

Access Free Building Parallel Embedded And Real Time Applications With Ada

Building Parallel Embedded And Real Time Applications With Ada

Learn how to accelerate C++ programs using data parallelism. This open access book enables C++ programmers to be at the forefront of this exciting and important new development that is helping to push computing to new levels. It is full of practical advice, detailed explanations, and code examples to illustrate key topics. Data parallelism in C++ enables

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access to parallel resources in a modern heterogeneous system, freeing you from being locked into any particular computing device. Now a single C++ application can use any combination of devices—including GPUs, CPUs, FPGAs and AI ASICs—that are suitable to the problems at hand. This book begins by introducing data parallelism and foundational topics for effective use of the SYCL standard from the Khronos Group and Data Parallel C++ (DPC++), the open source compiler used in this book. Later chapters cover advanced topics including error handling, hardware-specific

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programming, communication and synchronization, and memory model considerations. Data Parallel C++ provides you with everything needed to use SYCL for programming heterogeneous systems. What You'll Learn Accelerate C++ programs using data-parallel programming Target multiple device types (e.g. CPU, GPU, FPGA) Use SYCL and SYCL compilers Connect with computing 's heterogeneous future via Intel 's oneAPI initiative Who This Book Is For Those new data-parallel programming and computer programmers interested in data-parallel programming using C++.

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Addresses the Question Frequently Proposed to the Designer by Architects: "Can We Do This? Offering guidance on how to use code-based procedures while at the same time providing an understanding of why provisions are necessary, Tall Building Design: Steel, Concrete, and Composite Systems methodically explores the structural behavior of steel, concrete, and composite members and systems. This text establishes the notion that design is a creative process, and not just an execution of framing proposals. It cultivates imaginative approaches by presenting examples specifically

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related to essential building codes and standards. Tying together precision and accuracy—it also bridges the gap between two design approaches—one based on initiative skill and the other based on computer skill. The book explains loads and load combinations typically used in building design, explores methods for determining design wind loads using the provisions of ASCE 7-10, and examines wind tunnel procedures. It defines conceptual seismic design, as the avoidance or minimization of problems created by the effects of seismic excitation. It introduces the concept of

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performance-based design (PBD). It also addresses serviceability considerations, prediction of tall building motions, damping devices, seismic isolation, blast-resistant design, and progressive collapse. The final chapters explain gravity and lateral systems for steel, concrete, and composite buildings. The Book Also Considers: Preliminary analysis and design techniques The structural rehabilitation of seismically vulnerable steel and concrete buildings Design differences between code-sponsored approaches The concept of ductility trade-off for strength Tall Building Design: Steel, Concrete,

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and Composite Systems is a structural design guide and reference for practicing engineers and educators, as well as recent graduates entering the structural engineering profession. This text examines all major concrete, steel, and composite building systems, and uses the most up-to-date building codes.

This book constitutes the proceedings of the 22st International Conference on Embedded Computer Systems: Architectures, Modeling, and Simulation, SAMOS 2021, which took place in July 2022 in Samos, Greece. The 21 full papers presented in this

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volume were carefully reviewed and selected from 44 submissions. The papers are organized in topics as follows: High level synthesis; memory systems; processor architecture; embedded software systems and beyond; deep learning optimization; extra-functional property estimation; innovative architectures and tools for security; european research projects on digital systems, services, and platforms.

Intelligent readers who want to build their own embedded computer systems-- installed in everything from cell phones to cars to handheld

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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

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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)

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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. Building Parallel Programs: SMPs, Clusters & Java Beginning Ada Programming Architecture of Computing Systems -- ARCS 2014 From Novice to Professional IFIP 18th World Computer Congress, TC10 Working Conference on Distributed and Parallel, Embedded

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Systems (DIPES 2004), 22–27 August, 2004

Toulouse, France

Productive High Performance Parallel Programming with Auto-tuned Domain-Specific Embedded Languages

Proceedings of the IFIP WG 10.3 Workshop on Programming Environments for Parallel Computing, Edinburgh, Scotland, 6-8 April, 1992

This is the first book to tackle all the issues relating to timber decay. It presents the facts and explores timber decay problems through case studies. These are illustrated with clear self-explanatory

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photographs for the reader to use as a diagnostic aid. Section 1 discusses timber as a living material, Section 2 deals with decay organisms and their habitat requirements. Section 3 moves on to the building as an environment for timber and discusses the ways in which wood responds to moisture change. Section 4 ends with an approach to timber decay which integrates knowledge on the decay organism, its requirements and natural predators with appropriate and targeted chemical treatments. This book constitutes the proceedings of the 27th International Conference on Architecture of Computing Systems, ARCS 2014, held in Lübeck, Germany, in February 2014. The 20 papers presented

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in this volume were carefully reviewed and selected from 44 submissions. They are organized in topical sections named: parallelization: applications and methods; self-organization and trust; system design; system design and sensor systems; and virtualization: I/O, memory, cloud; dependability: safety, security, and reliability aspects.

