Concurrent Programming On Windows Architecture Principles And Patterns Microsoft Net Development

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Programming Massively Parallel Processors
- David B. Kirk 2012-12-31
Programming Massively Parallel Processors: A Hands-on Approach, Second Edition, teaches students how to program massively parallel processors. It offers a detailed discussion of various techniques for constructing parallel programs. Case studies are used to demonstrate the development process, which begins with computational thinking and ends with effective and efficient parallel programs. This guide shows both student and professional alike the basic concepts of parallel programming and GPU architecture. Topics of performance, floating-point format, parallel patterns, and dynamic parallelism are covered in depth. This revised edition contains more parallel programming examples, commonly-used libraries such as Thrust, and explanations of the latest tools. It also provides new coverage of CUDA 5.0, improved performance, enhanced development tools, increased hardware support, and more; increased coverage of related technology, OpenCL and new material on algorithm patterns, GPU clusters, host programming, and data parallelism; and two new case studies (on MRI reconstruction and molecular visualization) that explore the latest applications of CUDA and GPUs for scientific research and high-performance computing. This book should be a valuable resource for advanced students, software engineers, programmers, and hardware engineers. New coverage of CUDA 5.0, improved performance, enhanced development tools, increased hardware support, and more Increased coverage of related technology, OpenCL and new material on algorithm patterns, GPU clusters, host programming, and data parallelism Two new case studies (on MRI reconstruction and molecular visualization) explore the latest applications of CUDA and GPUs for scientific research and high-performance computing

The Art of Concurrency - Clay Breshears 2009-05-07
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.

Mastering C# Concurrency - Eugene Agafonov 2015-10-28
Create robust and scalable applications along with responsive UI using concurrency and the multi-threading infrastructure in .NET and C# About This Book Learn to combine your asynchronous operations with Task Parallel Library Master C#'s asynchronous infrastructure and use asynchronous APIs effectively to achieve optimal responsiveness of the application An easy-to-follow, example-based guide that helps you to build scalable applications using concurrency in C# Who This Book Is For If you are a C# developer who wants to develop modern applications in C# and wants to overcome problems by using asynchronous APIs and standard patterns, then this book is ideal for you. Reasonable development knowledge, an understanding of core elements and applications related to the .Net platform, and also the fundamentals of concurrency is assumed. What You Will Learn Apply general multithreading concepts to your application's design Leverage lock-free concurrency and learn about its pros and cons to achieve efficient synchronization between user threads Combine your asynchronous operations with Task Parallel Library Make your code easier with C#'s asynchrony support Use common concurrent collections and programming patterns Write scalable and robust server-side asynchronous code Create fast and responsible client applications Avoid common problems and

troubleshoot your multi-threaded and asynchronous applications In Detail Starting with the traditional approach to concurrency, you will learn how to write multithreaded concurrent programs and compose ways that won't require locking. You will explore the concepts of parallelism granularity, and fine-grained and coarse-grained parallel tasks by choosing a concurrent program structure and parallelizing the workload optimally. You will also learn how to use task parallel library, cancellations, timeouts, and how to handle errors. You will know how to choose the appropriate data structure for a specific parallel algorithm to achieve scalability and performance. Further, you'll learn about server scalability, asynchronous I/O, and thread pools, and write responsive traditional Windows and Windows Store applications. By the end of the book, you will be able to diagnose and resolve typical problems that could happen in multithreaded applications. Style and approach An easy-to-follow, example-based guide that will walk you through the core principles of concurrency and multithreading using C#.

Computer Organization & Architecture: Themes and Variations - Alan Clements 2013-01-01
COMPUTER ORGANIZATION AND ARCHITECTURE: THEMES AND VARIATIONS stresses the structure of the complete system (CPU, memory, buses and peripherals) and reinforces that core content with an emphasis on divergent examples. This approach to computer architecture is an effective arrangement that provides sufficient detail at the logic and organizational levels appropriate for EE/ECE departments as well as for Computer Science readers. The text goes well beyond the minimal curriculum coverage and introduces topics that are important to anyone involved with computer architecture in a way that is both thought provoking and interesting to all. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Parallel and Concurrent Programming in Haskell - Simon Marlow 2013-07-12
If you have a working knowledge of Haskell, this hands-on book shows you how to use the language's many APIs and frameworks for

writing both parallel and concurrent programs. You'll learn how parallelism exploits multicore processors to speed up computation-heavy programs, and how concurrency enables you to write programs with threads for multiple interactions. Author Simon Marlow walks you through the process with lots of code examples that you can run, experiment with, and extend. Divided into separate sections on Parallel and Concurrent Haskell, this book also includes exercises to help you become familiar with the concepts presented: Express parallelism in Haskell with the Eval monad and Evaluation Strategies Parallelize ordinary Haskell code with the Par monad Build parallel array-based computations, using the Repa library Use the Accelerate library to run computations directly on the GPU Work with basic interfaces for writing concurrent code Build trees of threads for larger and more complex programs Learn how to build high-speed concurrent network servers Write distributed programs that run on multiple machines in a network

