Async In C

Asynchronous Programming with C++

Design and develop high-performance software solutions by using concurrent and asynchronous techniques provided by the most modern features in C++20 and C++23 Key Features Learn how to use modern C++ features, including futures, promises, async, and coroutines to build asynchronous solutions Develop cross-platform network and low-level I/O projects with Boost.Asio Master optimization techniques by understanding how software adapts to machine hardware Purchase of the print or Kindle book includes a free PDF eBook Book Description As hardware advancements continue to accelerate, bringing greater memory capacity and more CPU cores, software must evolve to adapt to efficiently use all available resources and reduce idle CPU cycles. In this book, two seasoned software engineers with about five decades of combined experience will teach you how to implement concurrent and asynchronous solutions in C++.You'll gain a comprehensive understanding of parallel programming paradigms--covering concurrent, asynchronous, parallel, multithreading, reactive, and event-driven programming, as well as dataflows--and see how threads, processes, and services are related. Moving into the heart of concurrency, the authors will guide you in creating and managing threads and exploring C++'s thread-safety mechanisms, including mutual exclusion, atomic operations, semaphores, condition variables, latches, and barriers. With this solid foundation, you'll focus on pure asynchronous programming, discovering futures, promises, the async function, and coroutines. The book takes you step by step through using Boost.Asio and Boost.Cobalt to develop network and low-level I/O solutions, proven performance and optimization techniques, and testing and debugging asynchronous software.By the end of this C++ book, you'll be able to implement high-performance software using modern asynchronous C++ techniques. What you will learn Explore the different parallel paradigms and know when to apply them Acquire deep knowledge of thread management and safety mechanisms Understand asynchronous programming in C++, including coroutines Leverage network asynchronous programming by using Boost.Asio and Boost.Cobalt Add proven performance and optimization techniques to your toolbox Find out how to test and debug asynchronous software Who this book is for This book is for developers who have some experience using C++, regardless of their professional field. If you want to improve your C++ skills and learn how to develop high-performance software using the latest modern C++ features, this book is for you.

C# 5.0 kurz & gut

Dieses Buch ist für vielbeschäftigte Programmierer gedacht, die eine knappe, aber dennoch gut verständliche Beschreibung von C# 5.0 und LINQ suchen. C# 5.0 – kurz & gut informiert Sie über genau das, was Sie wissen müssen, um schnell durchstarten zu können. Behandelt werden: die neuen Features von C# 5.0: vereinfachte asynchrone Programmierung mit async und Aufrufer-Info-Attribute; alle Aspekte der C#-Syntax, vordefinierte Typen, Ausdrücke und Operatoren; das Erstellen von Klassen, Structs, Delegates und Events, Enums, Generics und Constraints, Exception Handling und Iteratoren; die Feinheiten des Boxing, das Überladen von Operatoren, die Delegate-Kovarianz oder das Auflösen von Extension-Methoden; LINQ – von den Standard-Abfrage-Operatoren bis zu einer vollständigen Referenz der Query-Syntax. Trotz seines erstaunlich kompakten Formats vernachlässigt dieses Buch keine Details. Es unterstützt Sie optimal, die konzeptionellen Herausforderungen beim Lernen von C# 5.0 und LINQ schnell zu meistern. Wenn Sie schon mit Java, C++ oder einer früheren Version von C# vertraut sind, ist C# 5.0 - kurz & gut die ideale Wahl.

Professional C++

Improve your existing C++ competencies quickly and efficiently with this advanced volume Professional

C++, 5th Edition raises the bar for advanced programming manuals. Complete with a comprehensive overview of the new capabilities of C++20, each feature of the newly updated programming language is explained in detail and with examples. Case studies that include extensive, working code round out the already impressive educational material found within. Without a doubt, the new 5th Edition of Professional C++ is the leading resource for dedicated and knowledgeable professionals who desire to advance their skills and improve their abilities. This book contains resources to help readers: Maximize the capabilities of C++ with effective design solutions Master little-known elements of the language and learn what to avoid Adopt new workarounds and testing/debugging best practices Utilize real-world program segments in your own applications Notoriously complex and unforgiving, C++ requires its practitioners to remain abreast of the latest developments and advancements. Professional C++, 5th Edition ensures that its readers will do just that.

Modernes C++: Concurrency meistern

Concurrency mit modernem C++ ist eine Reise durch die bestehende und die zukünftige Nebenläufigkeit in C++. Das Buch erklärt Ihnen die Details zu Nebenläufigkeit in modernem C++ und gibt Ihnen mehr als 100 lauffähige Programme. Damit können Sie die Theorie mit der Praxis verknüpfen um den optimalen Nutzen aus dem Buch zu ziehen. Nebenläufigkeit, Parallelität, Gleichzeitigkeit • C++11 und C++14 besitzen die elementaren Bausteine, um nebenläufige und parallele Programme zu schreiben. • Mit C++17 stehen die parallelen Algorithmen der Standard Template Library (STL) vor der Tür. Das heißt, dass die meisten der Algorithmen der STL sequentiell, parallel oder vektorisiert ausgeführt werden können. • Die Geschichte in C++ geht aber weiter. Dank C++20 können wir auf erweiterte Futures, Coroutinen, Transaktionen und noch viel mehr hoffen. Für C++ Entwickler, die ihr Niveau rund um Gleichzeitigkeit auf das nächste Niveau heben wollen. Gleichzeitigkeit ist neben Security und Verteilung eine der Schlüsselherausforderung der Softwareentwicklung der nächsten mindestens 10 Jahre. EXTRA: E-Book inside. Systemvoraussetzungen für E-Book inside: Internet-Verbindung und Adobe-Reader oder Ebook-Reader bzw. Adobe Digital Editions.

