

Boost Asio C Network Programming Second Edition

On its own, C# simplifies network programming. Combine it with the precise instruction found in C# Network Programming, and you'll find that building network applications is easier and quicker than ever. This book helps newcomers get started with a look at the basics of network programming as they relate to C#, including the language's network classes, the Winsock interface, and DNS resolution. Spend as much time here as you need, then dig into the core topics of the network layer. You'll learn to make socket connections via TCP and "connectionless" connections via UDP. You'll also discover just how much help C# gives you with some of your toughest chores, such as asynchronous socket programming, multithreading, and multicasting. Network-layer techniques are just a means to an end, of course, and so this book keeps going, providing a series of detailed application-layer programming examples that show you how to work with real protocols and real network environments to build and implement a variety of applications. Use SNMP to manage network devices, SMTP to communicate with remote mail servers, and HTTP to Web-enable your applications. And use classes native to C# to query and modify Active Directory entries. Rounding it all out is plenty of advanced coverage to push your C# network programming skills to the limit. For example, you'll learn two ways to share application methods across the network: using Web services and remoting. You'll also master the security features intrinsic to C# and .NET--features that stand to benefit all of your programming projects.

Do you need to develop flexible software that can be customized quickly? Do you need to add the power and efficiency of frameworks to your software? The ADAPTIVE Communication

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Environment (ACE) is an open-source toolkit for building high-performance networked applications and next-generation middleware. ACE's power and flexibility arise from object-oriented frameworks, used to achieve the systematic reuse of networked application software. ACE frameworks handle common network programming tasks and can be customized using C++ language features to produce complete distributed applications. C++ Network Programming, Volume 2, focuses on ACE frameworks, providing thorough coverage of the concepts, patterns, and usage rules that form their structure. This book is a practical guide to designing object-oriented frameworks and shows developers how to apply frameworks to concurrent networked applications. C++ Networking, Volume 1, introduced ACE and the wrapper facades, which are basic network computing ingredients. Volume 2 explains how frameworks build on wrapper facades to provide higher-level communication services. Written by two experts in the ACE community, this book contains:

- An overview of ACE frameworks
- Design dimensions for networked services
- Descriptions of the key capabilities of the most important ACE frameworks
- Numerous C++ code examples that demonstrate how to use ACE frameworks

C++ Network Programming, Volume 2, teaches how to use frameworks to write networked applications quickly, reducing development effort and overhead. It will be an invaluable asset to any C++ developer working on networked applications.

The Definitive Guide to HTML5 WebSocket is the ultimate insider's WebSocket resource. This revolutionary new web technology enables you to harness the power of true real-time connectivity and build responsive, modern web applications. This book contains everything web developers and architects need to know about WebSocket. It discusses how WebSocket-based architectures provide a dramatic reduction in unnecessary network overhead and

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latency compared to older HTTP (Ajax) architectures, how to layer widely used protocols such as XMPP and STOMP on top of WebSocket, and how to secure WebSocket connections and deploy WebSocket-based applications to the enterprise. Build real-time web applications with HTML5. This book: Introduces you to the WebSocket API and protocol Describes and provides real-world examples of protocol communication over WebSocket Explains WebSocket security and enterprise deployment

Learn effective C++ network programming with Boost.Asio and become a proficient C++ network programmer About This Book Learn efficient C++ network programming with minimum coding using Boost.Asio Your one-stop destination to everything related to the Boost.Asio library Explore the fundamentals of networking to choose designs with more examples, and learn the basics of Boost.Asio Who This Book Is For This book is for C++ Network programmers with basic knowledge of network programming, but no knowledge of how to use Boost.Asio for network programming. What You Will Learn Prepare the tools to simplify network programming in C++ using Boost.Asio Explore the networking concepts of IP addressing, TCP/IP ports and protocols, and LAN topologies Get acquainted with the usage of the Boost libraries Get to know more about the content of Boost.Asio network programming and Asynchronous programming Establish communication between client and server by creating client-server application Understand the various functions inside Boost.Asio C++ libraries to delve into network programming Discover how to debug and run the code successfully In Detail Boost.Asio is a C++ library used for network programming operations. Organizations use Boost because of its productivity. Use of these high-quality libraries speed up initial development, result in fewer bugs, reduce reinvention-of-the-wheel, and cut long-term

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maintenance costs. Using Boost libraries gives an organization a head start in adopting new technologies. This book will teach you C++ Network programming using synchronous and asynchronous operations in Boost.Asio with minimum code, along with the fundamentals of Boost, server-client applications, debugging, and more. You will begin by preparing and setting up the required tools to simplify your network programming in C++ with Boost.Asio. Then you will learn about the basic concepts in networking such as IP addressing, TCP/IP protocols, and LAN with its topologies. This will be followed by an overview of the Boost libraries and their usage. Next you will get to know more about Boost.Asio and its concepts related to network programming. We will then go on to create a client-server application, helping you to understand the networking concepts. Moving on, you will discover how to use all the functions inside the Boost.Asio C++ libraries. Lastly, you will understand how to debug the code if there are errors found and will run the code successfully. Style and approach An example-oriented book to show you the basics of networking and help you create a network application simply using Boost.Asio, with more examples for you to get up and running with Boost.Asio quickly. Filled with dozens of working code examples that illustrate the use of over 40 popular Boost libraries, this book takes you on a tour of Boost, helping you to independently build the libraries from source and use them in your own code. The first half of the book focuses on basic programming interfaces including generic containers and algorithms, strings, resource management, exception safety, and a miscellany of programming utilities that make everyday programming chores easy. Following a short interlude that introduces template metaprogramming and functional programming, the later chapters are devoted to systems programming interfaces, focusing on directory handling, I/O, concurrency, and network