This book presents the proceedings of the First International EURO-PAR Conference on Parallel Processing, held in Stockholm, Sweden in August 1995. EURO-PAR is the merger of the former PARLE and CONPAR-VAPP conference series; the aim of this merger is to create the premier annual scientific conference on parallel processing in Europe. The

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book presents 50 full revised research papers and 11 posters selected from a total of 196 submissions on the basis of 582 reviews. The scope of the contributions spans the full spectrum of parallel processing ranging from theory over design to application; thus the volume is a "must" for anybody interested in the scientific aspects of parallel processing or its advanced applications.

This chapter discusses communication and synchronization libraries which can be used to implement parallelism in your embedded application. Details will be shared on several common libraries including Windows Threads, POSIX Threads, Threading Building Blocks, OpenMP, and MCAPI.

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***A Practical Approach to Parallel Computing
16th International Conference, PaCT 2021,
Kaliningrad, Russia, September 13-18, 2021,
Proceedings***

***Programming Environments for Parallel Computing
IFIP WG10.3/WG10.5 International Workshop on
Distributed and Parallel Embedded Systems
(DIPES'98) October 5-6, 1998, Schloß Eringerfeld,
Germany***

***Hands-On Concurrency with Rust
Steel, Concrete, and Composite Systems
9th International Conference, ICA3PP 2009, Taipei,
Taiwan, June 8-11, 2009, Proceedings***

Teach your students the craft of designing and building

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parallel programs specifically programs that employ multiple processors operating at once to solve a large computational problem with the clear presentation and fresh, contemporary approach found in Kaminsky's BUILDING PARALLEL PROGRAMS. Written by experienced instructor and industry developer Alan Kaminsky, this book addresses techniques for parallel programming on both major categories of parallel computers SMPs and clusters. Your students gain first-hand experience working with the increasingly popular programming language, Java, as they complete programs from the text written in Java and use a unique, author-developed Java class library. The book emphasizes how to use performance metrics in the

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design of parallel programs, a topic not even addressed in most other texts. Give your students the contemporary, hands-on experience they need to succeed in today's parallel programming with Kaminsky's BUILDING PARALLEL PROGRAMS.

Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Design and Analysis of Distributed Embedded Systems is organized similar to the conference. Chapters 1 and 2 deal with specification methods and their analysis while Chapter 6 concentrates on timing and performance analysis. Chapter 3 describes approaches to system verification at different levels of abstraction. Chapter 4

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deals with fault tolerance and detection. Middleware and software reuse aspects are treated in Chapter 5. Chapters 7 and 8 concentrate on the distribution related topics such as partitioning, scheduling and communication. The book closes with a chapter on design methods and frameworks.

Due to the decreasing production costs of IT systems, applications that had to be realised as expensive PCBs formerly, can now be realised as a system-on-chip.

Furthermore, low cost broadband communication media for wide area communication as well as for the realisation of local distributed systems are available.

Typically the market requires IT systems that realise a set of specific features for the end user in a given

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environment, so called embedded systems. Some examples for such embedded systems are control systems in cars, airplanes, houses or plants, information and communication devices like digital TV, mobile phones or autonomous systems like service- or edutainment robots. For the design of embedded systems the designer has to tackle three major aspects: The application itself including the man-machine interface, The (target) architecture of the system including all functional and non-functional constraints and, the design methodology including modelling, specification, synthesis, test and validation. The last two points are a major focus of this book. This book documents the high quality approaches and results that

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were presented at the International Workshop on Distributed and Parallel Embedded Systems (DIPES 2000), which was sponsored by the International Federation for Information Processing (IFIP), and organised by IFIP working groups WG10.3, WG10.4 and WG10.5. The workshop took place on October 18-19, 2000, in Schloß Eringerfeld near Paderborn, Germany. Architecture and Design of Distributed Embedded Systems is organised similar to the workshop. Chapters 1 and 4 (Methodology I and II) deal with different modelling and specification paradigms and the corresponding design methodologies. Generic system architectures for different classes of embedded systems are presented in Chapter 2. In Chapter 3 several design

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environments for the support of specific design methodologies are presented. Problems concerning test and validation are discussed in Chapter 5. The last two chapters include distribution and communication aspects (Chapter 6) and synthesis techniques for embedded systems (Chapter 7). This book is essential reading for computer science researchers and application developers.