Ascend AI Processor Architecture and Programming - Xiaoyao Liang 2020-07-29 Ascend AI Processor Architecture and Programming: Principles and Applications of CANN offers in-depth AI applications using Huawei's Ascend chip, presenting and analyzing the unique performance and attributes of this processor. The title introduces the fundamental theory of AI, the software and hardware architecture of the Ascend AI processor, related tools and programming technology, and typical application cases. It demonstrates internal software and hardware design principles, system tools and programming techniques for the processor, laying out the elements of AI programming technology needed by researchers developing AI applications. Chapters cover the theoretical fundamentals of AI and deep learning, the state of the industry, including the current state of Neural Network Processors, deep learning frameworks, and a deep learning compilation framework, the hardware architecture of the Ascend AI processor, programming methods and practices for developing the processor, and finally, detailed case studies on data and algorithms for AI. Presents the performance and attributes of the Huawei Ascend AI processor Describes the

software and hardware architecture of the Ascend processor Lays out the elements of AI theory, processor architecture, and AI applications Provides detailed case studies on data and algorithms for AI Offers insights into processor architecture and programming to spark new AI applications

Emphasizing Distributed Systems - 2000-06-29
As the computer industry moves into the 21st century, the long-running Advances in Computers is ready to tackle the challenges of the new century with insightful articles on new technology, just as it has since 1960 in chronicling the advances in computer technology from the last century. As the longest-running continuing series on computers, Advances in Computers presents those technologies that will affect the industry in the years to come. In this volume, the 53rd in the series, we present 8 relevant topics. The first three represent a common theme on distributed computing systems -using more than one processor to allow for parallel execution, and hence completion of a complex computing task in a minimal amount of time. The other 5 chapters describe other relevant advances from the late 1990s with an emphasis on software development, topics of vital importance to developers today- process improvement, measurement and legal liabilities. Key Features * Longest running series on computers * Contains eight insightful chapters on new technology * Gives comprehensive treatment of distributed systems * Shows how to evaluate measurements * Details how to evaluate software process improvement models * Examines how to expand e-commerce on the Web * Discusses legal liabilities in developing software—a must-read for developers
More Effective C# - Bill Wagner 2008-10-01
In More Effective C#, Microsoft C# MVP and Regional Director Bill Wagner introduces fifty brand-new ways to write more efficient and more robust software. This all-new book follows the same format as Wagner's best-selling Effective C# (Addison-Wesley, 2005), providing clear, practical explanations, expert tips, and plenty of realistic code examples. Wagner shows how to make the most of powerful innovations built into Microsoft's new C# 3.0 and .NET

Framework 3.5, as well as advanced C# language capabilities not covered in his previous book. Drawing on his unsurpassed C# experience, the author reveals new best practices for working with LINQ, generics, metaprogramming, and many other features. He also uncovers practices that compromise performance or reliability and shows exactly how to avoid them. More Effective C# shows how to Use generics to express your design intent more effectively Master advanced generics techniques, such as constraints, method constraints, and generic specialization Use the multithreaded techniques you'll need to work with the .NET framework every day Express modern design idioms using the rich palette of C# language features Successfully mix object oriented and functional programming constructs Create composable interfaces and avoid confusion in public interfaces Use extension methods to separate contracts from implementation Program successfully with C# closures and anonymous types Write more effective LINQ queries Make the most of LINQ Lazy Evaluation Queries and Lambda Expressions Distinguish and convert between delegates and expression trees Efficiently utilize nullable types and partial classes Use implicit properties for mutable, nonserializable data You're already a successful C# programmer—this book can help you become an outstanding one.