programming

Design and architect real-world scalable C++ applications by exploring advanced techniques in low-level programming, object-oriented programming (OOP), the Standard Template Library (STL), metaprogramming, and concurrency Key Features Design professional-grade, maintainable apps by learning advanced concepts such as functional programming, templates, and networking Apply design patterns and best practices to solve real-world problems Improve the performance of your projects by designing concurrent data structures and algorithms Book Description C++ has evolved over the years and the latest release – C++20 – is now available. Since C++11, C++ has been constantly enhancing the language feature set. With the new version, you'll explore an array of features such as concepts, modules, ranges, and coroutines. This book will be your guide to learning the intricacies of the language, techniques, C++ tools, and the new features introduced in C++20, while also helping you apply these when building modern and resilient software. You'll start by exploring the latest features of C++, and then move on to advanced techniques such as multithreading, concurrency, debugging, monitoring, and high-performance programming. The book will delve into object-oriented programming principles and the C++ Standard Template Library, and even show you how to create custom templates. After this, you'll learn about different approaches such as test-driven development (TDD), behavior-driven development (BDD), and domain-driven design (DDD), before taking a look at the coding best practices and design patterns essential for building professional-grade applications. Toward the end of the book, you will gain useful insights into the recent C++ advancements in AI and machine learning. By the end of this C++ programming book, you'll have gained expertise in real-world application development,

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including the process of designing complex software. What you will learn Understand memory management and low-level programming in C++ to write secure and stable applications Discover the latest C++20 features such as modules, concepts, ranges, and coroutines Understand debugging and testing techniques and reduce issues in your programs Design and implement GUI applications using Qt5 Use multithreading and concurrency to make your programs run faster Develop high-end games by using the object-oriented capabilities of C++ Explore AI and machine learning concepts with C++ Who this book is for This C++ book is for experienced C++ developers who are looking to take their knowledge to the next level and perfect their skills in building professional-grade applications.

Handbook of Open Source Tools introduces a comprehensive collection of advanced open source tools useful in developing software applications. The book contains information on more than 200 open-source tools which include software construction utilities for compilers, virtual-machines, database, graphics, high-performance computing, OpenGL, geometry, algebra, graph theory , GUIs and more. Special highlights for software construction utilities and application libraries are included. Each tool is covered in the context of a real like application development setting. This unique handbook presents a comprehensive discussion of advanced tools, a valuable asset used by most application developers and programmers; includes a special focus on Mathematical Open Source Software not available in most Open Source Software books, and introduces several tools (eg ACL2, CLIPS, CUDA, and COIN) which are not known outside of select groups, but are very powerful. Handbook of Open Source Tools is designed for application developers and programmers working with Open Source Tools. Advanced-level students concentrating on Engineering, Mathematics and Computer Science

will find this reference a valuable asset as well.

This book is the follow-up of the Boost Volume I book and it has been written for software developers who use Boost C++ libraries to create flexible applications. We discuss approximately 20 advanced libraries that can be classified into the following major categories: Mathematics: special functions, statistical distributions, interval arithmetic and matrix algebra. Special data structures: date and time, circular buffer, UUID, dynamic bitsets, pool memory. TCP and UDP portable network programming using the software interface. Interprocess communication and shared memory programming models. Three chapters on graphs, graph algorithms and their implementation in Boost. The focus is hands-on and each library is discussed in detail and numerous working examples are given to get the reader up to speed as soon as possible. Each library is described in a step-by-step fashion and you can use the corresponding code as a basis for more advanced applications. These libraries are the ideal basis for new applications. We shall use them in Volume III of the current series when we discuss applications to engineering, science and computational finance. About the Authors Robert Demming is software designer, developer and trainer and he has been involved with software projects in the areas of optical technology, process control, CAD and order processing systems since 1993. He has a BSc degree in technical computerscience from Amsterdam Hogeschool. Daniel J. Duffy is founder of Datasim Education BV and has been working with C++ and its applications since 1989 and with software development since 1979. He is designer, algorithm builder and trainer. He has a PhD in numerical analysis from Trinity College, Dublin. One of the projects that he is involved in is applying the Boost libraries to computational finance."

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A text focusing on the methods and alternatives for designed TCP/IP-based client/server systems and advanced techniques for specialized applications with Perl. A guide examining a collection of the best third party modules in the Comprehensive Perl Archive Network. Topics covered: Perl function libraries and techniques that allow programs to interact with resources over a network. IO: Socket library ; Net: FTP library -- Telnet library -- SMTP library ; Chat problems ; Internet Message Access Protocol (IMAP) issues ; Markup-language parsing ; Internet Protocol (IP) broadcasting and multicasting.