Discover the Ada programming language by being gently guided through the various parts of the language and its latest available stable release. The goal in this book is to slowly ease you into the different topics. It is understood that you do not always have ample free time, so the text is easy to digest and concepts are spoon fed to the

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reader. Starting with the simplest of topics, detailed explanations demonstrate the how and why of Ada. You are strongly encouraged to experiment and break things (without which the learning process is linear and quite dull). At the end of Beginning Ada Programming, you will have an excellent understanding of the general topics that make up the Ada programming language and can tackle far more challenging topics. Each chapter builds on what was previously described. Furthermore, each code example is independent of others and will run all by itself. Instructions are provided where you can obtain an Ada compiler and how to debug your code. What You Will Learn Master basic types, control structures, procedures, and functions in AdaUse Ada arrays,

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records, and access typesImplement OO programming using AdaHandle the basics of I/O and interfacing with the operating systemTake advantage of string operators, data containers, multiprocessing with tasks, and moreWork with contracts and proofs, networks, and various Ada libraries Who This Book Is For Programmers who are new to Ada, with at least some experience in programming, especially scientific programming.

Advanced Computational Infrastructures for Parallel and Distributed Adaptive Applications

From Specification to Embedded Systems Application

Design Patterns for Great Software

Distributed and Parallel Embedded Systems

IFIP 17th World Computer Congress - TC10 Stream on

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Distributed and Parallel Embedded Systems (DIPES 2002)

August 25–29, 2002, Montréal, Québec, Canada

Making Embedded Systems

Introduction to Embedded Systems

This book constitutes the proceedings of the 16th International Conference on Parallel Computing Technologies, PaCT 2021, which was held during September 13-18, 2021. The conference was planned to take place in Kaliningrad, Russia, but changed to an online event due to the COVID-19 pandemic. The 24 full and 12 short papers included in this book were carefully reviewed and selected from 62 submissions. They were organized in topical sections as follows: parallel

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programming methods and tools; applications; memory-efficient data structures; experimental studies; job management; essential algorithms; computing services; and cellular automata.

From Model-Driven Design to Resource Management for Distributed Embedded Systems presents 16 original contributions and 12 invited papers presented at the Working Conference on Distributed and Parallel Embedded Systems - DIPES 2006, sponsored by the International Federation for Information Processing - IFIP. Coverage includes model-driven design, testing and evolution of embedded systems, timing analysis and predictability, scheduling, allocation, communication and

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resource management in distributed real-time systems. As the complexity of machines and architectures has increased, performance tuning has become more challenging, leading to the failure of general compilers to generate the best possible optimized code. Expert performance programmers can often hand-write code that outperforms compiler-optimized low-level code by an order of magnitude. At the same time, the complexity of programs has also increased, with modern programs built on a variety of abstraction layers to manage complexity, yet these layers hinder efforts at optimization. In fact, it is common to lose one or two additional orders of magnitude in performance when

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going from a low-level language such as Fortran or C to a high-level language like Python, Ruby, or Matlab. General purpose compilers are limited by the inability of program analysis to determine programmer intent, as well as the lack of detailed performance models that always determine the best executable code for a given computation and architecture. The latter problem can be mitigated through auto-tuning, which generates many code variants for a particular problem and empirically determines which performs best on a given architecture. This thesis addresses the problem of how to write programs at a high level while obtaining the performance of code written by performance experts at the low level.

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To do so, we build domain-specific embedded languages that generate low-level parallel code from a high-level language, and then use auto-tuning to determine the best performing low-level code. Such DSEs avoid analysis by restricting the domain while ensuring programmers specify high-level intent, and by performing empirical auto-tuning instead of modeling machine parameters. As a result, programmers write in high-level languages with portions of their code using DSEs, yet obtain performance equivalent to the best hand-optimized low-level code, across many architectures. We present a methodology for building such auto-tuned DSEs, as well as a software infrastructure and example

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DSELS using the infrastructure, including a DSEL for structured grid computations and two DSELS for graph algorithms. The structured grid DSEL obtains over 80% of peak performance for a variety of benchmark kernels across different architectures, while the graph algorithm DSELS mitigate all performance loss due to using a high-level language. Overall, the methodology, infrastructure, and example DSELS point to a promising new direction for obtaining high performance while programming in a high-level language.

Interested in developing embedded systems? Since they don't tolerate inefficiency, these systems require a disciplined approach to programming. This easy-to-read

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guide helps you cultivate a host of good development practices, based on classic software design patterns and new patterns unique to embedded programming. Learn how to build system architecture for processors, not operating systems, and discover specific techniques for dealing with hardware difficulties and manufacturing requirements. Written by an expert who's created embedded systems ranging from urban surveillance and DNA scanners to children's toys, this book is ideal for intermediate and experienced programmers, no matter what platform you use. Optimize your system to reduce cost and increase performance Develop an architecture that makes your software robust in resource-constrained

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environments Explore sensors, motors, and other I/O devices Do more with less: reduce RAM consumption, code space, processor cycles, and power consumption Learn how to update embedded code directly in the processor Discover how to implement complex mathematics on small processors Understand what interviewers look for when you apply for an embedded systems job "Making Embedded Systems is the book for a C programmer who wants to enter the fun (and lucrative) world of embedded systems. It's very well written—entertaining, even—and filled with clear illustrations." —Jack Ganssle, author and embedded system expert.