Expert C++ - Vardan Grigoryan 2020-04-10 Design and architect real-world scalable C++ applications by exploring advanced techniques in low-level programming, object-oriented programming (OOP), the Standard Template Library (STL), metaprogramming, and concurrency Key FeaturesDesign professional-grade, maintainable apps by learning advanced concepts such as functional programming, templates, and networkingApply design patterns and best practices to solve real-world problemsImprove the performance of your projects by designing concurrent data structures and algorithmsBook Description C++ has evolved over the years and the latest release – C++20 – is now available. Since C++11, C++ has been constantly enhancing the language feature set. With the new version, you'll explore an array of features such as concepts, modules, ranges, and coroutines. This book will be your guide to learning the intricacies of the language, techniques, C++ tools, and the new features introduced in C++20, while also helping you apply these when building modern and resilient software. You'll start by exploring the latest features of C++, and then move on to advanced techniques such as multithreading, concurrency, debugging, monitoring, and high-performance programming. The book will delve into object-oriented programming principles and the C++ Standard Template Library, and even show you how to create custom templates. After this, you'll learn about different approaches such as test-driven development (TDD), behavior-driven development (BDD), and domain-driven design (DDD), before taking a look at the coding best practices and design patterns essential for building professional-grade applications. Toward the end of the book, you will gain useful insights into the recent C++ advancements in AI and machine learning. By the end of this C++ programming book, you'll have gained expertise in real-world application development, including the process of designing complex software. What you will learnUnderstand memory management and low-level programming in C++ to write secure and stable applicationsDiscover the latest C++20 features such as modules, concepts, ranges, and coroutinesUnderstand debugging and testing techniques and reduce issues in your programsDesign and implement GUI applications using Qt5Use multithreading and concurrency to make your programs run fasterDevelop high-end games by using the object-oriented capabilities of C++Explore AI and machine learning concepts with C++Who this book is for This C++ book is for experienced C++ developers who are looking to take their knowledge to the next level and perfect their skills in building professional-grade applications.

Principles and Practice of Constraint Programming - CP 2007 - Christian Bessiere 2007-09-06
This book constitutes the refereed proceedings of the 13th International Conference on Principles and Practice of Constraint Programming, CP 2007. It contains 51 revised full papers and 14 revised short papers presented together with eight application papers and the abstracts of two invited lectures. All

current issues of computing with constraints are addressed, ranging from methodological and foundational aspects to solving real-world problems in various application fields.

Communicating Process Architectures 2006 - Peter H. Welch 2006

"This publication contains papers from the conference Communicating Process Architectures 2006 conference, held at Napier University in Edinburgh. It is perhaps appropriate that a meeting concerning simple ways of designing, implementing and reasoning about concurrent systems should be held in an institution named after the inventor of a simple, and highly concurrent, adding machine. The house in which John Napier lived forms part of the campus where the meeting was held. The papers are very varied and wide ranging and subjects include various aspects of communicating process theory and their application to designing and building systems. One of the hottest current topics safe and effective programming models for multicore processors (e.g. IBMs Cell) has a natural home in this community and is addressed. Other papers include a case study on large scale formal development and verification, CSP mechanisms for Microsofts .NET framework, parallel systems on embedded and mobile devices, modern link technology (SpaceWire), various applications of occam- , JCSP and JCSP.net (video processing, robotics, massive multiplayer gaming, material and biological modeling, etc.), visual design languages and tools for CSP and real-time systems, new process oriented programming and design environments, new developments of the Transterpreter, efficient cluster computing and the debugging of message-passing systems."

Fundamentals of Operating Systems - Bob Eager 2016-01-06

A revised and updated edition of this student introductory textbook, it has new diagrams and illustrations, with updated hardware examples. A new concluding chapter on graphical user interfaces is added. There is also more emphasis on client-server systems.

Embedded Software Design and Programming of Multiprocessor System-on-Chip - Katalin Popovici 2010-03-03

Current multimedia and telecom applications require complex, heterogeneous multiprocessor system on chip (MPSoC) architectures with specific communication infrastructure in order to achieve the required performance. Heterogeneous MPSoC includes different types of processing units (DSP, microcontroller, ASIP) and different communication schemes (fast links, non standard memory organization and access). Programming an MPSoC requires the generation of efficient software running on MPSoC from a high level environment, by using the characteristics of the architecture. This task is known to be tedious and error prone, because it requires a combination of high level programming environments with low level software design. This book gives an overview of concepts related to embedded software design for MPSoC. It details a full software design approach, allowing systematic, high-level mapping of software applications on heterogeneous MPSoC. This approach is based on gradual refinement of hardware/software interfaces and simulation models allowing to validate the software at different abstraction levels. This book combines Simulink for high level programming and SystemC for the low level software development. This approach is illustrated with multiple examples of application software and MPSoC architectures that can be used for deep understanding of software design for MPSoC.