TCP/IP Sockets in C: Practical Guide for Programmers, Second Edition is a quick and affordable way to gain the knowledge and skills needed to develop sophisticated and powerful web-based applications. The book's focused, tutorial-based approach enables the reader to master the tasks and techniques essential to virtually all client-server projects using sockets in C. This edition has been expanded to include new advancements such as support for IPv6 as well as detailed defensive programming strategies. If you program using Java, be sure to check out this book's companion, TCP/IP Sockets in Java: Practical Guide for Programmers, 2nd Edition. Includes completely new and expanded sections that address the IPv6 network environment, defensive programming, and the `select()` system call, thereby allowing the reader to program in accordance with the most current standards for internetworking. Streamlined and concise tutelage in conjunction with line-by-line code commentary allows readers to quickly program web-based applications without having to wade through unrelated and discursive networking tenets.

Boost.Asio C++ Network Programming Packt Publishing Ltd

PRACTICAL, EXAMPLE-RICH COVERAGE OF: Classes, Objects, Encapsulation, Inheritance,

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Polymorphism Integrated OOP Case Studies: Time, GradeBook, Employee Industrial-Strength, 95-Page OOD/UML® 2 ATM Case Study Standard Template Library (STL): Containers, Iterators and Algorithms I/O, Types, Control Statements, Functions Arrays, Vectors, Pointers, References String Class, C-Style Strings Operator Overloading, Templates Exception Handling, Files Bit and Character Manipulation Boost Libraries and the Future of C++ GNU™ and Visual C++® Debuggers And more... VISIT WWW.DEITEL.COM For information on Deitel® Dive-Into® Series corporate training courses offered at customer sites worldwide (or write to deitel@deitel.com) Download code examples Check out the growing list of programming, Web 2.0 and software-related Resource Centers To receive updates for this book, subscribe to the free DEITEL® BUZZ ONLINE e-mail newsletter at www.deitel.com/newsletter/subscribe.html Read archived issues of the DEITEL® BUZZ ONLINE The professional programmer's DEITEL® guide to C++ and object-oriented application development Written for programmers with a background in high-level language programming, this book applies the Deitel signature live-code approach to teaching programming and explores the C++ language and C++ Standard Libraries in depth. The book presents the concepts in the context of fully tested programs, complete with syntax shading, code highlighting, code walkthroughs and program outputs. The book features 240 C++ applications with over 15,000 lines of proven C++ code, and hundreds of tips that will help you build robust applications. Start with an introduction to C++ using an early classes and objects approach, then rapidly move on to more advanced topics, including templates, exception handling, the Standard Template Library (STL) and selected features from the Boost libraries. You'll enjoy the Deitels' classic treatment of object-oriented programming and the

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OOD/UML® 2 ATM case study, including a complete C++ implementation. When you're finished, you'll have everything you need to build object-oriented C++ applications. The DEITEL® Developer Series is designed for practicing programmers. The series presents focused treatments of emerging technologies, including C++, .NET, Java™, web services, Internet and web development and more. PRE-PUBLICATION REVIEWER TESTIMONIALS

“An excellent ‘objects first’ coverage of C++. The example-driven presentation is enriched by the optional UML case study that contextualizes the material in an ongoing software engineering project.” –Gavin Osborne, Saskatchewan Institute of Applied Science and Technology

“Introducing the UML early on is a great idea.” –Raymond Stephenson, Microsoft

“Good use of diagrams, especially of the activation call stack and recursive functions.” –Amar Raheja, California State Polytechnic University, Pomona

“Terrific discussion of pointers—probably the best I have seen.” –Anne B. Horton, Lockheed Martin

“Great coverage of polymorphism and how the compiler implements polymorphism ‘under the hood.’” –Ed James-Beckham, Borland

“The Boost/C++0x chapter will get you up and running quickly with the memory management and regular expression libraries, plus whet your appetite for new C++ features being standardized.” –Ed Brey, Kohler Co.

“Excellent introduction to the Standard Template Library (STL). The best book on C++ programming!” –Richard Albright, Goldey-Beacom College

“Just when you think you are focused on learning one topic, suddenly you discover you’ve learned more than you expected.” –Chad Willwerth, University of Washington, Tacoma

“The most thorough C++ treatment I’ve seen. Replete with real-world case studies covering the full software development lifecycle. Code examples are extraordinary!” –Terrell Hull, Logicalis Integration Solutions/

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Software -- Operating Systems.

C++ High Performance, Second Edition enables you to measure and identify bottlenecks in the code and eradicate them to amplify your application's working speed without compromising the readability of your C++ codebase

C++ is one of the most widely-used programming languages and has applications in a variety of fields, such as gaming, GUI programming, and operating systems, to name a few. Through the years, C++ has evolved into (and remains) one of the top choices for software developers worldwide. This book will show you some notable C++ features and how to ...

