

Programming With Posix Threads Addison Wesley Professional Computing Paperback

This is the eBook version of the printed book. If the print book includes a CD-ROM, this content is not included within the eBook version. Advanced Linux Programming is divided into two parts. The first covers generic UNIX system services, but with a particular eye towards Linux specific information. This portion of the book will be of use even to advanced programmers who have worked with other Linux systems since it will cover Linux specific details and differences. For programmers without UNIX experience, it will be even more valuable. The second section covers material that is entirely Linux specific. These are truly advanced topics, and are the techniques that the gurus use to build great applications. While this book will focus mostly on the Application Programming Interface (API) provided by the Linux kernel and the C library, a preliminary introduction to the development tools available will allow all who purchase the book to make immediate use of Linux. The Linux Programming Interface (TLPI) is the definitive guide to the Linux and UNIX programming interface—the interface employed by nearly every application that runs on a Linux or UNIX system. In this authoritative work, Linux programming expert Michael Kerrisk provides detailed descriptions of the system calls and library functions that you need in order to master the craft of system programming, and accompanies his explanations with clear, complete example programs. You'll find descriptions of over 500 system calls and library functions, and more than 200 example programs, 88 tables, and 115 diagrams. You'll learn how to: –Read and write files efficiently –Use signals, clocks, and timers –Create processes and execute programs –Write secure programs –Write multithreaded programs using POSIX threads –Build and use shared libraries –Perform interprocess communication using pipes, message queues, shared memory, and semaphores –Write network applications with the sockets API While The Linux Programming Interface covers a wealth of Linux-specific features, including epoll, inotify, and the /proc file system, its emphasis on UNIX standards (POSIX.1-2001/SUSv3 and POSIX.1-2008/SUSv4) makes it equally valuable to programmers working on other UNIX platforms. The Linux Programming Interface is the most comprehensive single-volume work on the Linux and UNIX programming interface, and a book that's destined to become a new classic.

The book provides the detailed information necessary to write practical programs under Mach. It shows applications writers and programmers how to create programs with multiple threads of control and make use of advanced interprocess communication mechanisms in a multi-processor environment. In addition the book illustrates, with complete example programs, how to fully exploit the functionality Mach provides. This book describes the differences between Mach and UNIX 4.3 BSD and OSF/1, two popular operating systems which share a common heritage with Mach.

Software -- Programming Languages.

A POSIX Standard for Better Multiprocessing

The Pragmatic Programmer

Model Checking Software

Computational Technologies

The Practice of Programming

Advanced Linux Programming

From Journeyman to Master

This book constitutes the refereed proceedings of the 13th International SPIN workshop on Model Checking Software, SPIN 2006, held in Vienna, Austria in March/April 2006 as satellite event of ETAPS 2006. The 16 revised full papers presented together with three tool presentation papers were carefully reviewed and selected from 44 submissions. The papers are organized in topical sections.

This text takes complicated and almost unapproachable parallel programming techniques and presents them in a simple, understandable manner. It covers the fundamentals of programming for distributed environments like Internets and Intranets as well as the topic of Web Based Agents.

This book constitutes the thoroughly refereed post-conference proceedings of the 10th International Conference on High Performance Computing for Computational Science, VECPAR 2012, held in Kope, Japan, in July 2012. The 28 papers presented together with 7 invited talks were carefully selected during two rounds of reviewing and revision. The papers are organized in topical sections on CPU computing, applications, finite element method from various viewpoints, cloud and visualization performance, method and tools for advanced scientific computing, algorithms and data analysis, parallel iterative solvers on multicore architectures.

This volume contains the proceedings from the workshops held in conjunction with the IEEE International Parallel and Distributed Processing Symposium, IPDPS 2000, on 1-5 May 2000 in Cancun, Mexico. The workshops provide a forum for bringing together researchers, practitioners, and designers from various backgrounds to discuss the state of the art in parallelism. They focus on different aspects of parallelism, from runtime systems to formal methods, from optics to irregular problems, from biology to networks of personal computers, from embedded systems to programming environments; the following workshops are represented in this volume: { Workshop on Personal Computer Based Networks of Workstations { Workshop on Advances in Parallel and Distributed Computational Models { Workshop on Par. and Dist. Comp. in Image, Video, and Multimedia { Workshop on High-Level Parallel Prog. Models and Supportive Env. { Workshop on High Performance Data Mining { Workshop on Solving Irregularly Structured Problems in Parallel { Workshop on Java for Parallel and Distributed Computing { Workshop on Biologically Inspired Solutions to Parallel Processing Problems { Workshop on Parallel and Distributed Real-Time Systems { Workshop on Embedded HPC Systems and Applications { Reconfigurable Architectures Workshop { Workshop on Formal Methods for Parallel Programming { Workshop on Optics and Computer Science { Workshop on Run-Time Systems for Parallel Programming { Workshop on Fault-Tolerant Parallel and Distributed Systems All papers published in the workshops proceedings were selected by the program committee on the basis of referee reports. Each paper was reviewed by independent referees who judged the papers for originality, quality, and consistency with the themes of the workshops.