A Process Algebraic Approach to Software Architecture Design

Inthe?eldofformalmethodsincomputerscience,concurrencytheoryisreceivinga constantlyincreasinginterest.Thisisespeciallytrueforprocessalgebra.Althoughit had been originally conceived as a means for reasoning about the semantics of c- current programs, process algebraic formalisms like CCS, CSP, ACP, ?-calculus, and their extensions (see, e.g., [154,119,112,22,155,181,30]) were soon used also for comprehendingfunctionaland nonfunctionalaspects of the behaviorof com- nicating concurrent systems. The scienti?c impact of process calculi and behavioral equivalences at the base of process algebra is witnessed not only by a very rich literature. It is in fact worth mentioningthe standardizationprocedurethat led to the developmentof the process algebraic language LOTOS [49], as well as the implementation of several modeling and analysis tools based on process algebra, like CWB [70] and CADP [93], some of which have been used in industrial case studies. Furthermore, process calculi and behavioral equivalencesare by now adopted in university-levelcourses to teach the foundations of concurrent programming as well as the model-driven design of concurrent, distributed, and mobile systems. Nevertheless, after 30 years since its introduction, process algebra is rarely adopted in the practice of software development. On the one hand, its technica- ties often obfuscate the way in which systems are modeled. As an example, if a process term comprises numerous occurrences of the parallel composition operator, it is hard to understand the communicationscheme among the varioussubterms. On the other hand, process algebra is perceived as being dif?cult to learn and use by practitioners, as it is not close enough to the way they think of software systems.

Programming in C#: Exam 70-483 (MCSD) Guide

Acquire necessary skills in preparing for Microsoft certification and enhance your software development career by learning the concepts of C# programming Key FeaturesPrepare for the certification using step-by-step examples, and mock tests with standard solutionsUnderstand the concepts of data security for secure

programming with C#Learn to scale and optimize your application codebase using best practices and patternsBook Description Programming in C# is a certification from Microsoft that measures the ability of developers to use the power of C# in decision making and creating business logic. This book is a certification guide that equips you with the skills that you need to crack this exam and promote your problem-solving acumen with C#. The book has been designed as preparation material for the Microsoft specialization exam in C#. It contains examples spanning the main focus areas of the certification exam, such as debugging and securing applications, and managing an application's code base, among others. This book will be full of scenarios that demand decision-making skills and require a thorough knowledge of C# concepts. You will learn how to develop business logic for your application types in C#. This book is exam-oriented, considering all the patterns for Microsoft certifications and practical solutions to challenges from Microsoft-certified authors. By the time you've finished this book, you will have had sufficient practice solving real-world application development problems with C# and will be able to carry your newly-learned skills to crack the Microsoft certification exam to level up your career. What you will learnExplore multi-threading and asynchronous programming in C#Create event handlers for effective exception handlingUse LINQ queries for data serialization and deserializationManage filesystems and understand I/O operationsTest, troubleshoot, and debug your C# programsUnderstand the objectives of Exam 70-483 and apply common solutionsWho this book is for The book is intended to the aspirants of Microsoft certifications and C# developers wanting to become a Microsoft specialist. The book does not require the knowledge of C#, basic knowledge of software development concepts will be beneficial

Windows-8-Apps für C#-Entwickler

Dieses Buch richtet sich an C#-Entwickler, die idealerweise bereits Erfahrung in der Erstellung von WPF-Anwendungen besitzen und sich mit der Welt von Windows 8 vertraut machen möchten. Sie erhalten kein Buch, das zu zwei Dritteln aus Inhalten besteht, die Sie ohnehin schon kennen: zu objektorientierter Programmierung, Visual Studio und der WPF wurden bereits hervorragende Bücher geschrieben. Stattdessen bekommen Sie einen Überblick über die Design-Guidelines und die Windows Runtime, außerdem eine Schritt-für-Schritt-Anleitung für Ihre erste App und zahlreiche \"Kochrezepte“ für weitere Features.

Windows Store Apps entwickeln mit C# und XAML, HTML5 oder C++

Windows 8-Apps entwickeln für Ein- und Umsteiger: Dieses Buch leitet Sie vom Grundaufbau bis zum Einstellen Ihrer Apps in den Windows Store. Sie erfahren, wie Sie Oberflächen, Navigationen und Animationen erstellen, Touch- und Sensoren-Events von Tablets verarbeiten und Ihre Apps testen und debuggen. Die Besonderheit dabei ist, dass Sie neben einer ausführlichen Einführung in die App-Entwicklung mit C# bzw. VB und XAML auch Einführungen in die Entwicklung mit HTML5/JavaScript, C++ sowie von Hybridlösungen erhalten. Dadurch eignet sich das Buch nicht nur für .NET-Entwickler, sondern auch für Umsteiger anderer Sprachen. So sind Sie bestens für Ihre Windows Store-Apps gerüstet!