Learn how to build efficient, secure and robust code in C++ by using data structures and algorithms - the building blocks of C++ Key Features Use data structures such as arrays, stacks, trees, lists, and graphs with real-world examples Learn the functional and reactive implementations of the traditional data structures Explore illustrations to present data structures and algorithms, as well as their analysis, in a clear, visual manner Book Description C++ is a general-purpose programming language which has evolved over the years and is used to develop software for many different sectors. This book will be your companion as it takes you through implementing classic data structures and algorithms to help you get up and running as a confident C++ programmer. We begin with an introduction to C++ data structures and algorithms while also covering essential language constructs. Next, we will see how to store data using linked lists, arrays, stacks, and queues. Then, we will learn how to implement different sorting algorithms, such as quick sort and heap sort. Along with these, we will dive into searching algorithms such as linear search, binary search and more. Our next mission will be to attain high performance by implementing algorithms to string datatypes and

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implementing hash structures in algorithm design. We'll also analyze Brute Force algorithms, Greedy algorithms, and more. By the end of the book, you'll know how to build components that are easy to understand, debug, and use in different applications. What you will learn Know how to use arrays and lists to get better results in complex scenarios Build enhanced applications by using hashtables, dictionaries, and sets Implement searching algorithms such as linear search, binary search, jump search, exponential search, and more Have a positive impact on the efficiency of applications with tree traversal Explore the design used in sorting algorithms like Heap sort, Quick sort, Merge sort and Radix sort Implement various common algorithms in string data types Find out how to design an algorithm for a specific task using the common algorithm paradigms Who this book is for This book is for developers who would like to learn the Data Structures and Algorithms in C++. Basic C++ programming knowledge is expected.

Learn effective C++ network programming with Boost.Asio and become a proficient C++ network programmer About This Book- Learn efficient C++ network programming with minimum coding using Boost.Asio- Your one-stop destination to everything related to the Boost.Asio library- Explore the fundamentals of networking to choose designs with more examples, and learn the basics of Boost.Asio Who This Book Is For This book is for C++ Network programmers with basic knowledge of network programming, but no knowledge of how to use Boost.Asio for network programming. What You Will Learn- Prepare the tools to simplify network programming in C++ using Boost.Asio- Explore the networking concepts of IP addressing, TCP/IP ports and protocols, and LAN topologies- Get acquainted with the usage of the Boost libraries- Get to know more about the content of Boost.Asio network programming

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and Asynchronous programming- Establish communication between client and server by creating client-server application- Understand the various functions inside Boost.Asio C++ libraries to delve into network programming- Discover how to debug and run the code successfully

In Detail Boost.Asio is a C++ library used for network programming operations. Organizations use Boost because of its productivity. Use of these high-quality libraries speed up initial development, result in fewer bugs, reduce reinvention-of-the-wheel, and cut long-term maintenance costs. Using Boost libraries gives an organization a head start in adopting new technologies. This book will teach you C++ Network programming using synchronous and asynchronous operations in Boost.Asio with minimum code, along with the fundamentals of Boost, server-client applications, debugging, and more. You will begin by preparing and setting up the required tools to simplify your network programming in C++ with Boost.Asio. Then you will learn about the basic concepts in networking such as IP addressing, TCP/IP protocols, and LAN with its topologies. This will be followed by an overview of the Boost libraries and their usage. Next you will get to know more about Boost.Asio and its concepts related to network programming. We will then go on to create a client-server application, helping you to understand the networking concepts. Moving on, you will discover how to use all the functions inside the Boost.Asio C++ libraries. Lastly, you will understand how to debug the code if there are errors found and will run the code successfully.

Style and approach An example-oriented book to show you the basics of networking and help you create a network application simply using Boost.Asio, with more examples for you to get up and running with Boost.Asio quickly.

As networks, devices, and systems continue to evolve, software engineers face the unique

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

Finally, with UNIX® System V Network Programming, an authoritative reference is available for programmers and system architects interested in building networked and distributed

applications for UNIX System V. Even if you currently use a different version of the UNIX system, such as the latest release of 4.3BSD or SunOS, this book is valuable to you because it is centered around UNIX System V Release 4, the version of the UNIX system that unified many of the divergent UNIX implementations. For those professionals new to networking and UNIX system programming, two introductory chapters are provided. The author then presents the programming interfaces most important to building communication software in System V, including STREAMS, the Transport Layer Interface library, Sockets, and Remote Procedure Calls. So that your designs are not limited to user-level, the author also explains how to write kernel-level communication software, including STREAMS drivers, modules, and multiplexors. Many examples are provided, including an Ethernet driver and a transport-level multiplexing driver. In the final chapter, the author brings the material from previous chapters together, presenting the design of a SLIP communication package.

A comprehensive guide with extensive coverage on concepts such as OOP, functional programming, generic programming, and STL along with the latest features of C++ Key Features Delve into the core patterns and components of C++ in order to master application design Learn tricks, techniques, and best practices to solve common design and architectural challenges Understand the limitation imposed by C++ and how to solve them using design patterns Book Description C++ is a general-purpose programming language designed with the goals of efficiency, performance, and flexibility in mind. Design patterns are commonly accepted solutions to well-recognized design problems. In essence, they are a library of reusable components, only for software architecture, and not for a concrete implementation. The focus of this book is on the design patterns that naturally lend themselves to the needs of

a C++ programmer, and on the patterns that uniquely benefit from the features of C++, in particular, the generic programming. Armed with the knowledge of these patterns, you will spend less time searching for a solution to a common problem and be familiar with the solutions developed from experience, as well as their advantages and drawbacks. The other use of design patterns is as a concise and an efficient way to communicate. A pattern is a familiar and instantly recognizable solution to specific problem; through its use, sometimes with a single line of code, we can convey a considerable amount of information. The code conveys: "This is the problem we are facing, these are additional considerations that are most important in our case; hence, the following well-known solution was chosen." By the end of this book, you will have gained a comprehensive understanding of design patterns to create robust, reusable, and maintainable code. What you will learn

- Recognize the most common design patterns used in C++
- Understand how to use C++ generic programming to solve common design problems
- Explore the most powerful C++ idioms, their strengths, and drawbacks
- Rediscover how to use popular C++ idioms with generic programming
- Understand the impact of design patterns on the program's performance

Who this book is for This book is for experienced C++ developers and programmers who wish to learn about software design patterns and principles and apply them to create robust, reusable, and easily maintainable apps.