Mastering Embedded Linux Programming

Writing Portable GUI applications on Unix and Win32

POSIX Programmers Guide

Design Principles and Patterns

AUUGN

C++ Network Programming, Volume I

14th International Conference on Formal Engineering Methods, ICFEM 2012, Kyoto, Japan, November 12-16, 2012, Proceedings

This book assumes familiarity with threads (in a language such as Ada, C#, or Java) and introduces the entity-life modeling (ELM) design approach for certain kinds of multithreaded software. ELM focuses on "reactive systems," which continuously interact with their problem environment. These "reactive systems" include embedded systems, as well as such interactive systems as cruise control.

and automated teller machines. Part I covers two fundamentals: program-language thread support and state diagramming. The techniques necessary for understanding ELM and are provided primarily for reference. Part II covers ELM from different angles. Part III compares ELM relative to other design approaches.

Software -- Operating Systems.

As networks, devices, and systems continue to evolve, software engineers face the unique challenge of creating reliable distributed applications within frequently changing environments. C++ Network Programming, Volume 1, provides practical solutions for developing and optimizing complex distributed systems using the ADAPTIVE Communication Environment (ACE), a revolutionary open-source framework that runs on dozens of hardware platforms and operating systems. This book guides software professionals through the traps and pitfalls of developing efficient, portable, and flexible networked applications. It explores the inherent complexities of concurrent networked applications and the tradeoffs that must be considered when working to master them. C++ Network Programming begins with an overview of the issues and tools involved in writing distributed concurrent applications. This book then provides the essential design dimensions, patterns, and principles needed to develop flexible and efficient concurrent networked applications. The book's expert author team shows you how to enhance design skills while applying C++ and patterns effectively to develop object-oriented networked applications. Readers will find coverage of: C++ network programming, including an overview and strategies for addressing common development challenges The ACE Toolkit Connection protocols, message exchange and message-passing versus shared memory Implementation methods for reusable networked application services Concurrent object-oriented network programming Design principles and patterns for ACE wrapper facades With this book, C++ developers have at their disposal the most complete toolkit available for developing successful, multiplatform, concurrent networked applications with ease and efficiency.

Offering comprehensive coverage of the convergence of real-time embedded systems scheduling, resource access control, software design and development, and high-level system modeling, analysis and verification Following an introductory overview, Dr. Wang delves into the specifics of hardware components, including processors, memory, I/O devices and architectures, communication structures, peripherals, and characteristics of real-time operating systems. Later chapters are dedicated to real-time task scheduling algorithms and resource access control policies, as well as priority-inversion control and deadlock avoidance. Concurrent system programming and POSIX programming for real-time systems are covered, as are finite state machines and Time Petri nets. Of particular interest to software engineers will be the chapter devoted to model checking, in which the author discusses temporal logic and the NuSMV model checking tool, as well as a chapter treating real-time software design with UML. The final portion of the book addresses practical issues of software reliability, aging, rejuvenation, security, safety, and power management. In addition, the book: Explains real-time embedded software modeling and design with finite state machines, Petri nets, and UML, and real-time constraints verification with the model checking tool, NuSMV Features real-world examples in finite state machines, model checking, real-time system design with UML, and more Covers embedded computer programming, designing for reliability, and designing for safety Explains how to make engineering trade-offs of power use and performance Investigates practical issues concerning software reliability, aging, rejuvenation, security, and power management Real-Time Embedded Systems is a valuable resource for those responsible for real-time and embedded software design, development, and management. It is also an excellent textbook for graduate courses in computer engineering, computer science, information technology, and software engineering on embedded and real-time software systems, and for undergraduate computer and software engineering courses.

Talking Directly to the Kernel and C Library

Programming Under Mach

Real-Time Embedded Systems

Parallel and Distributed Programming Using C++

Programming for the Real World

Parallel Computing: Software Technology, Algorithms, Architectures & Applications

Modern Multithreading

UNIX, UNIX LINUX & UNIX TCL/TK. Write software that makes the most effective use of the Linux system, including the kernel and core system libraries. The majority of both Unix and Linux code is still written at the system level, and this book helps you focus on everything above the kernel, where applications such as Apache, bash, cp, vim, Emacs, gdb, glibc, ls, mv, and X exist. Written primarily for engineers looking to program at the low level, this updated C Linux System Programming gives you an understanding of core internals that makes for better code, no matter how deep it appears in the stack. -- Provided by publisher.