Concurrent Patterns and Best Practices - Atul S. Khot 2018-09-27

A definitive guide to mastering and implementing concurrency patterns in your applications Key FeaturesBuild scalable apps with patterns in multithreading, synchronization, and functional programmingExplore the parallel programming and multithreading techniques to make the code run fasterEfficiently use the techniques outlined to build reliable applicationsBook Description Selecting the correct concurrency architecture has a significant impact on the design and performance of your applications. This book explains how to leverage the different characteristics of parallel architecture to make your code faster and more efficient. To start with, you'll understand the basic concurrency concepts and explore patterns around explicit locking, lock free programming, futures &

actors. Then, you'll get insights into different concurrency models and parallel algorithms and put them to practice in different scenarios to realize your application's true potential. We'll take you through multithreading design patterns, such as master, slave, leader, follower, map-reduce, and monitor, also helping you to learn hands-on coding using these patterns. Once you've grasped all of this, you'll move on to solving problems using synchronizer patterns. You'll discover the rationale for these patterns in distributed & parallel applications, followed by studying how future composition, immutability and the monadic flow help create more robust code. Toward the end of the book, you'll learn about the actor paradigm and actor patterns - the message passing concurrency paradigm. What you will learnExplore parallel architecture Get acquainted with concurrency models Internalize design themes by implementing multithreading patterns Get insights into concurrent design patterns Discover design principles behind many java threading abstractions Work with functional concurrency patternsWho this book is for This is a must-have guide for developers who want to learn patterns to build scalable and high-performing apps. It's assumed that you already have a decent level of programming knowledge.

Parallel Computing Technologies - Victor Malyshkin 2007-08-29
This book constitutes the refereed proceedings of the 9th International Conference on Parallel Computing Technologies, PaCT 2007, held in conjunction with the Russian-Taiwan symposium on Methods and Tools of Parallel Programming of Multicomputers. It covers models and languages, applications, techniques for parallel programming supporting, cellular automata, as well as methods and tools of parallel programming of multicomputers.

Introducing .NET 4.0 - Alex Mackey 2011-01-27
Microsoft has introduced a large number of changes to the way that the .NET Framework operates. Familiar technologies have being altered, best practices replaced, and developer methodologies adjusted. Many developers find it hard to keep up with the pace of change across .NET's ever-widening array of technologies. You may know what's happening in C#, but how

about the Azure cloud? How is that going to affect your work? What are the limitations of the pLINQ syntax? What you need is a roadmap. A guide to help you see the innovations that matter and to give you a head start on the opportunities available in the new framework. Introducing .NET 4.0: with Visual Studio 2010 is designed to provide you with just that roadmap. It serves as a no-nonsense primer that will help experienced .NET developers understand the impact of the new framework and its associated technologies. This book will keep you updated on the changes and help you to seize new opportunities confidently and quickly.
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Concurrency Control and Recovery in Database Systems - Philip A. Bernstein 1987

Concurrent Programming on Windows - Joe Duffy 2008-10-28
"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.

Patterns for Parallel Programming - Timothy G. Mattson 2004-09-15
The Parallel Programming Guide for Every Software Developer From grids and clusters to next-generation game consoles, parallel computing is going mainstream. Innovations such as Hyper-Threading Technology, HyperTransport Technology, and multicore microprocessors from IBM, Intel, and Sun are accelerating the movement's growth. Only one thing is missing: programmers with the skills to meet the soaring demand for parallel software. That's where Patterns for Parallel Programming comes in. It's the first parallel programming guide written specifically to serve working software developers, not just computer scientists. The authors introduce a complete, highly accessible pattern language that will help any experienced developer "think parallel"-and start writing effective parallel code almost immediately. Instead of formal theory, they deliver proven solutions to the challenges faced by parallel programmers, and pragmatic guidance for using today's parallel APIs in the real world. Coverage includes: Understanding the parallel computing landscape and the challenges faced by parallel developers Finding the concurrency in a software design problem and decomposing it into concurrent tasks Managing the use of data across tasks Creating an algorithm structure that effectively exploits the concurrency you've identified Connecting your algorithmic structures to the APIs needed to implement them Specific software constructs for implementing parallel programs Working with today's leading parallel programming environments: OpenMP, MPI, and Java Patterns

have helped thousands of programmers master object-oriented development and other complex programming technologies. With this book, you will learn that they're the best way to master parallel programming too.