Learn to build applications faster and better by leveraging the real power of Boost and C++

About This Book Learn to use the Boost libraries to simplify your application development

Learn to develop high quality, fast and portable applications

Learn the relations between Boost and C++11/C++4/C++17

Who This Book Is For This book is for developers looking to improve their knowledge of Boost and who would like to simplify their application development

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processes. Prior C++ knowledge and basic knowledge of the standard library is assumed.

What You Will Learn Get familiar with new data types for everyday use Use smart pointers to manage resources Get to grips with compile-time computations and assertions Use Boost libraries for multithreading Learn about parallel execution of different task Perform common string-related tasks using Boost libraries Split all the processes, computations, and interactions to tasks and process them independently Learn the basics of working with graphs, stacktracing, testing and interprocess communications Explore different helper macros used to detect compiler, platform and Boost features In Detail If you want to take advantage of the real power of Boost and C++ and avoid the confusion about which library to use in which situation, then this book is for you. Beginning with the basics of Boost C++, you will move on to learn how the Boost libraries simplify application development. You will learn to convert data such as string to numbers, numbers to string, numbers to numbers and more. Managing resources will become a piece of cake. You'll see what kind of work can be done at compile time and what Boost containers can do. You will learn everything for the development of high quality fast and portable applications. Write a program once and then you can use it on Linux, Windows, MacOS, Android operating systems. From manipulating images to graphs, directories, timers, files, networking – everyone will find an interesting topic. Be sure that knowledge from this book won't get outdated, as more and more Boost libraries become part of the C++ Standard. What you want is an easy level of abstraction, which is just what this book provides in conjunction with Boost.Asio. Switching to Boost.Asio is just a few extra #include directives away, with the help of this practical and engaging guide. This book is great for developers that need to do network programming, who don't want to delve into the complicated issues of a raw

networking API. You should be familiar with core Boost concepts, such as smart pointers and `shared_from_this`, resource classes (noncopyable), functors and `boost::bind`, boost mutexes, and the boost date/time library. Readers should also be familiar with “blocking” versus “non-blocking” operations.

Apply Functional Programming techniques to C++ to build highly modular, testable, and reusable code About This Book Modularize your applications and make them highly reusable and testable Get familiar with complex concepts such as metaprogramming, concurrency, and immutability A highly practical guide to building functional code in C++ filled with lots of examples and real-world use cases Who This Book Is For This book is for C++ developers comfortable with OOP who are interested in learning how to apply the functional paradigm to create robust and testable apps. What You Will Learn Get to know the difference between imperative and functional approaches See the use of first-class functions and pure functions in a functional style Discover various techniques to apply immutable state to avoid side effects Design a recursive algorithm effectively Create faster programs using lazy evaluation Structure code using design patterns to make the design process easier Use concurrency techniques to develop responsive software Learn how to use the C++ Standard Template Library and metaprogramming in a functional way to improve code optimization In Detail Functional programming allows developers to divide programs into smaller, reusable components that ease the creation, testing, and maintenance of software as a whole. Combined with the power of C++, you can develop robust and scalable applications that fulfill modern day software requirements. This book will help you discover all the C++ 17 features that can be applied to build software in a functional way. The book is divided into three modules—the first introduces

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the fundamentals of functional programming and how it is supported by modern C++. The second module explains how to efficiently implement C++ features such as pure functions and immutable states to build robust applications. The last module describes how to achieve concurrency and apply design patterns to enhance your application's performance. Here, you will also learn to optimize code using metaprogramming in a functional way. By the end of the book, you will be familiar with the functional approach of programming and will be able to use these techniques on a daily basis. Style and approach This book uses a module-based approach, where each module will cover important aspects of functional programming in C++ and will help you develop efficient and robust applications through gaining a practical understanding.

Uncover the secrets of functional programming using C# and change the way you approach your applications forever About This Book This book focuses on the functional paradigm of C#, which will give you a whole new angle on coding with C# It illustrates the advantages that functional programming brings to the table and the associated coding benefits This practical guide covers all the aspects of functional programming and provides solutions that can be applied in business scenarios Who This Book Is For This book is suitable for C# developers with basic prior knowledge of C# and with no functional programming experience at all. What You Will Learn Develop an application using the functional approach Implement unit testing to functionally program code Create efficient code using functional programming Work through a LINQ query so you can work with data Compose asynchronous programs to create a responsive application Use recursion in function programming in order to simplify code Optimize the program code using Laziness and Caching Techniques In Detail Functional

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programming makes your application faster, improves performance, and increases your productivity. C# code is written at a higher level of abstraction, so that code will be closer to business requirements, abstracting away many low-level implementation details. This book bridges the language gap for C# developers by showing you how to create and consume functional constructs in C#. We also bridge the domain gap by showing how functional constructs can be applied in business scenarios. We'll take you through lambda expressions and extension methods, and help you develop a deep understanding of the concepts and practices of LINQ and recursion in C#. By the end of the book, you will be able to write code using the best approach and will be able to perform unit testing in functional programming, changing how you write your applications and revolutionizing your projects. Style and approach This book takes a pragmatic approach and shows you techniques to write better functional constructs in C#. We'll also show you how these concepts can be applied in business scenarios.