Here is a programmer's guide to using and programming POSIX threads, commonly known as Pthreads. A "coder's book", this title tells how to use Pthreads in the real world, making efficient and portable applications. Pthreads is an important set of current tools programmers need to have in today's network-intensive climate.

Written in an informal, informative style, this authoritative guide goes way beyond the standard reference manual and discusses each of the POSIX.4 facilities and what they mean, why and when you would use each of these facilities, and the trouble spots you might run into. c.

The revision of the definitive guide to Unix system programming is now available in a more portable format.

Implementing, Testing, and Debugging Multithreaded Java and C++/Pthreads/Win32 Programs

Differentiating Computer Programs Containing OpenMP

Design of Multithreaded Software

High Performance Computing for Computational Science - VECPAR 2012

13th International SPIN Workshop, Vienna, Austria, March 30 - April 1, 2006, Proceedings

Mastering Complexity with ACE and Patterns, Portable Documents

Programming Languages: Principles and Practices

This book constitutes the refereed proceedings of the 14th International Conference on Formal Engineering Methods, ICFEM 2012, held in Kyoto, Japan, November 2012. The 31 revised full papers together with 3 invited talks presented were carefully reviewed and selected from 85 submissions. The

papers address all current issues in formal methods and their applications in software engineering. They are organized in topical sections on concurrency, applications of formal methods to new areas, quantity and probability, formal verification, modeling and development methodology, temporal logics, abstraction and refinement, tools, as well as testing and runtime verification.

Describes the concepts of programming with Linux, covering such topics as shell programming, file structure, managing memory, using MySQL, debugging, processes and signals, and GNOME.

An Introduction to Parallel Programming, Second Edition presents a tried-and-true tutorial approach that shows students how to develop effective parallel programs with MPI, Pthreads and OpenMP. As the first undergraduate text to directly address compiling and running parallel programs on multi-core and cluster architecture, this second edition carries forward its clear explanations for designing, debugging and evaluating the performance of distributed and shared-memory programs while adding coverage of accelerators via new content on GPU programming and heterogeneous programming. New and improved user-friendly exercises teach students how to compile, run and modify example programs. Takes a tutorial approach, starting with small programming examples and building progressively to more challenging examples Explains how to develop parallel programs using MPI, Pthreads and OpenMP programming models A robust package of online ancillaries for instructors and students includes lecture slides, solutions manual, downloadable source code, and an image bank New to this edition: New chapters on GPU programming and heterogeneous programming New examples and exercises related to parallel algorithms

In this book, realistic examples show both the situations where threading is valuable and the ways to use threads to improve the modularity and efficiency of a program. The author takes the user behind the scenes to show them how threads work, where to expect problems, and what performance issues exist.

Chapters on DCE, real-time, and multiprocessing are included.

C++ Concurrency in Action

PThreads Programming

For Windows, Linux, and Oracle Solaris

A Linux and UNIX System Programming Handbook

An Introduction to Parallel Programming

Programming with Qt

Programming with POSIX Threads

Innovations in hardware architecture, like hyper-threading or multicore processors, mean that parallel computing resources are available for inexpensive desktop computers. In only a few years, many standard software products will be based on concepts of parallel programming implemented on such hardware, and the range of applications will be much broader than that of scientific computing, up to now the main application area for parallel computing. Rauber and Runger take up these recent developments in processor architecture by giving detailed descriptions of parallel programming techniques that are necessary for developing efficient programs for multicore processors as well as for parallel cluster systems and supercomputers. Their book is structured in three main parts, covering all areas of parallel computing: the architecture of parallel systems, parallel programming models and environments, and the implementation of efficient application algorithms. The emphasis lies on parallel programming techniques needed for different architectures. For this second edition, all chapters have been carefully revised. The chapter on architecture of parallel systems has been updated considerably, with a greater emphasis on the architecture of multicore systems and adding new material on the latest developments in computer architecture. Lastly, a completely new chapter on general-purpose GPUs and the corresponding programming techniques has been added. The main goal of the book is to present parallel programming techniques that can be used in many situations for a broad range of application areas and which enable the reader to develop correct and efficient parallel programs. Many examples and exercises are provided to show how to apply the techniques. The book can be used as both a textbook for students and a reference book for professionals. The material presented has been used for courses in parallel programming at different universities for many years.

Multicore Application Programming is a comprehensive, practical guide to high-performance multicore programming that any experienced developer can use. Author Darryl Gove covers the leading approaches to parallelization on Windows, Linux, and Oracle Solaris. Through practical examples, he illuminates the challenges involved in writing applications that fully utilize multicore processors, helping you produce applications that are functionally correct, offer superior performance, and scale well to eight cores, sixteen Cores, and beyond. The book reveals how specific hardware implementations impact application performance and shows how to avoid common pitfalls. Step by step, you'll write applications that can handle large numbers of parallel threads, and you'll master advanced parallelization techniques. Multicore Application Programming isn't wedded to a single approach or platform: It is for every experienced C programmer working with any contemporary multicore processor in any leading operating system environment.