C++ Concurrency in Action - Anthony Williams 2019-02-07
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

Scientific Programming and Computer Architecture - Divakar Viswanath 2017-07-28

A variety of programming models relevant to scientists explained, with an emphasis on how programming constructs map to parts of the computer. What makes computer programs fast or slow? To answer this question, we have to get behind the abstractions of programming languages and look at how a computer really works. This book examines and explains a variety of scientific programming models (programming models relevant to scientists) with an emphasis on how programming constructs map to different parts of the computer's architecture. Two themes emerge: program speed and program modularity. Throughout this book, the premise is to "get under the hood," and the discussion is tied to specific programs. The book digs into linkers, compilers, operating systems, and computer architecture to understand how the different parts of the computer interact with programs. It begins with a review of C/C++ and explanations of how libraries, linkers, and Makefiles work. Programming models covered include Pthreads, OpenMP, MPI, TCP/IP, and CUDA.The emphasis on how computers work leads the reader into computer architecture and occasionally into the operating system kernel. The operating system studied is Linux, the preferred platform for scientific computing. Linux is also open source, which allows users to peer into its inner workings. A brief appendix provides a useful table of machines used to time programs. The book's website (https://github.com/divakarvi/bk-spca) has all the programs described in the book as well as a link to the html text.

Designing Embedded Hardware - John Catsoulis 2002

Intelligent readers who want to build their own embedded computer systems-- installed in everything from cell phones to cars to handheld organizers to refrigerators-- will find this book to be the most in-depth, practical, and up-to-date guide on the market. Designing Embedded Hardware carefully steers between the practical and philosophical aspects, so developers can both create their own devices and gadgets and customize and extend off-the-shelf systems. There are hundreds of books to choose from if you need to learn programming, but only a few are available if you want to learn to create hardware. Designing Embedded Hardware provides software and hardware engineers with no prior experience in embedded systems with the necessary conceptual and design building blocks to understand the architectures of embedded systems. Written to provide the depth of coverage and real-world examples developers need, Designing Embedded Hardware also provides a road-map to the pitfalls and traps to avoid in designing embedded systems. Designing Embedded Hardware covers such essential topics as: The principles of developing computer hardware Core hardware designs Assembly language concepts Parallel I/O Analog-digital conversion Timers (internal and external) UART Serial Peripheral Interface Inter-Integrated Circuit Bus Controller Area Network (CAN) Data Converter Interface (DCI) Low-power operation This invaluable and eminently useful book gives you the practical tools and skills to develop, build, and program your own application-specific computers.

Languages and Compilers for Parallel Computing - Larry Carter 2003-06-29
In August 1999, the Twelfth Workshop on Languages and Compilers for P- allel Computing (LCPC) was hosted by the Hierarchical Tiling Research group from the Computer Science and Engineering Department at the University of California San Diego (UCSD). The workshop is an annual international forum for leading research groups to present their current research activities and the latest results. It has also been a place for researchers and practitioners to - teract closely and exchange ideas about future directions. Among the topics of interest to the workshop are language features, code generation, debugging, - timization, communication and distributed shared memory libraries, distributed object systems, resource management systems, integration of compiler and r- time systems, irregular and dynamic applications, and performance evaluation. In 1999, the workshop was held at the International Relations/Paci c

Studies Auditorium and the San Diego Supercomputer Center at UCSD. Seventy-seven researchers from Australia, England, France, Germany, Korea, Spain, and the United States attended the workshop, an increase of over 50% from 1998.

AN INTRODUCTION TO OPERATING SYSTEMS : CONCEPTS AND PRACTICE (GNU/LINUX AND WINDOWS), FIFTH EDITION - BHATT, PRAMOD CHANDRA P. 2019-07-01

The book, now in its Fifth Edition, aims to provide a practical view of GNU/Linux and Windows 7, 8 and 10, covering different design considerations and patterns of use. The section on concepts covers fundamental principles, such as file systems, process management, memory management, input-output, resource sharing, inter-process communication (IPC), distributed computing, OS security, real-time and microkernel design. This thoroughly revised edition comes with a description of an instructional OS to support teaching of OS and also covers Android, currently the most popular OS for handheld systems. Basically, this text enables students to learn by practicing with the examples and doing exercises. NEW TO THE FIFTH EDITION • Includes the details on Windows 7, 8 and 10 • Describes an Instructional Operating System (PintOS), FEDORA and Android • The following additional material related to the book is available at www.phindia.com/bhatt. o Source Code Control System in UNIX o X-Windows in UNIX o System Administration in UNIX o VxWorks Operating System (full chapter) o OS for handheld systems, excluding Android o The student projects o Questions for practice for selected chapters TARGET AUDIENCE • BE/B.Tech (Computer Science and Engineering and Information Technology) • M.Sc. (Computer Science) BCA/MCA