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Embedded Systems Architecture

Programming Embedded Systems

33rd International Conference, Aachen, Germany, May 25–28, 2020, Proceedings

With C and GNU Development Tools

EURO-PAR '95: Parallel Processing

Workshops and Symposia at MODELS 2009, Denver, CO, USA, October 4-9, 2009. Reports and Revised

Selected Papers

Building Embedded Systems

A unique investigation of the state of the art in design, architectures, and implementations of advanced computational

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infrastructures and the applications they support Emerging large-scale adaptive scientific and engineering applications are requiring an increasing amount of computing and storage resources to provide new insights into complex systems. Due to their runtime adaptivity, these applications exhibit complicated behaviors that are highly dynamic, heterogeneous, and unpredictable—and therefore require full-fledged computational infrastructure support for problem solving, runtime management, and dynamic

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partitioning/balancing. This book presents a comprehensive study of the design, architecture, and implementation of advanced computational infrastructures as well as the adaptive applications developed and deployed using these infrastructures from different perspectives, including system architects, software engineers, computational scientists, and application scientists. Providing insights into recent research efforts and projects, the authors include descriptions and experiences pertaining to

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the realistic modeling of adaptive applications on parallel and distributed systems. The first part of the book focuses on high-performance adaptive scientific applications and includes chapters that describe high-impact, real-world application scenarios in order to motivate the need for advanced computational engines as well as to outline their requirements. The second part identifies popular and widely used adaptive computational infrastructures. The third part focuses on the more

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specific partitioning and runtime management schemes underlying these computational toolkits. Presents representative problem-solving environments and infrastructures, runtime management strategies, partitioning and decomposition methods, and adaptive and dynamic applications Provides a unique collection of selected solutions and infrastructures that have significant impact with sufficient introductory materials Includes descriptions and experiences pertaining to the realistic

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modeling of adaptive applications on parallel and distributed systems The cross-disciplinary approach of this reference delivers a comprehensive discussion of the requirements, design challenges, underlying design philosophies, architectures, and implementation/deployment details of advanced computational infrastructures. It makes it a valuable resource for advanced courses in computational science and software/systems engineering for senior undergraduate and graduate students, as

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well as for computational and computer scientists, software developers, and other industry professionals.

An introduction to the engineering principles of embedded systems, with a focus on modeling, design, and analysis of cyber-physical systems. The most visible use of computers and software is processing information for human consumption. The vast majority of computers in use, however, are much less visible. They run the engine, brakes, seatbelts, airbag, and audio system in

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your car. They digitally encode your voice and construct a radio signal to send it from your cell phone to a base station. They command robots on a factory floor, power generation in a power plant, processes in a chemical plant, and traffic lights in a city. These less visible computers are called embedded systems, and the software they run is called embedded software. The principal challenges in designing and analyzing embedded systems stem from their interaction with physical processes. This book takes a cyber-

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physical approach to embedded systems, introducing the engineering concepts underlying embedded systems as a technology and as a subject of study. The focus is on modeling, design, and analysis of cyber-physical systems, which integrate computation, networking, and physical processes. The second edition offers two new chapters, several new exercises, and other improvements. The book can be used as a textbook at the advanced undergraduate or introductory graduate level and as a professional reference for

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practicing engineers and computer scientists. Readers should have some familiarity with machine structures, computer programming, basic discrete mathematics and algorithms, and signals and systems.

Nowadays, the prevalence of computing systems in our lives is so ubiquitous that we live in a cyber-physical world dominated by computer systems, from pacemakers to cars and airplanes. These systems demand for more computational performance to process large amounts of

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data from multiple data sources with guaranteed processing times. Actuating outside of the required timing bounds may cause the failure of the system, being vital for systems like planes, cars, business monitoring, e-trading, etc. High-Performance and Time-Predictable Embedded Computing presents recent advances in software architecture and tools to support such complex systems, enabling the design of embedded computing devices which are able to deliver high-performance whilst guaranteeing the application required

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timing bounds. Technical topics discussed in the book include: Parallel embedded platforms Programming models Mapping and scheduling of parallel computations Timing and schedulability analysis Runtimes and operating systems The work reflected in this book was done in the scope of the European project P-SOCRATES, funded under the FP7 framework program of the European Commission. High-performance and time-predictable embedded computing is ideal for personnel in computer/communication/embedded industries

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as well as academic staff and master/research students in computer science, embedded systems, cyber-physical systems and internet-of-things.