Advances in Parallel Computing series presents the theory and use of of parallel computer systems, including vector, pipeline, array, fifth and future generation computers and neural computers. This volume features original research work, as well as accounts on practical experience with and techniques for the use of parallel computers.

Numerical programs often use parallel programming techniques such as OpenMP to compute the program's output values as efficient as possible. In addition, derivative values of these output values with respect to certain input values play a crucial role. To achieve code that computes not only the output

values simultaneously but also the derivative values, this work introduces several source-to-source transformation rules. These rules are based on a technique called algorithmic differentiation. The main focus of this work lies on the important reverse mode of algorithmic differentiation. The inherent data-flow reversal of the reverse mode must be handled properly during the transformation. The first part of the work examines the transformations in a very general way since pragma-based parallel regions occur in many different kinds such as OpenMP, OpenACC, and Intel Phi. The second part describes the transformation rules of the most important OpenMP constructs.

Proceedings of the International Conference ParCo2003, Dresden, Germany

Shared Memory Application Programming

Parallel Programming

Linux for Embedded and Real-time Applications

15 IPDPS 2000 Workshops Cancun, Mexico, May 1-5, 2000 Proceedings

Advanced Programming in the UNIX Environment

Extreme C

This new edition of Linux for Embedded and Real-Time Applications provides a practical introduction to the basics and the latest developments in this rapidly evolving technology. Ideal for those new to using Linux in an embedded environment, it takes a hands-on approach and covers key concepts plus specific applications. Key features include: Substantially updated to focus on a specific ARM-based single board computer (SBC) as a target for embedded application programming Includes an introduction to Android programming With this book you will learn: The basics of Open Source, Linux and the embedded space How to set up a simple system and tool chain How to use simulation for initial application testing Network, graphics and Android programming How to use some of the many Linux components and tools How to configure and build the Linux kernel, BusyBox and U-Boot bootloader Provides a hands-on introduction for engineers and software developers who need to get up to speed quickly on embedded Linux, its operation and its capabilities – including Android Updated and changed accompanying tools, with a focus on the author's specially-developed Embedded Linux Learning Kit

Summary This bestseller has been updated and revised to cover all the latest changes to C++ 14 and 17! C++ Concurrency in Action, Second Edition teaches you everything you need to write robust and elegant multithreaded applications in C++17. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology You choose C++ when your applications need to run fast. Well-designed concurrency makes them go even faster. C++ 17 delivers strong support for the multithreaded, multiprocessor programming required for fast graphic processing, machine learning, and other performance-sensitive tasks. This exceptional book unpacks the features, patterns, and best practices of production-grade C++ concurrency. About the Book 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. What's inside Full coverage of new C++ 17 features Starting and managing threads Synchronizing concurrent operations Designing concurrent code Debugging multithreaded applications About the Reader Written for intermediate C and C++ developers. No prior experience with concurrency required. About the Author Anthony Williams has been an active member of the BSI C++ Panel since 2001 and is the developer of the just::thread Pro extensions to the C++11 thread library. Table of Contents Hello, world of concurrency in C++! Managing threads Sharing data between threads Synchronizing concurrent operations The C++ memory model and operations on atomic types Designing lock-based concurrent data structures Designing lock-free concurrent data structures Designing concurrent code Advanced thread management Parallel algorithms Testing and debugging multithreaded applications Master the techniques needed to build great, efficient embedded devices on Linux About This Book Discover how to build and configure reliable embedded Linux devices This book has been updated to include Linux 4.9 and Yocto Project 2.2 (Morty) This comprehensive guide covers the remote update of devices in the field and power management Who This Book Is For If you are an engineer who wishes to understand and use Linux in embedded devices, this book is for you. It is also for Linux developers and system programmers who are familiar with embedded systems and want to learn and program the best in class devices. It is appropriate for students studying embedded techniques, for developers implementing embedded Linux devices, and engineers supporting existing Linux devices. What You Will Learn Evaluate the Board Support Packages offered by most manufacturers of a system on chip or embedded module Use Buildroot and the Yocto Project to create embedded Linux systems quickly and efficiently Update IoT devices in the field without compromising security Reduce the power budget of devices to make batteries last longer Interact with the hardware without having to write kernel device drivers Debug devices remotely using GDB, and see how to measure the performance of the systems using powerful tools such as perk, ftrace, and valgrind Find out how to configure Linux as a real-time operating system In Detail Embedded Linux runs many of the devices we use every day, from