Eine Tour durch C++

- Die neuesten Sprachfeatures im Überblick - Verfasst vom Entwickler von C++ - Übersetzung der 3. Auflage Dieses Buch bietet erfahrenen Programmierern einen praktischen Überblick über C++20 nach ISO-Standard und damit ein klares Verständnis für den Einsatz von modernem C++. Anhand vieler Codebeispiele und hilfreicher Praxistipps wird ein Großteil der Hauptfeatures der Sprache sowie der Standardbibliothek behandelt, die für den effektiven Einsatz unverzichtbar sind. Stroustrup stellt die einzelnen Sprachfeatures von C++ vor und zeigt, wie sie im Kontext der unterstützten Programmierstile eingesetzt werden, beispielsweise der objektorientierten oder generischen Programmierung. Seine Tour beginnt mit den Grundlagen und setzt den Fokus anschließend auf fortgeschrittene Techniken, wobei er insbesondere auf die neueren Sprach-features eingeht. Dieses Buch deckt zahlreiche Features ab, die mit C++20 neu eingeführt wurden, darunter Module, Konzepte, Koroutinen und Bereiche. Selbst einige schon jetzt verfügbare Komponenten, die nicht vor C++23 in den Standard integriert werden sollen, werden vorgestellt. Wenn Sie

bereits Programmierkenntnisse in C++ oder einer anderen Sprache haben, ist dies die kompakteste und verständlichste Einführung, um die Besonderheiten und Vorteile von modernem C++ kennenzulernen.

Parallel C++

This textbook focuses on practical parallel C++ programming at the graduate student level. In particular, it shows the APIs and related language features in the C++ 17 and C++ 20 standards, covering both single node and distributed systems. It shows that with the parallel features in the C++ 17 and C++ 20 standards, learning meta-languages like OpenMP is no longer necessary. Using the C++ standard library for parallelism and concurrency (HPX), the same language features can be extended to distributed codes, providing a higher-level C++ interface to distributed programming than the Message Passing Interface (MPI). The book starts with the single-threaded implementation of the fractal sets, e.g. Julia set, and Mandelbrot set, using the C++ Standard Library (SL)’s container and algorithms. This code base is used for parallel implementation using low-level threads, asynchronous programming, parallel algorithms, and coroutines. The asynchronous programming examples are then extended to distributed programming using the C++ standard library for parallelism and concurrency (HPX). Octo-Tiger, an astrophysics code for stellar merger, is used as a showcase for a portable, efficient, and scalable high-performance application using HPX. The book’s core audience is advanced undergraduate and graduate students who want to learn the basics of parallel and distributed C++ programming but are not computer science majors. Basic C++ knowledge, like functions, classes, loops, and conditional statements, is assumed as a requirement, while C++ advanced topics, like generic programming, lambda functions, smart pointers, and move semantics, are briefly summarized in the appendix.

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

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

Static Analysis

This book constitutes the thoroughly refereed proceedings of the 19th International Symposium on Static Analysis, SAS 2012, held in Deauville, France, in September 2012. The 25 revised full papers presented together with 4 invited talks were selected from 62 submissions. The papers address all aspects of static analysis, including abstract domains, abstract interpretation, abstract testing, bug detection, data flow analysis, model checking, new applications, program transformation, program verification, security analysis, theoretical frameworks, and type checking.

Optimized Computing in C++: Mastering Concurrency, Multithreading, and Parallel Programming

Discover the future of high-performance computing with \"Optimized Computing in C++: Mastering Concurrency, Multithreading, and Parallel Programming,\" a comprehensive guide designed to elevate your C++ programming skills to unparalleled heights. Whether you're an intermediate programmer eager to broaden your understanding or an experienced developer aiming to optimize your applications, this book is an invaluable resource for maximizing efficiency and speed using C++. Delve into the fundamental principles of high-performance computing (HPC) and grasp the pivotal role of C++ in building scalable, robust applications. Master the intricacies of concurrency, threading, and parallel programming through well-organized chapters, rich with code snippets, practical examples, and real-world case studies. Covering essential topics from basic thread management to advanced GPU programming and MPI for distributed computing, this book spans the full spectrum of HPC in C++. Leverage modern C++ standards and the latest features to simplify concurrent programming, ensuring your applications remain fast and future-proof. Confront real-world challenges head-on with confidence as you learn to debug and profile concurrent and parallel C++ programs, optimizing them for both performance and reliability. \"Optimized Computing in C++: Mastering Concurrency, Multithreading, and Parallel Programming\" is an indispensable guide for programmers, researchers, and engineers, offering the tools and knowledge needed to push the boundaries of computational performance. Harness the power of C++ and revolutionize your approach to high-performance applications.

Advanced C++

Become an expert at C++ by learning all the key C++ concepts and working through interesting exercises Key FeaturesExplore C++ concepts through descriptive graphics and interactive exercisesLearn how to keep your development bug-free with testing and debuggingDiscover various techniques to optimize your codeBook Description C++ is one of the most widely used programming languages and is applied in a variety of domains, right from gaming to graphical user interface (GUI) programming and even operating systems. If you're looking to expand your career opportunities, mastering the advanced features of C++ is key. The book begins with advanced C++ concepts by helping you decipher the sophisticated C++ type system and understand how various stages of compilation convert source code to object code. You'll then learn how to recognize the tools that need to be used in order to control the flow of execution, capture data, and pass data around. By creating small models, you'll even discover how to use advanced lambdas and captures and express common API design patterns in C++. As you cover later chapters, you'll explore ways to optimize your code by learning about memory alignment, cache access, and the time a program takes to run. The concluding chapter will help you to maximize performance by understanding modern CPU branch prediction and how to make your code cache-friendly. By the end of this book, you'll have developed programming skills that will set you apart from other C++ programmers. What you will learnDelve into the anatomy and workflow of C++Study the pros and cons of different approaches to coding in C++Test, run, and debug your programsLink object files as a dynamic libraryUse templates, SFINAE, constexpr if expressions and variadic templatesApply best practice to resource managementWho this book is for If you have worked in C++ but want to learn how to make the most of this language, especially for large projects, this book is for you. A general understanding of programming and knowledge of using an editor to produce code files in project directories is a must. Some experience with strongly typed languages, such as C and C++, is also recommended.