This book constitutes the refereed proceedings of the 9th International Conference on Algorithms and Architectures for Parallel Processing, ICA3PP 2009, held in Taipei, Taiwan, in June 2009. The 80 revised full papers were carefully reviewed and selected from 243 submissions. The papers are organized in topical sections on bioinformatics in

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parallel computing; cluster, grid and fault-tolerant computing; cluster distributed parallel operating systems; dependability issues in computer networks and communications; dependability issues in distributed and parallel systems; distributed scheduling and load balancing, industrial applications; information security internet; multi-core programming software tools; multimedia in parallel computing; parallel distributed databases; parallel algorithms; parallel architectures; parallel I/O systems and

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storage systems; performance of parallel distributed computing systems; scientific applications; self-healing, self-protecting and fault-tolerant systems; tools and environments for parallel and distributed software development; and Web service.

The Conservation Approach to Treatment
10th International IPPS/SPDP'98 Workshops,
Held in Conjunction with the 12th
International Parallel Processing
Symposium and 9th Symposium on Parallel
and Distributed Processing, Orlando,

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Florida, USA, March 30 - April 3, 1998,
Proceedings

Data Parallel C++

Timber Decay in Buildings

Parallel Computing Technologies

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Design Methods and Applications for
Distributed Embedded Systems

As almost no other technology, embedded systems is an essential element of many innovations in automotive engineering. New functions and improvements of already existing functions, as well as the

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compliance with traffic regulations and customer requirements, have only become possible by the increasing use of electronic systems, especially in the fields of driving, safety, reliability, and functionality. Along with the functionalities that increase in number and have to cooperate, the complexity of the entire system will increase. Synergy effects resulting from distributed application functionalities via several electronic control devices, exchanging information through the network brings

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about more complex system architectures with many different sub-networks, operating with different velocities and different protocol implementations. To manage the increasing complexity of these systems, a deterministic behaviour of the control units and the communication network must be provided for, in particular when dealing with a distributed functionality. From Specification to Embedded Systems Application documents recent approaches and results presented at the International Embedded Systems

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Symposium (IESS 2005), which was held in August 2005 in Manaus (Brazil) and sponsored by the International Federation for Information Processing (IFIP). The topics which have been chosen for this working conference are very timely: design methodology, modeling, specification, software synthesis, power management, formal verification, testing, network, communication systems, distributed control systems, resource management and special aspects in system design.

Get to grips with modern software demands

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by learning the effective uses of Rust's powerful memory safety. Key Features Learn and improve the sequential performance characteristics of your software Understand the use of operating system processes in a high-scale concurrent system Learn of the various coordination methods available in the Standard library Book Description Most programming languages can really complicate things, especially with regard to unsafe memory access. The burden on you, the programmer, lies across two domains: understanding the

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modern machine and your language's pain-points. This book will teach you to how to manage program performance on modern machines and build fast, memory-safe, and concurrent software in Rust. It starts with the fundamentals of Rust and discusses machine architecture concepts. You will be taken through ways to measure and improve the performance of Rust code systematically and how to write collections with confidence. You will learn about the Sync and Send traits applied to threads, and coordinate thread

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execution with locks, atomic primitives, data-parallelism, and more. The book will show you how to efficiently embed Rust in C++ code and explore the functionalities of various crates for multithreaded applications. It explores implementations in depth. You will know how a mutex works and build several yourself. You will master radically different approaches that exist in the ecosystem for structuring and managing high-scale systems. By the end of the book, you will feel comfortable with designing safe, consistent, parallel, and

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high-performance applications in Rust. What you will learn Probe your programs for performance and accuracy issues Create your own threading and multi-processing environment in Rust Use coarse locks from Rust's Standard library Solve common synchronization problems or avoid synchronization using atomic programming Build lock-free/wait-free structures in Rust and understand their implementations in the crates ecosystem Leverage Rust's memory model and type system to build safety properties into your parallel

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programs Understand the new features of the Rust programming language to ease the writing of parallel programs Who this book is for This book is aimed at software engineers with a basic understanding of Rust who want to exploit the parallel and concurrent nature of modern computing environments, safely.

It is our great pleasure to present the proceedings of the symposia and workshops on parallel and distributed computing and applications associated with the ICA3PP 2010 conference. These symposia and

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workshops provide vibrant opportunities for researchers and industry practitioners to share their research experience, original research results and practical development experiences in the new challenging research areas of parallel and distributed computing technologies and applications. It was the first time that the ICA3PP conference series added symposia and wo- shops to its program in order to provide a wide range of topics that extend beyond the main conferences. The goal was to provide a better coverage

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of emerging research areas and also forums for focused and stimulating discussions. With this objective in mind, we selected three workshops to accompany the ICA3PP 2010 conference: • FPDC 2010, the 2010 International Symposium on Frontiers of Parallel and Distributed Computing • HPCTA 2010, the 2010 International Workshop on High-Performance Computing, Technologies and Applications • M2A 2010, the 2010 International Workshop on Multicore and Mul- threaded Architectures and Algorithms Each of the symposia / workshops focused

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on a particular theme and complemented the spectrum of the main conference. 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, contribution, presentation and consistency with the theme of the workshops.