smart TVs to WiFi routers, test equipment to industrial controllers - all of them have Linux at their heart. Linux is a core technology in the implementation of the inter-connected world of the Internet of Things. The comprehensive guide shows you the technologies and techniques required to build Linux into embedded systems. You will begin by learning about the fundamental elements that underpin all embedded Linux projects: the toolchain, the bootloader, the kernel, and the root filesystem. You'll see how to create each of these elements from scratch, and how to automate the process using Buildroot and the Yocto Project. Moving on, you'll find out how to implement an effective storage strategy for flash memory chips, and how to install updates to the device remotely once it is deployed. You'll also get to know the key aspects of writing code for embedded Linux, such as how to access hardware from applications, the implications of writing multi-threaded code, and techniques to manage memory in an efficient way. The final chapters show you how to debug your code, both in applications and in the Linux kernel, and how to profile the system so that you can look out for performance bottlenecks. By the end of the book, you will have a complete overview of the steps required to create a successful embedded Linux system.

Style and approach This book is an easy-to-follow and pragmatic guide with in-depth analysis of the implementation of embedded devices. It follows the life cycle of a project from inception through to completion, at each stage giving both the theory that underlies the topic and practical step-by-step walkthroughs of an example implementation. Push the limits of what C - and you - can do, with this high-intensity guide to the most advanced capabilities of C

Key Features Make the most of C's low-level control, flexibility, and high performance

A comprehensive guide to C's most powerful and challenging features A thought-provoking guide packed with hands-on exercises and examples

Book Description There's a lot more to C than knowing the language syntax. The industry looks for developers with a rigorous, scientific understanding of the principles and practices. Extreme C will teach you to use C's advanced low-level power to write effective, efficient systems. This intensive, practical guide will help you become an expert C programmer. Building on your existing C knowledge, you will master preprocessor directives, macros, conditional compilation, pointers, and much more. You will gain new insight into algorithm design, functions, and structures. You will discover how C helps you squeeze maximum performance out of critical, resource-constrained applications. C still plays a critical role in 21st-century programming, remaining the core language for precision engineering, aviations, space research, and more. This book shows how C works with Unix, how to implement OO principles in C, and fully covers multi-processing. In Extreme C, Amini encourages you to think, question, apply, and experiment for yourself. The book is essential for anybody who wants to take their C to the next level. What you will learn

Build advanced C knowledge on strong foundations, rooted in first principles Understand memory structures and compilation pipeline and how they work, and how to make most out of them

Apply object-oriented design principles to your procedural C code Write low-level code that's close to the hardware and squeezes maximum performance out of a computer system

Master concurrency, multithreading, multi-processing, and integration with other languages Unit Testing and debugging, build systems, and inter-process communication for C programming

Who this book is for Extreme C is for C programmers who want to dig deep into the language and its capabilities. It will help you make the most of the low-level control C gives you.

for Multicore and Cluster Systems

Logic Programming

Parallel and Distributed Processing

Beginning Linux?Programming

The Entity-Life Modeling Approach

Taking you to the limit in Concurrency, OOP, and the most advanced capabilities of C

10th International Conference, Kope, Japan, July 17-20, 2012, Revised Selected Papers

This volume contains the proceedings of the 19th International Conference on Logic Programming, ICLP 2003, which was held at the Tata Institute of Fundamental Research in Mumbai, India, during 9-13 December, 2003. ICLP 2003 was colocated with the 8th Asian Computing Science Conference, ASIAN 2003, and was followed by the 23rd Conference on Foundations of Software Technology and Theoretical Computer Science, FSTTCS 2003. The latter event was hosted by the Indian Institute of Technology in Mumbai. In addition, there were 2 satellite workshops associated with ICLP 2003: - PPSWR 2003, Principles and Practice of Semantic Web Reasoning, 8th Dec. 2003, organized by Françoise Bry, Nicola Henze, and Jan Maluszynski. - COLOPS 2003, CONstraint & LOGic Programming in Security, 8th Dec. 2003, organized by Martin Leucker, Justin Pearson, Fred Spiessens, and Frank D. Valencia. - WLPE 2003, Workshop on Logic Programming Environments, organized by Alexander Serebrenik and Fred Mesnard. -

CICLOPS2003, Implementation of Constraint and Logic Programming Systems, 14th Dec. 2003, organized by Michel Ferreira and Ricardo

Lopes. - SVV 2003, Software Verification and Validation, 14th Dec. 2003, organized by Sandro Etalle, Supratik Mukhopadhyay, and Abhik Roychoudhury.