Asynchronous Programming in Rust

Get a fundamental understanding of asynchronous programming and Rust's futures by working through examples that show you how everything really works Key Features Master asynchronous Rust through examples focusing on key concepts Build a solid understanding of concepts such as coroutines, fibers, futures, and callbacks Explore Rust's futures, craft your own runtime, and excel in handling stacks, ABIs,

syscalls, and inline assembly Purchase of the print or Kindle book includes a free PDF eBook Book DescriptionStep into the world of asynchronous programming with confidence by conquering the challenges of unclear concepts with this hands-on guide. Using functional examples, this book simplifies the trickiest concepts, exploring goroutines, fibers, futures, and callbacks to help you navigate the vast Rust async ecosystem with ease. You'll start by building a solid foundation in asynchronous programming and explore diverse strategies for modeling program flow. The book then guides you through concepts like epoll, coroutines, green threads, and callbacks using practical examples. The final section focuses on Rust, examining futures, generators, and the reactor-executor pattern. You'll apply your knowledge to create your own runtime, solidifying expertise in this dynamic domain. Throughout the book, you'll not only gain proficiency in Rust's async features but also see how Rust models asynchronous program flow. By the end of the book, you'll possess the knowledge and practical skills needed to actively contribute to the Rust async ecosystem.What you will learn Explore the essence of asynchronous program flow and its significance Understand the difference between concurrency and parallelism Gain insights into how computers and operating systems handle concurrent tasks Uncover the mechanics of async/await Understand Rust's futures by implementing them yourself Implement green threads from scratch to thoroughly understand them Who this book is for This book is for programmers who want to enhance their understanding of asynchronous programming, especially those experienced in VM'ed or interpreted languages like C#, Java, Python, JavaScript, and Go. If you work with C or C++ but have had limited exposure to asynchronous programming, this book serves as a resource to broaden your knowledge in this area. Although the examples are predominantly in Rust, the intricacies of Rust's futures are covered in detail. So, anyone with a keen interest in learning Rust or with working knowledge of Rust will be able to get the most out of this book.

Effektives modernes C++

Um richtig in C++11 und C++14 einzusteigen, reicht es nicht aus, sich mit den neuen Features vertraut zu machen. Die Herausforderung liegt darin, sie effektiv einzusetzen, so dass Ihre Software korrekt, effizient, wartbar und portabel ist. Hier kommt dieses praxisnahe Buch ins Spiel: Es beschreibt, wie Sie wirklich gute Software mit C++11 und C++14 erstellen - also modernes C++ einsetzen. Scott Meyers' Effective C++-Bestseller gelten seit mehr als 20 Jahren als herausragende C++-Ratgeber. Seine klaren, verbindlichen Erläuterungen komplexer technischer Materie haben ihm eine weltweite Anhängerschaft beschert. In diesem Buch nutzt Scott Meyers wieder das bewährte beispielorientierte Konzept seiner früheren Bücher, um Ihnen den optimalen Einsatz von C++11 und C++14 zu veranschaulichen. Das Buch ist Pflichtlektüre für jeden modernen C++-Softwareentwickler.

Advances in Service-Oriented and Cloud Computing

This volume contains the technical papers presented in the workshops, which took place at the 7th European Conference on Service-Oriented and Cloud Computing, ESOCC 2018, held in Como, Italy, in September 2018:Joint Cloudways and OptiMoCS Workshop; 14th International Workshop on Engineering Service-Oriented Applications and Cloud Services. Additionally the papers from ESOCC 2018 PhD Symposium and ESOCC 2018 EU Projects Track were included in the volume. The 22 full papers were carefully reviewed and selected from 34 submissions. The papers focus on specific topics in service-oriented and cloud computing domains such as limits and/or advantages of existing cloud solutions, future internet technologies, efficient and adaptive deployment and management of service-based applications across multiple clouds, novel cloud service migration practices and solutions, digitization of enterprises in the cloud computing era, federated cloud networking services.