Inside Microsoft Dynamics AX 2012 - The Microsoft Dynamics AX Team 2012-10-15

Dig into the architecture and internals of Microsoft Dynamics AX 2012—with firsthand insights from the team that designed and developed it. Targeted for solution developers and system implementers, this guide focuses on programming and customization capabilities—including key architectural principles, the application model, framework, and tools. Topics include: Architecture and development environment, including MorphX Microsoft Visual Studio tools for Microsoft Dynamics AX X++ programming language Microsoft SQL Server reporting and analytics Models Core development concepts Extending and customizing Microsoft Dynamics AX Performance and security considerations Workflow Best practices Note: Readers should have working knowledge of SQL and OOP concepts to gain max benefit from this book.

Multicore Processors and Systems - Stephen W. Keckler 2009-08-29

Multicore Processors and Systems provides a comprehensive overview of emerging multicore processors and systems. It covers technology trends affecting multicores, multicore architecture innovations, multicore software innovations, and case studies of state-of-the-art commercial multicore systems. A cross-cutting theme of the book is the challenges associated with scaling up multicore systems to hundreds of cores. The book provides an overview of significant developments in the architectures for multicore processors and systems. It includes chapters on fundamental requirements for multicore systems, including processing, memory systems, and interconnect. It also includes several case studies on commercial multicore systems that have recently been developed and deployed across multiple application domains. The architecture chapters focus on innovative multicore execution models as well as infrastructure for multicores, including memory systems and on-chip interconnections. The case studies examine multicore implementations across different application domains, including general purpose, server, media/broadband, network processing, and signal processing. Multicore Processors and Systems is the first book that focuses solely on multicore processors and systems, and in particular on the unique technology implications, architectures, and implementations. The book has contributing authors that are from both the academic and industrial communities.

Encyclopedia of Parallel Computing - David Padua 2011-09-08

Containing over 300 entries in an A-Z format,

the Encyclopedia of Parallel Computing provides easy, intuitive access to relevant information for professionals and researchers seeking access to any aspect within the broad field of parallel computing. Topics for this comprehensive reference were selected, written, and peer-reviewed by an international pool of distinguished researchers in the field. The Encyclopedia is broad in scope, covering machine organization, programming languages, algorithms, and applications. Within each area, concepts, designs, and specific implementations are presented. The highly-structured essays in this work comprise synonyms, a definition and discussion of the topic, bibliographies, and links to related literature. Extensive cross-references to other entries within the Encyclopedia support efficient, user-friendly searchers for immediate access to useful information. Key concepts presented in the Encyclopedia of Parallel Computing include; laws and metrics; specific numerical and non-numerical algorithms; asynchronous algorithms; libraries of subroutines; benchmark suites; applications; sequential consistency and cache coherency; machine classes such as clusters, shared-memory multiprocessors, special-purpose machines and dataflow machines; specific machines such as Cray supercomputers, IBM's cell processor and Intel's multicore machines; race detection and auto parallelization; parallel programming languages, synchronization primitives, collective operations, message passing libraries, checkpointing, and operating systems. Topics covered: Speedup, Efficiency, Isoefficiency, Redundancy, Amdahls law, Computer Architecture Concepts, Parallel Machine Designs, Benmarks, Parallel Programming concepts & design, Algorithms, Parallel applications. This authoritative reference will be published in two formats: print and online. The online edition features hyperlinks to cross-references and to additional significant research. Related Subjects: supercomputing, high-performance computing, distributed computing

Concurrent Programming in Java - Douglas Lea 2000
Software -- Programming Languages.

Pattern-Oriented Software Architecture, Patterns for Resource Management - Michael Kircher 2013-04-19

The first volume of the POSA pattern series introduced a broad-spectrum of general-purpose patterns in software design and architecture. The second narrowed the focus to fundamental patterns for building sophisticated concurrent and networked software systems and applications. This volume uses design patterns to present techniques for implementing effective resource management in a system. The patterns are covered in detail making use of several examples providing directions to the readers on how to implement the presented patterns. Additionally, the volume presents a thorough introduction into resource management and a case study where the patterns are applied to the domain of mobile radio networks. The patterns are grouped by different areas of resource management and hence address the complete lifecycle of resources: resource acquisition, coordination and release.