Master the essentials of concurrent programming, including testing and debugging This textbook examines languages and libraries for multithreaded programming. Readers learn how to create threads in Java and C++, and develop essential concurrent programming and problem-solving skills. Moreover, the textbook sets itself apart from other comparable works by helping readers to become proficient in key testing and debugging techniques. Among the topics covered, readers are introduced to the relevant aspects of Java, the POSIX Pthread library, and the Windows Win32 Applications Programming Interface. The authors have developed and fine-tuned this book through the concurrent programming courses they have taught for the past twenty years. The material, which emphasizes practical tools and techniques to solve concurrent programming problems, includes original results from the authors' research. Chapters include: * 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 have been implemented to provide working examples of all the material that is covered. These libraries and the testing techniques they support can be used to assess student-written programs. Each chapter includes exercises that build skills in program writing and help ensure that readers have mastered the chapter's key concepts. The source code for all the listings in the text and for the synchronization libraries is also provided, as well as startup files and test cases for the exercises. This textbook is designed for upper-level undergraduates and graduate students in computer science. With its abundance of practical material and inclusion of working code, coupled with an emphasis on testing and debugging, it is also a highly useful reference for practicing programmers.*

"The security of information systems has not improved at a rate consistent with the growth and sophistication of the attacks being made against them. To address this problem, we must improve the underlying strategies and techniques used to create our systems. Specifically, we must build security in from the start, rather than append it as an afterthought. That's the point of Secure Coding in C and C++. In careful detail, this book shows software developers how to build high-quality systems that are less vulnerable to costly and even catastrophic attack. It's a book that every developer should read before the start of any serious project." --Frank Abagnale, author, lecturer, and leading consultant on fraud prevention and secure documents Learn the Root Causes of Software Vulnerabilities and How to Avoid Them Commonly exploited software vulnerabilities are usually caused by avoidable software defects. Having analyzed nearly 18,000 vulnerability reports over the past ten years, the CERT/Coordination Center (CERT/CC) has determined that a relatively small number of root causes account for most of them. This book identifies and explains these causes and shows the steps that can be taken to prevent exploitation. Moreover, this book encourages programmers to adopt security best practices and develop a security mindset that can help protect software from tomorrow's attacks, not just today's. Drawing on the CERT/CC's reports and conclusions, Robert Seacord systematically identifies the program errors most likely to lead to security breaches, shows how they can be exploited, reviews the potential consequences, and presents secure alternatives. Coverage includes technical detail on how to Improve the overall security of any C/C++ application Thwart buffer overflows and stack-smashing attacks that exploit insecure string manipulation logic Avoid vulnerabilities and security flaws resulting from the incorrect use of dynamic memory management functions Eliminate integer-related problems: integer overflows, sign errors, and truncation errors Correctly use formatted output functions without introducing format-string vulnerabilities Avoid I/O vulnerabilities, including race conditions Secure Coding in C and C++ presents hundreds of examples of secure code, insecure code, and exploits, implemented for Windows and Linux. If you're responsible for creating secure C or C++ software--or for keeping it safe--no other book offers you this much detailed, expert assistance.

The Go Programming Language is the authoritative resource for any programmer who wants to learn Go. It shows how to write clear and idiomatic Go to solve real-world problems. The book does not assume prior knowledge of Go nor experience with any specific language, so you'll find it accessible whether you're most comfortable with JavaScript, Ruby, Python, Java, or C++. The first chapter is a tutorial on the basic concepts of Go, introduced through programs for file I/O and text processing, simple graphics, and web clients and servers. Early chapters cover the structural elements of Go programs: syntax, control flow, data types, and the organization of a program into packages, files, and functions. The examples illustrate many packages from the standard library and show how to create new ones of your own. Later chapters explain the package mechanism in more detail, and how to build, test, and maintain projects using the go tool. The chapters on methods and interfaces introduce Go's unconventional approach to object-oriented programming, in which methods can be declared on any type and interfaces are implicitly satisfied. They explain the key principles of encapsulation, composition, and substitutability using realistic examples. Two chapters on concurrency present in-depth approaches to this increasingly important topic. The first, which covers the basic mechanisms of goroutines and channels, illustrates the style known as communicating sequential processes for which Go is renowned. The second covers more traditional aspects of concurrency with shared variables. These chapters provide a solid foundation for programmers encountering concurrency for the first time. The final two chapters explore lower-level features of Go. One covers the art of metaprogramming using reflection. The other shows how to use the unsafe package to step outside the type system for special situations, and how to use the cgo tool to create Go bindings for C libraries. The book features hundreds of interesting and practical examples of well-written Go code that cover the whole language, its most important packages, and a wide range of applications. Each chapter has exercises to test your understanding and explore extensions and alternatives. Source code is freely available for download from <http://gopl.io/> and may be conveniently fetched, built, and installed using the go get command.