Full-Stack Web Development with TypeScript 5

Unleash the power of modern web development and master both frontend and backend development by building a real-world application Key Features Integrate AI capabilities in an application using the OpenAI API and learn AI-based features Build robust web applications with advanced TypeScript features like

typing, generics, classes, and interfaces Implement user authentication and authorization mechanisms to protect your apps and user data Purchase of the print or Kindle book includes a free PDF eBook Book DescriptionThis book takes you on a journey with TypeScript 5, introducing its nuances and advantages over traditional JavaScript, explaining TypeScript basics, and highlighting the syntax, typing, generics, classes, and interfaces. Expert advice will help you build your understanding of TypeScript's role in modern web applications. You'll gain hands-on experience with the tools required to write full-stack web applications end to end, beginning with setting up the Bun environment for backend development. This book also explores server-side functionality such as authentication, routing, and database integration with PostgreSQL. The second part of the book focuses on the integration of the OpenAI API, demonstrating the use of the GPT API for different use cases. The final part covers frontend development using Svelte, guiding you through UI design, state management, and performance optimization. Each chapter has real-world examples and comparisons to other technologies, providing you with a comprehensive understanding of full-stack development. By the end of this book, you'll have learned how to build modern web applications using TypeScript 5 and confidently tackle full-stack development challenges.What you will learn Develop a chat application by implementing frontend and backend features effectively Build powerful backends using PostgreSQL Write unit tests efficiently for cleaner and more reliable apps Understand full-stack application architecture for better scalability and maintainability Create dynamic and responsive UIs with Svelte Use debugging, testing, and logging tools in web applications to quickly detect and minimize errors Who this book is for This book is for junior to mid-level software engineers with foundational knowledge of JavaScript and web development, who are enthusiastic about the most cutting-edge technologies and want to expand their understanding of building full-stack applications end to end. Familiarity with the fundamentals of frontend and backend development will help you get the most out of this book.

CONCUR 2005 - Concurrency Theory

This book constitutes the refereed proceedings of the 16th International Conference on Concurreny Theory, CONCUR 2005, held in San Francisco, CA, USA in August 2005. The 38 revised full papers presented together with 4 invited papers were carefully reviewed and selected from 100 submissions. Among the topics covered are concurrency related aspects of models of computation, Petri nets, model checking, game semantics, process algebras, real-time systems, verification techniques, secrecy and authenticity, refinement, distributed programming, constraint logic programming, typing systems and algorithms, case studies, tools, and environment for programming and verification.

Logic And Software Engineering - Proceedings Of The International Workshop In Honor Of Chih-sung Tang

This workshop brought together top researchers in logic and software engineering in the unique occasion of celebrating the 70th birthday of Professor C S Tang who has devoted much of his long research career to establishing a solid logic foundation for software engineering.

Networking Programming with C++

\"Networking Programming with C++: Build Efficient Communication Systems\" is a comprehensive guide designed to demystify the intricacies of network programming using the highly efficient C++ language. With an emphasis on foundational knowledge and progressive mastery, this book is crafted for both beginners and seasoned programmers. It meticulously unpacks complex concepts such as socket programming, TCP/IP protocol suite, and asynchronous versus synchronous communication, presenting them in an accessible and engaging manner. Readers will gain an in-depth understanding of crucial networking protocols and the role of multithreading in enhancing application performance. The book also delves into advanced topics like data stream handling, serialization, and network security, equipping readers with the practical skills to develop secure and efficient network applications. Additionally, by integrating performance optimization techniques and real-world application development strategies, this book provides a robust framework for creating

cutting-edge networked systems ready to meet contemporary demands.

C++-Standardbibliothek - kurz & gut

Die C++-Bibliothek hat mit dem aktuellen C++11-Standard eine enorme Erweiterung erfahren, die Anzahl der Bibliotheken hat sich mehr als verdoppelt. Auch bestehende Bibliotheken wurden überarbeitet und deutlich verbessert. Für C++-Programmierer stecken unzählige nützliche Funktionen in den C++-Bibliotheken, die es zu entdecken gilt. Kann man diese Vielzahl an Bibliotheken so komprimiert darstellen, dass Sie alle wichtigen Informationen für Ihre Arbeit finden? Man kann! Diese handliche Referenz stellt die zum Teil noch relativ unbekannten C++-Bibliotheken kondensiert und übersichtlich dar. Nirgendwo sonst können Sie sich so kompakt darüber informieren, wie eine Bibliothek einzusetzen ist und was sie Ihnen bietet. Themen sind: Sequenzielle und assoziative Container, Iteratoren und Algorithmen, Reguläre Ausdrücke und Strings, Ein- und Ausgabestreams, Multithreading. Dieses Buch ist eine ideale Ergänzung zu der Schnellreferenz \"C++ - kurz & gut\

C# 8.0 in a Nutshell

When you have questions about C# 8.0 or .NET Core, this best-selling guide has the answers you need. C# is a language of unusual flexibility and breadth, but with its continual growth there’s so much more to learn. In the tradition of the O’Reilly Nutshell guides, this thoroughly updated edition is simply the best one-volume reference to the C# language available today. Organized around concepts and use cases, C# 8.0 in a Nutshell provides intermediate and advanced programmers with a concise map of C# and .NET knowledge that also plumbs significant depths. Get up to speed on C#, from syntax and variables to advanced topics such as pointers, closures, and patterns Dig deep into LINQ with three chapters dedicated to the topic Explore concurrency and asynchrony, advanced threading, and parallel programming Work with .NET features, including regular expressions, networking, serialization, spans, reflection, and cryptography Delve into Roslyn, the modular C# compiler as a service