Beowulf Cluster Computing with Windows - Thomas Sterling 2001-10-26

Comprehensive guides to the latest Beowulf tools and methodologies. Beowulf clusters, which exploit mass-market PC hardware and software in conjunction with cost-effective commercial network technology, are becoming the platform for many scientific, engineering, and commercial applications. With growing popularity has come growing complexity. Addressing that complexity, Beowulf Cluster Computing with Linux and Beowulf Cluster Computing with Windows provide system users and administrators with the tools they need to run the most advanced Beowulf clusters. The book is appearing in both Linux and Windows versions in order to reach the entire PC cluster community, which is divided into two distinct camps according to the node operating system. Each book consists of three stand-alone parts. The first provides an introduction to the underlying hardware technology, assembly, and configuration. The second part offers a detailed presentation of the major parallel programming libraries. The third, and largest, part describes software infrastructures and tools for managing cluster resources. This includes some of the most popular of the software packages available for distributed task scheduling, as well as tools for monitoring and administering system

resources and user accounts. Approximately 75% of the material in the two books is shared, with the other 25% pertaining to the specific operating system. Most of the chapters include text specific to the operating system. The Linux volume includes a discussion of parallel file systems.

Concurrent Programming on Windows - Joe Duffy 2009
This practical book includes a tutorial of the entire set of Windows and .NET APIs required to write concurrent programs. Because so much of the threading and synchronization features of the platform are Windows-general, the author, Joe Duffy, focuses first on the general behavior and then on the API details of native and managed code. Interspersed among the tutorial are many difficult-to-discover, useful insights, and internal details about how things work.

Programming Many-Core Chips - András Vajda 2011-06-10
This book presents new concepts, techniques and promising programming models for designing software for chips with "many" (hundreds to thousands) processor cores. Given the scale of parallelism inherent to these chips, software designers face new challenges in terms of operating systems, middleware and applications. This will serve as an invaluable, single-source reference to the state-of-the-art in programming many-core chips. Coverage includes many-core architectures, operating systems, middleware, and programming models.

Parallel Computing: Software Technology, Algorithms, Architectures & Applications - Gerhard Joubert 2004-09-23
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.

Euro-Par 2003 Parallel Processing - Harald Kosch 2004-06-01
Euro-ParConferenceSeries The European Conference on Parallel Computing (Euro-Par) is an international conference series dedicated to the promotion and advancement of all aspects of parallel and distributed computing. The major

themes fall into the categories of hardware, software, algorithms, and applications. This year, new and interesting topicswereintroduced,likePeer-to-PeerComputing,DistributedMultimedia- stems, and Mobile and Ubiquitous Computing. For the ?rst time, we organized a Demo Session showing many challenging applications. The general objective of Euro-Par is to provide a forum promoting the de- lopment of parallel and distributed computing both as an industrial technique and an academic discipline, extending the frontiers of both the state of the art and the state of the practice. The industrial importance of parallel and dist- buted computing is supported this year by a special Industrial Session as well as a vendors' exhibition. This is particularly important as currently parallel and distributed computing is evolving into a globally important technology; the b- zword Grid Computing clearly expresses this move. In addition, the trend to a - bile world is clearly visible in this year's Euro-Par. ThemainaudienceforandparticipantsatEuro-Pararereserchersinaca- mic departments, industrial organizations, and government laboratories. Euro- Par aims to become the primary choice of such professionals for the presentation of new results in their speci?c areas. Euro-Par has its own Internet domain with a permanent Web site where the history of the conference series is described: http://www.euro-par.org. The Euro-Par conference series is sponsored by the Association for Computer Machinery (ACM) and the International Federation for Information Processing (IFIP).

Parallel Programming - Thomas Rauber 2013-06-13
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 Rünger 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.