This Expert Guide gives you the techniques and technologies in embedded multicore to optimally design and implement your

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embedded system. Written by experts with a solutions focus, this encyclopedic reference gives you an indispensable aid to tackling the day-to-day problems when building and managing multicore embedded systems. Following an embedded system design path from start to finish, our team of experts takes you from architecture, through hardware implementation to software programming and debug. With this book you will learn:

- What motivates multicore*
- The architectural options and tradeoffs; when to use what*
- How to deal*

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with the unique hardware challenges that multicore presents • How to manage the software infrastructure in a multicore environment • How to write effective multicore programs • How to port legacy code into a multicore system and partition legacy software • How to optimize both the system and software • The particular challenges of debugging multicore hardware and software Examples demonstrating timeless implementation details Proven and practical techniques reflecting the authors' expertise built from years of

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experience and key advice on tackling critical issues

Programmable Hardware

10th International Conference, ICA3PP 2010, Busan, Korea, May 21-23, 2010.

Workshops, Part II

High-Performance and Time-Predictable Embedded Computing

Designing Embedded Hardware

Parallel and Distributed Processing

From Model-Driven Design to Resource Management for Distributed Embedded Systems

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Explore architectural concepts, pragmatic design patterns, and best practices to produce robust systems

国外著名高等院校信息科学与技术优秀教材

"I'm a human sponge - I soak up memories. I feel like a thief, stealing secrets with an innocent touch. I don't like this gift. It's intrusive and sneaky. I think it's harmless, but I can't be sure. If knowledge is power, why do I feel so alone..." The apocalypse came and the world burned. But it wasn't the end, and out of the destruction, new life has emerged. Bec is back to face the Demonata. After centuries of imprisonment, she's more powerful than ever, but the demons no longer

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stand alone. Something else has crawled out of the darkness with her. Lord Loss is no longer humanity's greatest threat...

This book constitutes the refereed proceedings of 11 IPPS/SPDP '98 Workshops held in conjunction with the 13th International Parallel Processing Symposium and the 10th Symposium on Parallel and Distributed Processing in San Juan, Puerto Rico, USA in April 1999. The 126 revised papers presented were carefully selected from a wealth of papers submitted. The papers are organised in topical sections on biologically inspired solutions to parallel processing problems: High-Level Parallel Programming Models and Supportive Environments; Biologically Inspired

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Solutions to Parallel Processing; Parallel and Distributed Real-Time Systems; Run-Time Systems for Parallel Programming; Reconfigurable Architectures; Java for Parallel and Distributed Computing; Optics and Computer Science; Solving Irregularly Structured Problems in Parallel; Personal Computer Based Workstation Networks; Formal Methods for Parallel Programming; Embedded HPC Systems and Applications.

Ada is the language of choice for the majority of programmers involved in writing safety-critical and high-integrity software. Previous editions of John Barnes' books established themselves as the definitive references for earlier

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versions of Ada. With the release of the latest ISO standard, Ada 2012, this new book will become recognised as the go-to resource for those wishing to learn the language or to program in it.

并行程序设计

Advanced Signal-processing Algorithms, Architectures, and Implementations

Architecture and Design of Distributed Embedded Systems
IFIP WG10.3/WG10.4/WG10.5 International Workshop on
Distributed and Parallel Embedded Systems (DIPES 2000)
October 18 – 19, 2000, Schlo ß Eringerfeld, Germany
First International EURO-PAR Conference, Stockholm,

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Sweden, August 29 - 31, 1995. Proceedings
Architecture of Computing Systems – ARCS 2020
Programming in Ada 2012

The IFIP TC-10 Working Conference on Distributed and Parallel Embedded Systems (DIPES 2004) brings together experts from industry and academia to discuss recent developments in this important and growing field in the splendid city of Toulouse, France. The ever decreasing price/performance ratio of microcontrollers makes it economically attractive to replace more and more conventional mechanical or electronic control systems within many products by

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embedded real-time computer systems. An embedded real-time computer system is always part of a well-specified larger system, which we call an intelligent product. Although most intelligent products start out as stand-alone units, many of them are required to interact with other systems at a later stage. At present, many industries are in the middle of this transition from stand-alone products to networked embedded systems. This transition requires reflection and architecting: The complexity of the evolving distributed artifact can only be controlled, if careful planning and principled design methods replace the -

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hoc engineering of the first version of many standalone embedded products.