Multicore Application Programming

The Linux Programming Interface

POSIX.4 Programmers Guide

Algorithmic Differentiation of Pragma-Defined Parallel Regions

Linux System Programming

Advanced Topics

Concurrent Programming in Java

Shared Memory Application Programming presents the key concepts and applications of parallel programming, in an accessible and engaging style applicable to developers across many domains. Multithreaded programming is today a core technology, at the basis of all software development projects in any branch of applied computer science. This book guides readers to develop insights about threaded programming and introduces two popular platforms for multicore development: OpenMP and Intel Threading Building Blocks (TBB). Author Victor Alessandrini leverages his rich experience to explain each platform's design strategies, analyzing the focus and strengths underlying their often complementary capabilities, as well as their interoperability. The book is divided into two parts: the first develops the essential concepts of thread management and synchronization, discussing the way they are implemented in native multithreading libraries (Windows threads, Pthreads) as well as in the modern C++11 threads standard. The second provides an in-depth discussion of TBB and OpenMP including the latest features in OpenMP 4.0 extensions to ensure readers' skills are fully up to date. Focus progressively shifts from traditional thread parallelism to modern task parallelism deployed by modern programming environments. Several chapters include examples drawn from a variety of disciplines, including molecular dynamics and image processing, with full source code and a software library incorporating a number of utilities that readers can adapt into their own projects. Designed to introduce

threading and multicore programming to teach modern coding strategies for developers in applied computing Leverages author Victor Alessandrini's rich experience to explain each platform's design strategies, analyzing the focus and strengths underlying their often complementary capabilities, as well as their interoperability Includes complete, up-to-date discussions of OpenMP 4.0 and TBB Based on the author's training sessions, including information on source code and software libraries which can be repurposed

The classic guide to UNIX® programming—completely updated! UNIX application programming requires a mastery of system-level services. Making sense of the many functions—more than 1,100 functions in the current UNIX specification—is a daunting task, so for years programmers have turned to Advanced UNIX Programming for its clear, expert advice on how to use the key functions reliably. An enormous number of changes have taken place in the UNIX environment since the landmark first edition. In Advanced UNIX Programming, Second Edition, UNIX pioneer Marc J. Rochkind brings the book fully up to date, with all-new, comprehensive coverage including: POSIX Solaris™ Linux® FreeBSD Darwin, the Mac™ OS X kernel And more than 200 new system calls Rochkind's fully updated classic explains all the UNIX system calls you're likely to need, all in a single volume! Interprocess communication, networking (sockets), pseudo terminals, asynchronous I/O, advanced signals, realtime, and threads Covers the system calls you'll actually use—no need to plow through hundreds of improperly implemented, obsolete, and otherwise unnecessary system calls! Thousands of lines of example code include a Web browser and server, a keystroke recorder/player, and a shell complete with pipelines, redirection, and background processes Emphasis on the practical—ensuring portability, avoiding pitfalls, and much more! Since 1985, the one book to have for mastering UNIX application programming has been Rochkind's Advanced UNIX Programming. Now completely updated, the second edition remains the choice for up-to-the-minute, in-depth coverage of the essential system-level services of the UNIX family of operating systems.

With the same insight and authority that made their book The Unix Programming Environment a classic, Brian Kernighan and Rob Pike have written The Practice of Programming to help make individual programmers more effective and productive. The practice of programming is more than just writing code. Programmers must also assess tradeoffs, choose among design alternatives, debug and test, improve performance, and maintain software written by themselves and others. At the same time, they must be concerned with issues like compatibility, robustness, and reliability, while meeting specifications. The Practice of Programming covers all these topics, and more. This book is full of practical advice and real-world examples in C, C++, Java, and a variety of special-purpose languages. It includes chapters on: debugging: finding bugs quickly and methodically testing: guaranteeing that software works correctly and reliably performance: making programs faster and more compact portability: ensuring that programs run everywhere without change design: balancing goals and constraints to decide which algorithms and data structures are best interfaces: using abstraction and information hiding to control the interactions between components style: writing code that works well and is a pleasure to read notation: choosing languages and tools that let the machine do more of the work Kernighan and Pike have distilled years of experience writing programs, teaching, and working with other programmers to create this book. Anyone who writes software will profit from the principles and guidance in The Practice of Programming .

What others in the trenches say about The Pragmatic Programmer... "The cool thing about this book is that it's great for keeping the programming process fresh. The book helps you to continue to grow and clearly comes from people who have been there." —Kent Beck, author of Extreme Programming Explained: Embrace Change "I found this book to be a great mix of solid advice and wonderful analogies!" —Martin Fowler, author of Refactoring and UML Distilled "I would buy a copy, read it twice, then tell all my colleagues to run out and grab a copy. This is a book I would never loan because I would worry about it being lost." —Kevin Ruland, Management Science, MSG-Logistics "The wisdom and practical experience of the authors is obvious. The topics presented are relevant and useful... By far its greatest strength for me has been the outstanding analogies—tracer bullets, broken windows, and the fabulous helicopter-based explanation of the need for orthogonality, especially in a crisis situation. I have little doubt that this book will eventually become an excellent source of useful information for journeymen programmers and expert mentors alike." —John Lakos, author of Large-Scale C++ Software Design "This is the sort of book I will buy a dozen copies of when it comes out so I can give it to my clients." —Eric Vought, Software Engineer "Most modern books on software development fail to cover the basics of what makes a great software developer, instead spending their time on syntax or technology where in reality the greatest leverage possible for any software team is in having talented developers who really know their craft well. An excellent book." —Pete McBreen, Independent Consultant "Since reading this book, I have implemented many of the practical suggestions and tips it contains. Across the board, they have saved my company time and money while helping me get my job done quicker! This should be a desktop reference for everyone who works with code for a living." —Jared Richardson, Senior Software Developer, iRenaissance, Inc. "I would like to see this issued to every new employee at my company..." —Chris Cleeland, Senior Software Engineer, Object Computing, Inc. "If I'm putting together a project, it's the authors of this book that I want. . . . And failing that I'd settle for people who've read their