Over 25 hands-on recipes to create robust and highly-efficient cross-platform distributed applications with the Boost.Asio library

- Build highly efficient distributed applications with ease
- Enhance your cross-platform network programming skills with one of the most reputable C++ libraries
- Find solutions to real-world problems related to network programming with ready-to-use recipes using this detailed and practical handbook

Who This Book Is For If you want to enhance your C++ network programming skills using the Boost.Asio library and understand the theory behind development of distributed applications, this book is just what you need. The

prerequisite for this book is experience with general C++11. To get the most from the book and comprehend advanced topics, you will need some background experience in multithreading.

What You Will Learn

- Boost your working knowledge of one of the most reputable C++ networking libraries—Boost.Asio
- Familiarize yourself with the basics of TCP and UDP protocols
- Create scalable and highly-efficient client and server applications
- Understand the theory behind development of distributed applications
- Increase the security of your distributed applications by adding SSL support
- Implement a HTTP client easily
- Use iostreams, scatter-gather buffers, and timers

In Detail

Starting with recipes demonstrating the execution of basic Boost.Asio operations, the book goes on to provide ready-to-use implementations of client and server applications from simple synchronous ones to powerful multithreaded scalable solutions. Finally, you are presented with advanced topics such as implementing a chat application, implementing an HTTP client, and adding SSL support. All the samples presented in the book are ready to be used in real projects just out of the box. As well as excellent practical examples, the book also includes extended supportive theoretical material on distributed application design and construction.

Style and approach

This book is a set of recipes, each containing the statement and description of a particular practical problem followed by code sample providing the solution to the problem and detailed step-by-step explanation. Recipes are grouped by topic into chapters and ordered by the level of complexity from basic to advanced.

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

A comprehensive guide to programming with network sockets, implementing Internet protocols, designing IoT devices, and much more with C Key Features Leverage your C or C++ programming skills to build powerful network applications Get to grips with a variety of network protocols that allow you to load web pages, send emails, and do much more Write portable network code for operating systems such as Windows, Linux, and macOS Book Description Network programming, a challenging topic in C, is made easy to understand with a careful exposition of socket programming APIs. This book gets you started with modern network programming in C and the right use of relevant operating system APIs. This book covers core concepts, such as hostname resolution with DNS, that are crucial to the functioning of the modern web. You'll delve into the fundamental network protocols, TCP and UDP. Essential techniques for networking paradigms such as client-server and peer-to-peer models are explained with the help of practical examples. You'll also study HTTP and HTTPS (the protocols responsible for web pages) from both the client and server perspective. To keep up with current trends, you'll apply the concepts covered in this book to gain insights into web programming for IoT. You'll even get to grips with network monitoring and

implementing security best practices. By the end of this book, you'll have experience of working with client-server applications, and be able to implement new network programs in C. The code in this book is compatible with the older C99 version as well as the latest C18 and C++17 standards. Special consideration is given to writing robust, reliable, and secure code that is portable across operating systems, including Winsock sockets for Windows and POSIX sockets for Linux and macOS. What you will learn

- Uncover cross-platform socket programming APIs
- Implement techniques for supporting IPv4 and IPv6
- Understand how TCP and UDP connections work over IP
- Discover how hostname resolution and DNS work
- Interface with web APIs using HTTP and HTTPS
- Acquire hands-on experience with Simple Mail Transfer Protocol (SMTP)
- Apply network programming to the Internet of Things (IoT)

Who this book is for If you're a developer or a system administrator who wants to enter the world of network programming, this book is for you. Basic knowledge of C programming is assumed.

C++ by Example includes 'UnderC,' an open-source language interpreter developed by the author, which shows the result of each new programming technique instantly, allowing novices to experiment in a more dynamic learning environment. The book starts with the fundamentals of the language, including expressions, variables, functions, and definitions and then covers the most common C++ features including

- Organizing data with Arrays
- Standard Algorithms and Containers
- Using Libraries within C++ programs
- Going beyond Arrays with Structures
- Using Pointers
- Manipulating data

using Operators The second half of the book covers OOP, including Classes, Inheritance, Encapsulation, and more. The final chapters include useful command and library references and appendices covering the preprocessor and freeware C++ compilers.