F# Language and Functional Programming Techniques

\"F# Language and Functional Programming Techniques\" Explore the strengths and elegance of modern functional programming with \"F# Language and Functional Programming Techniques.\" This comprehensive book guides readers through the landscape of F# within the powerful .NET ecosystem, starting from its historical roots and unique role in contemporary software development. By addressing practical setup, advanced project management, and in-depth performance profiling, the text equips both newcomers and seasoned developers to harness F#'s full capabilities in building robust and performant applications. Delving into the heart of functional programming, the book offers a deep exploration of F#’s type system, including sophisticated features such as discriminated unions, records, and type providers for seamless data integration. Readers will master foundational and advanced concepts: immutability, higher-order functions, lazy evaluation, pattern matching, and sophisticated error handling. Specialized chapters illuminate advanced techniques in concurrency, computation expressions, and metaprogramming—enabling creation of scalable, composable, and safe solutions. Beyond language features, the narrative expands to architectural design, functional patterns, and integration with .NET and other languages such as Python and R, making it an indispensable resource for analytical, scientific, and distributed applications. Insights into ecosystem tooling, testing, open-source engagement, and the future of F# ensure that readers will not only build expertise in the language, but also contribute effectively to the next generation of functional software engineering.

C# 10 in a Nutshell

This book constitutes the refereed proceedings of the 26th European Conference on Object-Oriented Programming, ECOOP 2012, held in Beijing, China, in June 2012. The 27 revised full papers presented

together with two keynote lectures were carefully reviewed and selected from a total of 140 submissions. The papers are organized in topical sections on extensibility, language evaluation, ownership and initialisation, language features, special-purpose analyses, javascript, hardcore theory, modularity, updates and interference, general-purpose analyses.

ECOOP 2012 -- Object-Oriented Programming

This book constitutes the refereed proceedings of the 11th International Conference on Coordination Models and Languages, COORDINATION 2009, held in Lisbon, Portugal, in June 2009, as one of the federated conferences on Distributed Computing Techniques, DisCoTec 2009. The 14 revised full papers presented were carefully reviewed and selected from 61 submissions. The subject-matter is to explore the spectrum of languages, middleware, services, and algorithms that separate behavior from interaction, therefore increasing modularity, simplifying reasoning, and ultimately enhancing software development.

Coordination Models and Languages

API Design for C++, Second Edition provides a comprehensive discussion of Application Programming Interface (API) development, from initial design through implementation, testing, documentation, release, versioning, maintenance, and deprecation. It is the only book that teaches the strategies of C++ API development, including interface design, versioning, scripting, and plug-in extensibility. Drawing from the author's experience on large scale, collaborative software projects, the text offers practical techniques of API design that produce robust code for the long-term. It presents patterns and practices that provide real value to individual developers as well as organizations.The Second Edition includes all new material fully updated for the latest versions of C++, including a new chapter on concurrency and multithreading, as well as a new chapter discussing how Objective C++ and C++ code can co-exist and how a C++ API can be accessed from Swift programs. In addition, it explores often overlooked issues, both technical and non-technical, contributing to successful design decisions that produce high quality, robust, and long-lived APIs. It focuses on various API styles and patterns that will allow you to produce elegant and durable libraries. A discussion on testing strategies concentrates on automated API testing techniques rather than attempting to include end-user application testing techniques such as GUI testing, system testing, or manual testing. - Teaches the strategies of C++ API development, including design, versioning, documentation, testing, scripting, and extensibility - Includes extensive code examples that illustrate each concept, with fully functional examples and working source code for experimentation available online - Covers various API styles and patterns, with a focus on practical and efficient designs for large-scale, long-term projects - Includes updated URLs and ensures all code examples continue to work with modern compilers and supporting tools

API Design for C++

In today’s fast and competitive world, a program’s performance is just as important to customers as the features it provides. This practical guide teaches developers performance-tuning principles that enable optimization in C++. You’ll learn how to make code that already embodies best practices of C++ design run faster and consume fewer resources on any computer—whether it’s a watch, phone, workstation, supercomputer, or globe-spanning network of servers. Author Kurt Guntheroth provides several running examples that demonstrate how to apply these principles incrementally to improve existing code so it meets customer requirements for responsiveness and throughput. The advice in this book will prove itself the first time you hear a colleague exclaim, “Wow, that was fast. Who fixed something?” Locate performance hot spots using the profiler and software timers Learn to perform repeatable experiments to measure performance of code changes Optimize use of dynamically allocated variables Improve performance of hot loops and functions Speed up string handling functions Recognize efficient algorithms and optimization patterns Learn the strengths—and weaknesses—of C++ container classes View searching and sorting through an optimizer’s eye Make efficient use of C++ streaming I/O functions Use C++ thread-based concurrency features effectively

Optimized C++

If you are a Clojure developer who is interested in using Reactive Programming to build asynchronous and concurrent applications, this book is for you. Knowledge of Clojure and Leiningen is required. Basic understanding of ClojureScript will be helpful for the web chapters, although it is not strictly necessary.

