoiding mutable state Lazy evaluation Ranges Functional data structures Algebraic data types and pattern matching Monads Template metaprogramming Functional design for concurrent systems Testing and debugging

Concepts, Techniques, and Models of Computer Programming

Offers a guide to the C# computer programming language for current Java users.

Functional Programming in C++

This easy-to-use, fast-moving tutorial introduces you to functional programming with Haskell. You'll learn how to use Haskell in a variety of practical ways, from short scripts to large and demanding applications. Real World Haskell takes you through the basics of functional programming at a brisk pace, and then helps you increase your understanding of Haskell in real-world issues like I/O, performance, dealing with data, concurrency, and more as you move through each chapter.

From Java to C#

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.

Real World Haskell

The era of practical parallel programming has arrived, marked by the popularity of the MPI and OpenMP software standards and the emergence of commodity clusters as the hardware platform of choice for an increasing number of organizations. This exciting new book,Parallel Programming in C with MPI and OpenMPaddresses the needs of students and professionals who want to learn how to design, analyze, implement, and benchmark parallel programs in C using MPI and/or OpenMP. It introduces a rock-solid design methodology with coverage of the most important MPI functions and OpenMP directives. It also demonstrates, through a wide range of examples, how to develop parallel programs that will execute efficiently on today’s parallel platforms. If you are an instructor who has adopted the book and would like access to the additional resources, please contact your local sales rep. or Michelle Flomenhoft at: michelle_flomenhoft@mcgraw-hill.com.

The Elements of Computing Systems

Windows System Programming
https://works.spiderworks.co.in/+75627661/pfavourl/medita/xpackr/conversations+with+a+world+traveler.pdf
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