Over 25 hands-on recipes to create robust and highly-efficient cross-platform distributed applications with the Boost.Asio library About This Book Build highly efficient distributed applications with ease Enhance your cross-platform network programming skills with one of the most reputable C++ libraries Find solutions to real-world problems related to network programming with ready-to-use recipes using this detailed and practical handbook Who This Book Is For If you want to enhance your C++ network programming skills using the Boost.Asio library and understand the theory behind development of distributed applications, this book is just what you need. The prerequisite for this book is experience with general C++11. To get the most from the book and comprehend advanced topics, you will need some background experience in multithreading. What You Will Learn Boost your working knowledge of one of the most reputable C++ networking libraries—Boost.Asio Familiarize yourself with the basics of TCP and UDP protocols Create scalable and highly-efficient client and server applications Understand the theory behind development of distributed applications Increase the security of your distributed applications by adding SSL support Implement a HTTP client easily Use iostreams, scatter-gather buffers, and timers In Detail Starting

with recipes demonstrating the execution of basic Boost.Asio operations, the book goes on to provide ready-to-use implementations of client and server applications from simple synchronous ones to powerful multithreaded scalable solutions. Finally, you are presented with advanced topics such as implementing a chat application, implementing an HTTP client, and adding SSL support. All the samples presented in the book are ready to be used in real projects just out of the box. As well as excellent practical examples, the book also includes extended supportive theoretical material on distributed application design and construction. Style and approach This book is a set of recipes, each containing the statement and description of a particular practical problem followed by code sample providing the solution to the problem and detailed step-by-step explanation. Recipes are grouped by topic into chapters and ordered by the level of complexity from basic to advanced.

This book analyzes the application of the legal principle of non-discrimination in the context of energy network operation. Since the early 1990s, the duty not to discriminate has applied to energy network operators, in order to achieve a liberalized European energy market in which European consumers have a free and real choice of energy supplier. The book provides guidance to those working in the context of the non-discrimination obligation, such as energy network operators, regulatory authorities, national courts, and other energy market players, as well as those studying the rules for (academic) research purposes. The book's conclusions serve as a tool for critical

consideration and offer suggestions for improvements to the legal framework and its application on a European, as well as a national, level. Several questions are answered, including why energy network operators have a non-discrimination obligation in the context of energy market liberalization, how European law has tried to remove and control the discrimination problem since the early 1990s, and when different treatment of energy network users amounts to 'forbidden' discrimination. The book's conclusions are underpinned by comparisons with competition law, public procurement law, and telecommunications law, as well as a case study on how energy network operators and regulators in several Member States currently interpret and apply the non-discrimination obligation. (Series: Energy & Law - Vol. 15)

This book gives a good start and complete introduction for C# Programming for Beginner's. While reading this book it is fun and easy to read it. This book is best suitable for first time C# readers, Covers all fast track topics of C# for all Computer Science students and Professionals. This book is targeted toward those who have little or no programming experience or who might be picking up C# as a second language. The book has been structured and written with a purpose: to get you productive as quickly as possible. I've used my experiences in writing applications with C# and teaching C# to create a book that I hope cuts through the fluff and teaches you what you need to know. All too often, authors fall into the trap of focusing on the technology rather than on the practical application of the technology. I've worked hard to keep this

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book focused on teaching you practical skills that you can apply immediately toward a development project. This book is divided into ten Chapters, each of which focuses on a different aspect of developing applications with C#. These parts generally follow the flow of tasks you'll perform as you begin creating your own programs with C#. I recommend that you read them in the order in which they appear. Using C#, this book develops the concepts and theory of Building the Program Logic and Interfaces analysis, Exceptions, Delegates and Events and other important things in a gradual, step-by-step manner, proceeding from concrete examples to abstract principles. Standish covers a wide range of both traditional and contemporary software engineering topics. This is a handy guide of sorts for any computer science engineering Students, Thinking In C# Programming is a solution bank for various complex problems related to C# and .NET. It can be used as a reference manual by Computer Science Engineering students. This Book also covers all aspects of B.TECH CS, IT, and BCA and MCA, BSC IT. Preview introduced programmers to a new era called functional programming. C# focused on bridging the gap between programming languages and databases. This book covers all the language features from the first version through C# . It also provides you with the essentials of using Visual Studio 2005 to let you enjoy its capabilities and save you time by using features such as IntelliSense. Learning a new programming language can be intimidating. If you've never programmed before, the act of typing seemingly cryptic text to produce sleek and powerful applications probably

seems like a black art, and you might wonder how you'll ever learn everything you need to know. The answer is, of course, one step at a time. The first step to learning a language is the same as that of any other activity: building confidence. Programming is part art and part science. Although it might seem like magic, it's more akin to illusion: After you know how things work a lot of the mysticism goes away, freeing you to focus on the mechanics necessary to produce any given desired result. Chapter 1 (Introduction To C# AND .NET) Chapter 2 (Your First Go at C# Programming) Chapter 3 (C# Data Types)' Chapter 4 (Building the Program Logic) Chapter 5 (Using Classes) Chapter 6 (Function Members) Chapter 7 (Structs, Enums, and Attributes) Chapter 8 (Interfaces) Chapter 9 (Exceptions) Chapter 10 (Delegates and Events)

C++ Builder 5 is an integrated development environment for building standalone, client/server, distributed and Internet-enabled Windows applications. This resource provides an introduction to the operation of the Intergrated Development Enviroment (IDE), the various tools, the debugger, the C++ language and libraries. It also gives coverage of the standard template library (STL) and Windows programming.