Clojure Reactive Programming

When you have questions about C# 9.0 or .NET 5, this best-selling guide has the answers you need. C# is a language of unusual flexibility and breadth, but with its continual growth there's so much more to learn. In the tradition of O'Reilly's Nutshell guides, this thoroughly updated edition is simply the best one-volume reference to the C# language available today. Organized around concepts and use cases, C# 9.0 in a Nutshell provides intermediate and advanced programmers with a concise map of C# and .NET that also plumbs significant depths. Get up to speed on C#, from syntax and variables to advanced topics such as pointers, records, closures, and patterns Dig deep into LINQ with three chapters dedicated to the topic Explore concurrency and asynchrony, advanced threading, and parallel programming Work with .NET features, including regular expressions, networking, spans, reflection, and cryptography

C# 9.0 in a Nutshell

Learn how to use RxClojure to deal with stateful computations Key FeaturesLeverage the features of Functional Reactive Programming using ClojureCreate dataflow-based systems that are the building blocks of Reactive ProgrammingUse different Functional Reactive Programming frameworks, techniques, and patterns to solve real-world problemsBook Description Reactive Programming is central to many concurrent systems, and can help make the process of developing highly concurrent, event-driven, and asynchronous applications simpler and less error-prone. This book will allow you to explore Reactive Programming in Clojure 1.9 and help you get to grips with some of its new features such as transducers, reader conditionals, additional string functions, direct linking, and socket servers. Hands-On Reactive Programming with Clojure starts by introducing you to Functional Reactive Programming (FRP) and its formulations, as well as showing you how it inspired Compositional Event Systems (CES). It then guides you in understanding Reactive Programming as well as learning how to develop your ability to work with time-varying values thanks to examples of reactive applications implemented in different frameworks. You'll also gain insight into some interesting Reactive design patterns such as the simple component, circuit breaker, request-response, and multiple-master replication. Finally, the book introduces microservices-based architecture in Clojure and closes with examples of unit testing frameworks. By the end of the book, you will have gained all the knowledge you need to create applications using different Reactive Programming approaches. What you will learnUnderstand how to think in terms of time-varying values and event streamsCreate, compose, and transform observable sequences using Reactive extensionsBuild a CES framework from scratch using core.async as its foundationDevelop a simple ClojureScript game using ReagiIntegrate Om and RxJS in a web applicationImplement a reactive API in Amazon Web Services (AWS) Discover helpful approaches to backpressure and error handlingGet to grips with futures and their applicationsWho this book is for If you’re interested in using Reactive Programming to build asynchronous and concurrent applications, this is the book for you. Basic knowledge of Clojure programming is necessary to understand the concepts covered in this book.

Hands-On Reactive Programming with Clojure

This book constitutes the refereed proceedings of the 20th International Conference on Concurrency Theory, CONCUR 2009, held in Bologna, Italy, September 1-4, 2009. The 37 revised full papers presented together with four invited papers were carefully reviewed and selected from 129 submissions. The topics include model checking, process calculi, minimization and equivalence checking, types, semantics, probability,

bisimulation and simulation, real time, and formal languages.

CONCUR 2009 - Concurrency Theory

This book constitutes the refereed proceedings of the Third International Conference on High Performance Computing and Communications, HPCC 2007. The 75 revised full papers address all current issues of parallel and distributed systems and high performance computing and communication, including networking protocols, embedded systems, wireless, mobile and pervasive computing, Web services and internet computing, and programming interfaces for parallel systems.

High Performance Computing and Communications

Intermediate to advanced technique coverage, updated for C# 2012 and .NET 4.5 This guide is geared towards experienced programmers looking to update and enhance their skills in writing Windows applications, web apps, and Metro apps with C# and .NET 4.5. Packed with information about intermediate and advanced features, this book includes everything professional developers need to know about C# and putting it to work. Covers challenging .NET features including Language Integrated Query (LINQ), LINQ to SQL, LINQ to XML, WCF, WPF, Workflow, and Generics Puts the new Async keyword to work and features refreshers on .NET architecture, objects, types, inheritance, arrays, operators, casts, delegates, events, strings, regular expressions, collections, and memory management Explores new options and interfaces presented by Windows 8 development, WinRT, and Metro style apps Includes traditional Windows forms programming, ASP.NET web programming with C#, and working in Visual Studio 2012 with C# Professional C# 2012 and .NET 4.5 is a comprehensive guide for experienced programmers wanting to maximize these technologies.

Professional C# 2012 and .NET 4.5

A collection of over seventy-five solution-focused recipes, \"Ansible DevOps Cookbook\" will show you how to use Ansible to fix problems, simplify operations, and boost the efficiency of your DevOps practices. Clear, step-by-step directions are provided for every recipe in this cookbook, covering everything from basic setup to advanced techniques. You should start by creating an efficient inventory system, configuring control and managed nodes, and setting up your Ansible environment. You can implement effective solutions such as handling more complex playbook techniques, such as working with variables, facts, conditionals, loops, and more. You will be skillful to organize playbooks and create reusable automation with Ansible roles. You can increase your automation capabilities by accessing community-driven content through Ansible Galaxy, which is explained in the book. When it comes to cloud integration, the book goes into great detail on how to automate deployments on AWS, Azure, and GCP. These recipes show how to use Ansible modules for managing and provisioning cloud infrastructure, so you can manage resources efficiently and ensure high availability and performance. Ansible, Jenkins, and GitLab are among the many of the tools covered in this book, which teaches you to automate the build, test, and deployment pipeline as part of continuous integration and continuous delivery. From playbook errors to inventory management issues, this cookbook has solutions to fix it all. Ansible Tower and AWX are implemented in the last chapters to automate enterprise-grade tasks, including job scheduling, monitoring, and role-based access control. This book's practical, real-world solutions will help you improve your DevOps practices and maximize the effectiveness of Ansible in your automation processes. Key Learnings Gain the expertise and abilities needed to establish Ansible environments for efficient automation and management of DevOps processes. Discover sophisticated playbook strategies for optimizing task automation through the utilization of variables and handlers. Streamline cloud deployments on AWS, Azure, and GCP to ensure optimal availability and performance. Integrate Ansible with CI/CD tools such as Jenkins and GitLab to enable continuous delivery. Resolve playbook errors and address inventory management issues using effective solutions. Employ Ansible roles and Galaxy to implement scalable and reusable automation content. Deploy high-level automation using Ansible Tower and AWX, which includes robust role-based access control. Efficiently manage workflow by