Concurrency in .NET - Riccardo Terrell 2018-06-05
Summary Concurrency in .NET teaches you how to build concurrent and scalable programs in .NET using the functional paradigm. This intermediate-level guide is aimed at developers, architects, and passionate computer programmers who are interested in writing code with improved speed and effectiveness by adopting a declarative and pain-free programming style. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Unlock the incredible performance built into your multi-processor machines. Concurrent applications run faster because they spread work across processor cores, performing several tasks at the same time. Modern tools and techniques on the .NET platform, including parallel LINQ, functional programming, asynchronous programming, and the Task Parallel Library, offer powerful alternatives to traditional thread-based concurrency. About the Book Concurrency in .NET teaches you to write code that delivers the speed you need for performance-sensitive applications. Featuring examples in both C# and F#, this book guides you through concurrent and parallel designs that emphasize functional programming in theory and practice. You'll start with the foundations of concurrency and master essential techniques and design practices to optimize code running on modern multiprocessor systems. What's Inside The most important concurrency abstractions Employing the agent programming model Implementing real-time event-stream processing Executing unbounded asynchronous operations Best concurrent practices and patterns that apply to all platforms About the Reader For readers skilled with C# or F#. About the Book Riccardo Terrell is a seasoned software engineer and Microsoft MVP who is passionate about functional programming. He has over 20 years' experience delivering cost-effective technology solutions in a competitive business environment. Table of Contents PART 1 - Benefits of functional programming applicable to concurrent programs Functional concurrency foundations Functional programming techniques for concurrency Functional data structures and immutability PART 2 - How to approach the different parts of a concurrent program The basics of processing big data: data parallelism, part 1 PLINQ and MapReduce: data parallelism, part 2 Real-time event streams: functional reactive programming Task-based functional parallelism Task asynchronicity for the win Asynchronous functional programming in F# Functional combinators for fluent concurrent programming Applying reactive programming everywhere with agents Parallel workflow and agent programming with TPL Dataflow PART 3 - Modern patterns of concurrent programming applied Recipes and design patterns for successful concurrent programming Building a scalable mobile app with concurrent functional programming

Programming Concurrency on the JVM - Venkat Subramaniam 2011-08-26
More than ever, learning to program

concurrency is critical to creating faster, responsive applications. Speedy and affordable multicore hardware is driving the demand for high-performing applications, and you can leverage the Java platform to bring these applications to life. Concurrency on the Java platform has evolved, from the synchronization model of JDK to software transactional memory (STM) and actor-based concurrency. This book is the first to show you all these concurrency styles so you can compare and choose what works best for your applications. You'll learn the benefits of each of these models, when and how to use them, and what their limitations are. Through hands-on exercises, you'll learn how to avoid shared mutable state and how to write good, elegant, explicit synchronization-free programs so you can create easy and safe concurrent applications. The techniques you learn in this book will take you from dreading concurrency to mastering and enjoying it. Best of all, you can work with Java or a JVM language of your choice - Clojure, JRuby, Groovy, or Scala - to reap the growing power of multicore hardware. If you are a Java programmer, you'd need JDK 1.5 or later and the Akka 1.0 library. In addition, if you program in Scala, Clojure, Groovy or JRuby you'd need the latest version of your preferred language. Groovy programmers will also need GPars.

Programming Erlang - Joe Armstrong 2013-09-23
A multi-user game, web site, cloud application, or networked database can have thousands of users all interacting at the same time. You need a powerful, industrial-strength tool to handle the really hard problems inherent in parallel, concurrent environments. You need Erlang. In this second edition of the bestselling Programming Erlang, you'll learn how to write parallel programs that scale effortlessly on multicore systems. Using Erlang, you'll be surprised at how easy it becomes to deal with parallel problems, and how much faster and more efficiently your programs run. That's because Erlang uses sets of parallel processes-not a single sequential process, as found in most programming languages. Joe Armstrong, creator of Erlang, introduces this powerful language in small steps, giving you a complete overview of Erlang and how to use it in common scenarios. You'll start with sequential programming, move to parallel programming and handling errors in parallel programs, and learn to work confidently with distributed programming and the standard Erlang/Open Telecom Platform (OTP) frameworks. You need no previous knowledge of functional or parallel programming. The chapters are packed with hands-on, real-world tutorial examples and insider tips and advice, and finish with exercises for both beginning and advanced users. The second edition has been extensively rewritten. New to this edition are seven chapters covering the latest Erlang features: maps, the type system and the Dialyzer, WebSockets, programming idioms, and a new stand-alone execution environment. You'll write programs that dynamically detect and correct errors, and that can be upgraded without stopping the system. There's also coverage of rebar (the de facto Erlang build system), and information on how to share and use Erlang projects on github, illustrated with examples from cowboy and bitcask. Erlang will change your view of the world, and of how you program. What You Need The Erlang/OTP system. Download it from erlang.org.
Seven Concurrency Models in Seven Weeks - Paul Butcher 2014