book." –Ward Cunningham Straight from the programming trenches, *The Pragmatic Programmer* cuts through the increasing specialization and technicalities of modern software development to examine the core process—taking a requirement and producing working, maintainable code that delights its users. It covers topics ranging from personal responsibility and career development to architectural techniques for keeping your code flexible and easy to adapt and reuse. Read this book, and you'll learn how to Fight software rot; Avoid the trap of duplicating knowledge; Write flexible, dynamic, and adaptable code; Avoid programming by coincidence; Bullet-proof your code with contracts, assertions, and exceptions; Capture real requirements; Test ruthlessly and effectively; Delight your users; Build teams of pragmatic programmers; and Make your developments more precise with automation. Written as a series of self-contained sections and filled with entertaining anecdotes, thoughtful examples, and interesting analogies, *The Pragmatic Programmer* illustrates the best practices and major pitfalls of many different aspects of software development. Whether you're a new coder, an experienced programmer, or a manager responsible for software projects, use these lessons daily, and you'll quickly see improvements in personal productivity, accuracy, and job satisfaction. You'll learn skills and develop habits and attitudes that form the foundation for long-term success in your career. You'll become a Pragmatic Programmer.

Concepts and Strategies in Multicore Application Programming

Advanced UNIX Programming

The Go Programming Language

Formal Methods and Software Engineering

Secure Coding in C and C++

19th International Conference, ICLP 2003, Mumbai, India, December 9–13, 2003, Proceedings

Kenneth Louden and Kenneth Lambert's new edition of *PROGRAMMING LANGUAGES: PRINCIPLES AND PRACTICE*, 3E gives advanced undergraduate students an overview of programming languages through general principles combined with details about many modern languages. Major languages used in this edition include C, C++, Smalltalk, Java, Ada, ML, Haskell, Scheme, and Prolog; many other languages are discussed more briefly. The text also contains extensive coverage of implementation issues, the theoretical foundations of programming languages, and a large number of exercises, making it the perfect bridge to compiler courses and to the theoretical study of programming languages. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book discusses questions of numerical solutions of applied problems on parallel computing systems. Nowadays, engineering and scientific computations are carried out on parallel computing systems, which provide parallel data processing on a few computing nodes. In the development of up-to-date applied software, this feature of computers must be taken into account for the maximum efficient usage of their resources. In constructing computational algorithms, we should separate relatively independent subproblems in order to solve them on a single computing node.

The popular open source KDE desktop environment for Unix was built with Qt, a C++ class library for writing GUI applications that run on Unix, Linux, Windows 95/98, Windows 2000, and Windows NT platforms. Qt emulates the look and feel of Motif, but is much easier to use. Best of all, after you have written an application with Qt, all you have to do is recompile it to have a version that works on Windows. Qt also emulates the look and feel of Windows, so your users get native-looking interfaces. Platform independence is not the only benefit. Qt is flexible and highly optimized. You'll find that you need to write very little, if any, platform-dependent code because Qt already has what you need. And Qt is free for open source and Linux development. Although programming with Qt is straightforward and feels natural once you get the hang of it, the learning curve can be steep. Qt comes with excellent reference documentation, but beginners often find the included tutorial is not enough to really get started with Qt. That's where *Programming with Qt* steps in. You'll learn how to program in Qt as the book guides you through the steps of writing a simple paint application. Exercises with fully worked out answers help you deepen your understanding of the topics. The book presents all of the GUI elements in Qt, along with advice about when and how to use them, so you can make full use of the toolkit. For seasoned Qt programmers, there's also lots of information on advanced 2D transformations, drag-and-drop, writing custom image file filters, networking with the new Qt Network Extension, XML processing, Unicode handling, and more. *Programming with Qt* helps you get the most out of this powerful, easy-to-use, cross-platform toolkit. It's been completely updated for Qt Version 3.0 and includes entirely new information on rich text, Unicode/double byte characters, internationalization, and network programming.