scheduling and monitoring Ansible jobs. Efficiently oversee both dynamic and static inventories, guaranteeing accurate allocation of resources. Table of Content Up and Running with Ansible Environment Writing and Running Playbooks Managing Inventories Advanced Playbook Techniques Ansible Plugins and Modules Provisioning on Windows and Mac Systems Ansible with AWS, Azure and GCP Managing CI/CD Ansible Tower and AWX

Ansible DevOps Cookbook

The professional's guide to C# 7, with expert guidance on the newest features Professional C# 7 and .NET Core 2.0 provides experienced programmers with the information they need to work effectively with the world's leading programming language. The latest C# update added many new features that help you get more done in less time, and this book is your ideal guide for getting up to speed quickly. C# 7 focuses on data consumption, code simplification, and performance, with new support for local functions, tuple types, record types, pattern matching, non-nullable reference types, immutable types, and better support for variables. Improvements to Visual Studio will bring significant changes to the way C# developers interact with the space, bringing .NET to non-Microsoft platforms and incorporating tools from other platforms like Docker, Gulp, and NPM. Guided by a leading .NET expert and steeped in real-world practicality, this guide is designed to get you up to date and back to work. With Microsoft speeding up its release cadence while offering more significant improvement with each update, it has never been more important to get a handle on new tools and features quickly. This book is designed to do just that, and more—everything you need to know about C# is right here, in the single-volume resource on every developer's shelf. Tour the many new and enhanced features packed into C# 7 and .NET Core 2.0 Learn how the latest Visual Studio update makes developers' jobs easier Streamline your workflow with a new focus on code simplification and performance enhancement Delve into improvements made for localization, networking, diagnostics, deployments, and more Whether you're entirely new to C# or just transitioning to C# 7, having a solid grasp of the latest features allows you to exploit the language's full functionality to create robust, high -quality apps. Professional C# 7 and .NET Core 2.0 is the one-stop guide to everything you need to know.

Seventh International Symposium on Asynchronous Circuits and Systems : ASYNC 2001

Leverage the latest parallel and concurrency features in .NET 6 when building your next application and explore the benefits and challenges of asynchrony, parallelism, and concurrency in .NET via practical examples Key FeaturesLearn to implement parallel programming and handle concurrency in .NET efficientlySwitch threads while debugging and learn how to monitor specific threads in Visual StudioDiscover how to cancel tasks with callbacks, by polling, or by using a task with wait handlesBook Description .NET has included managed threading capabilities since the beginning, but early techniques had inherent risks: memory leaks, thread synchronization issues, and deadlocks. This book will help you avoid those pitfalls and leverage the modern constructs available in .NET 6 and C# 10, while providing recommendations on patterns and best practices for parallelism and concurrency. Parallel, concurrent, and asynchronous programming are part of every .NET application today, and it becomes imperative for modern developers to understand how to effectively use these techniques. This book will teach intermediate-level .NET developers how to make their applications faster and more responsive with parallel programming and concurrency in .NET and C# with practical examples. The book starts with the essentials of multi-threaded .NET development and explores how the language and framework constructs have evolved along with .NET. You will later get to grips with the different options available today in .NET 6, followed by insights into best practices, debugging, and unit testing. By the end of this book, you will have a deep understanding of why, when, and how to employ parallelism and concurrency in any .NET application. What you will learnPrevent deadlocks and race conditions with managed threadingUpdate Windows app UIs without causing exceptionsExplore best practices for introducing asynchronous constructs to existing codeAvoid pitfalls when introducing parallelism to your codeImplement the producer-consumer pattern with Dataflow blocksEnforce data sorting when processing data in parallel and safely merge data from multiple sourcesUse

concurrent collections that help synchronize data across threadsDebug an everyday parallel app with the Parallel Stacks and Parallel Tasks windowsWho this book is for This book is for beginner to intermediate-level .NET developers who want to employ the latest parallel and concurrency features in .NET when building their applications. Readers should have a solid understanding of the C# language and any version of the .NET Framework or .NET Core.

Professional C# 7 and .NET Core 2.0

The IBM XIV® Storage System has a rich set of copy functions suited for various data protection scenarios that enable you to enhance your business continuance, disaster recovery, data migration, and online backup solutions. These functions allow point-in-time copies, known as snapshots and full volume copies, and also include remote copy capabilities in either synchronous or asynchronous mode. A three-site mirroring function is now available to further improve availability and disaster recovery capabilities. These functions are included in the XIV software and all their features are available at no extra charge. The various copy functions are reviewed in separate chapters, which include detailed information about usage and practical illustrations. The book also illustrates the use of IBM® Tivoli® Storage Productivity Center for Replication to manage XIV Copy Services. This IBM Redbooks® publication is intended for anyone who needs a detailed and practical understanding of the XIV copy functions.

Parallel Programming and Concurrency with C# 10 and .NET 6

IBM XIV Storage System Business Continuity Functions