This book constitutes the refereed proceedings of 10 international workshops held in conjunction with the merged 1998 IPPS/SPDP symposia, held in Orlando, Florida, US in March/April 1998. The volume comprises 118 revised full papers presenting cutting-edge research or work in progress. In accordance with the workshops covered, the papers are organized in topical sections on reconfigurable architectures, run-time systems for parallel programming, biologically inspired solutions to parallel processing problems,

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randomized parallel computing, solving combinatorial optimization problems in parallel, PC based networks of workstations, fault-tolerant parallel and distributed systems, formal methods for parallel programming, embedded HPC systems and applications, and parallel and distributed real-time systems.

Embedded systems are becoming one of the major driving forces in computer science. Furthermore, it is the impact of embedded information technology that dictates the pace in most engineering domains. Nearly all technical products above a certain level of complexity are not only controlled but increasingly

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even dominated by their embedded computer systems. Traditionally, such embedded control systems have been implemented in a monolithic, centralized way. Recently, distributed solutions are gaining increasing importance. In this approach, the control task is carried out by a number of controllers distributed over the entire system and connected by some interconnect network, like fieldbuses. Such a distributed embedded system may consist of a few controllers up to several hundred, as in today's top-range automobiles. Distribution and parallelism in embedded systems design increase the engineering challenges and require

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new development methods and tools. This book is the result of the International Workshop on Distributed and Parallel Embedded Systems (DIPES'98), organized by the International Federation for Information Processing (IFIP) Working Groups 10.3 (Concurrent Systems) and 10.5 (Design and Engineering of Electronic Systems). The workshop took place in October 1998 in Schloss Eringerfeld, near Paderborn, Germany, and the resulting book reflects the most recent points of view of experts from Brazil, Finland, France, Germany, Italy, Portugal, and the USA. The book is organized in six chapters:

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`Formalisms for Embedded System Design': IP-based system design and various approaches to multi-language formalisms. `Synthesis from Synchronous/Asynchronous Specification': Synthesis techniques based on Message Sequence Charts (MSC), StateCharts, and Predicate/Transition Nets. `Partitioning and Load-Balancing': Application in simulation models and target systems. `Verification and Validation': Formal techniques for precise verification and more pragmatic approaches to validation. `Design Environments' for distributed embedded systems and their impact on the industrial

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state of the art. `Object Oriented Approaches': Impact of OO-techniques on distributed embedded systems. £/LIST£ This volume will be essential reading for computer science researchers and application developers.

Learn to design and develop safe and reliable embedded systems Key Features Identify and overcome challenges in embedded environments Understand the steps required to increase the security of IoT solutions Build safety-critical and memory-safe parallel and distributed embedded systems Book Description Embedded systems are self-contained

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devices with a dedicated purpose. We come across a variety of fields of applications for embedded systems in industries such as automotive, telecommunications, healthcare and consumer electronics, just to name a few. Embedded Systems Architecture begins with a bird's eye view of embedded development and how it differs from the other systems that you may be familiar with. You will first be guided to set up an optimal development environment, then move on to software tools and methodologies to improve the work flow. You will explore the boot-up mechanisms and the memory management strategies typical of a real-time

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embedded system. Through the analysis of the programming interface of the reference microcontroller, you'll look at the implementation of the features and the device drivers. Next, you'll learn about the techniques used to reduce power consumption. Then you will be introduced to the technologies, protocols and security aspects related to integrating the system into IoT solutions. By the end of the book, you will have explored various aspects of embedded architecture, including task synchronization in a multi-threading environment, and the safety models adopted by modern real-time operating

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systems. What you will learn Participate in the design and definition phase of an embedded product Get to grips with writing code for ARM Cortex-M microcontrollers Build an embedded development lab and optimize the workflow Write memory-safe code Understand the architecture behind the communication interfaces Understand the design and development patterns for connected and distributed devices in the IoT Master multitask parallel execution patterns and real-time operating systems Who this book is for If you're a software developer or designer wanting to learn about embedded programming, this is

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**the book for you. You'll also find this book useful if
you're a less experienced embedded programmer
willing to expand your knowledge.**

**27th International Conference, Lübeck, Germany,
February 25-28, 2014, Proceedings**

Tall Building Design

**Chapter 8. Communication and Synchronization
Libraries**

**Design and Analysis of Distributed Embedded Systems
Models in Software Engineering**

**IFIP TC 10 Working Conference on Distributed and
Parallel Embedded Systems (DIPES 2006) October**

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11-13, 2006, Braga, Portugal

A Cyber-Physical Systems Approach

This book constitutes a collection of the best papers selected from 9 workshops and 2 symposia held in conjunction with MODELS 2009, the 12 International Conference on Model Driven Engineering Languages and Systems, in Denver, CO, USA, in October 2009. The first two sections contain selected papers from the Doctoral Symposium and the Educational Symposium, respectively. The other contributions are organized according to the workshops at which they were presented: 2nd International Workshop on Model Based Architecting and Construction of Embedded Systems (ACES

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MB'09); 14th International Workshop on Aspect-Oriented Modeling (AOM); Models@run.time (Models@run.time); Model-driven Engineering, Verification, and Validation: Integrating Verification and Validation in MDE (MoDeVVa09); Models and Evolution (MoDSE-MCCM); Third International Workshop on Multi-Paradigm Modeling (MPM09); The Pragmatics of OCL and Other Textual Specification Languages (OCL); 2nd International Workshop on Non-Functional System Properties in Domain Specific Modeling Languages (NFPinDSML); and 2nd Workshop on Transformation and Weaving OWL Ontologies and MDE/MDA (TWOMDE2009). Each section includes a summary of the workshop.

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Develop the software and hardware you never think about. We're talking about the nitty-gritty behind the buttons on a microwave, inside your thermostat, inside the keyboard used to type this description, and even running the monitor on which you are reading it now. Such stuff is termed embedded systems, and this book shows how to design and develop embedded systems at a professional level. Because yes, many people quietly make a successful career doing just that. Building embedded systems can be both fun and intimidating. Putting together an embedded system requires skill sets from multiple engineering disciplines, from software and hardware in particular. Building Embedded Systems is a book about helping you do things in the right way from the beginning of

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your first project: Programmers who know software will learn what they need to know about hardware. Engineers with hardware knowledge likewise will learn about the software side. Whatever your background is, Building Embedded Systems is the perfect book to fill in any knowledge gaps and get you started in a career programming for everyday devices. Author Changyi Gu brings more than fifteen years of experience in working his way up the ladder in the field of embedded systems. He brings knowledge of numerous approaches to embedded systems design, including the System on Programmable Chips (SOPC) approach that is currently growing to dominate the field. His knowledge and experience make Building Embedded Systems an excellent book for

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anyone wanting to enter the field, or even just to do some embedded programming as a side project. What You Will Learn Program embedded systems at the hardware level Learn current industry practices in firmware development Develop practical knowledge of embedded hardware options Create tight integration between software and hardware Practice work flow leading to successful outcomes Build from transistor level to the system level Make sound choices between performance and cost Who This Book Is For Embedded-systems engineers and intermediate electronics enthusiasts who are seeking tighter integration between software and hardware Those who favor the System on a Programmable Chip (SOPC) approach will in particular benefit from this book. Students

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both Electrical Engineering and Computer Science can also benefit from this book and the real-life industry practice it provides.

The arrival and popularity of multi-core processors has sparked a renewed interest in the development of parallel programs. Similarly, the availability of low-cost microprocessors and sensors has generated a great interest in embedded real-time programs. This book provides students and programmers whose backgrounds are in traditional sequential programming with the opportunity to expand their capabilities into parallel, embedded, real-time and distributed computing. It also addresses the theoretical foundation of time scheduling analysis, focusing on theory that is useful

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actual applications. Written by award-winning educators at a level suitable for undergraduates and beginning graduate students, this book is the first truly entry-level textbook in the subject. Complete examples allow readers to understand the context in which a new concept is used, and enable them to build and run the examples, make changes, and observe the results.

Authored by two of the leading authorities in the field, this guide offers readers the knowledge and skills needed to achieve proficiency with embedded software.

11th [i.e. 11] IPPS/SPDP'99 Workshops Held in Conjunction with the 13th International Parallel Processing Symposium and 10th Symposium on Parallel and Distributed Processing

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San Juan, Puerto Rico, USA, April 12-16, 1999 : Proceedings
Confidently build memory-safe, parallel, and efficient software
in Rust

Embedded Computer Systems: Architectures, Modeling, and
Simulation

Real World Multicore Embedded Systems

Algorithms and Architectures for Parallel Processing

22nd International Conference, SAMOS 2022, Samos, Greece,
July 3–7, 2022, Proceedings

Building Parallel, Embedded, and Real-Time Applications
with Ada

*This book constitutes the proceedings of the 33rd
International Conference on Architecture of Computing*

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Systems, ARCS 2020, held in Aachen, Germany, in May 2020. The 12 full papers in this volume were carefully reviewed and selected from 33 submissions. 6 workshop papers are also included. ARCS has always been a conference attracting leading-edge research outcomes in Computer Architecture and Operating Systems, including a wide spectrum of topics ranging from embedded and real-time systems all the way to large-scale and parallel systems. The selected papers focus on concepts and tools for incorporating self-adaptation and self-organization mechanisms in high-performance computing systems. This includes upcoming approaches for runtime modifications at various abstraction levels, ranging from hardware changes to goal changes and their impact on architectures, technologies,*

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*and languages. *The conference was canceled due to the COVID-19 pandemic.*

Mastering DPC++ for Programming of Heterogeneous Systems using C++ and SYCL