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

A fast-paced, thorough introduction to modern C++ written for experienced programmers. After reading C++ Crash Course, you'll be proficient in the core language concepts, the C++ Standard Library, and the Boost Libraries. C++ is one of the most

widely used languages for real-world software. In the hands of a knowledgeable programmer, C++ can produce small, efficient, and readable code that any programmer would be proud of. Designed for intermediate to advanced programmers, C++ Crash Course cuts through the weeds to get you straight to the core of C++17, the most modern revision of the ISO standard. Part 1 covers the core of the C++ language, where you'll learn about everything from types and functions, to the object life cycle and expressions. Part 2 introduces you to the C++ Standard Library and Boost Libraries, where you'll learn about all of the high-quality, fully-featured facilities available to you. You'll cover special utility classes, data structures, and algorithms, and learn how to manipulate file systems and build high-performance programs that communicate over networks. You'll learn all the major features of modern C++, including:

- Fundamental types, reference types, and user-defined types
- The object lifecycle including storage duration, memory management, exceptions, call stacks, and the RAII paradigm
- Compile-time polymorphism with templates and run-time polymorphism with virtual classes
- Advanced expressions, statements, and functions
- Smart pointers, data structures, dates and times, numerics, and probability/statistics facilities
- Containers, iterators, strings, and algorithms
- Streams and files, concurrency, networking, and application development

With well over 500 code samples and nearly 100 exercises, C++ Crash Course is sure to help you build a strong C++ foundation.

The purpose of this book is to provide tools to design and implement network-orientated

applications in .NET. It is also a guide for software designers to choose the best and most efficient way to implement mission critical solutions. The book addresses real-world issues facing professional developers, such as using third-party components as opposed in-house development. It differentiates itself from existing .NET publications because it is aimed at experienced professionals and concentrates on practical, ready-to-use information. The book is written in two languages C# and VB.NET, and covers never-before published information on Telephony in .NET and packet-level networking. This is the second book in the Digital Press Software Development Series. Coverage of lower level protocols allows implementation of performance-centric applications Demonstrates the feasibility of developing telephony solutions in-house rather than outsourcing Written in VB.NET and C# to assist readers working in either language Coverage of Email, FTP and the WWW allows implementation of applications in all three areas

Apply business requirements to IT infrastructure and deliver a high-quality product by understanding architectures such as microservices, DevOps, and cloud-native using modern C++ standards and features Key Features Design scalable large-scale applications with the C++ programming language Architect software solutions in a cloud-based environment with continuous integration and continuous delivery (CI/CD) Achieve architectural goals by leveraging design patterns, language features, and useful tools Book Description Software architecture refers to the high-level design of

complex applications. It is evolving just like the languages we use. Modern C++ allows developers to write high-performance apps in a high-level language without sacrificing readability and maintainability. If you're working with modern C++, this practical guide will help you put your knowledge to work and design distributed, large-scale apps. You'll start by getting up to speed with architectural concepts, including established patterns and rising trends. The book will then explain what software architecture is and help you explore its components. Next, you'll discover the design concepts involved in application architecture and the patterns in software development, before going on to learn how to build, package, integrate, and deploy your components. In the concluding chapters, you'll explore different architectural qualities, such as maintainability, reusability, testability, performance, scalability, and security. Finally, you will get an overview of distributed systems, such as service-oriented architecture, microservices, and cloud-native, and understand how to apply them in application development. By the end of this book, you'll be able to build distributed services using modern C++ and associated tools to deliver solutions as per your clients' requirements. What you will learn

- Understand how to apply the principles of software architecture
- Apply design patterns and best practices to meet your architectural goals
- Write elegant, safe, and performant code using the latest C++ features
- Build applications that are easy to maintain and deploy
- Explore the different architectural approaches and learn to apply them as per your requirement
- Simplify development and operations using application

containers Discover various techniques to solve common problems in software design and development Who this book is for This software architecture C++ programming book is for experienced C++ developers who are looking to become software architects or are interested in developing enterprise-grade applications.

The second edition of *The Boost C++ Libraries* introduces 72 Boost libraries that provide a wide range of useful capabilities. They help you manage memory and process strings more easily. They provide containers and other data structures that go well beyond what the standard library offers. They make it easy to build platform-independent network applications. Simply put, these 72 libraries greatly expand your C++ toolbox. The second edition contains more than 430 examples. All examples are as short as possible, but they are complete, so you can compile and run them as is. They show you what the Boost libraries offer and give you a head start on using the libraries in your own applications. The goal of this book is to increase your efficiency as a C++ developer and to simplify software development with C++. The Boost libraries introduced in this book will help you write less code with fewer bugs and finish projects faster. Your code will be more concise and self-explanatory and more easily adapted when requirements change. The second edition is based on the Boost libraries 1.55.0 and 1.56.0 with the latter version having been released in August 2014. The examples are based on C++11 and have been tested with Visual Studio 2013, GCC 4.8 and Clang 3.3 on various platforms. For Boost libraries which were incorporated into the

C++11 standard library, differences between Boost and the standard library are highlighted. The Boost libraries are one of the most important and influential open source C++ libraries. Their source code is available under a permissive free software license. Several Boost libraries have been incorporated into the C++11 standard library. The Boost libraries are developed and supported by the Boost community - a worldwide developer community with a strong interest in pushing C++ boundaries further. Consistent, high-quality coding standards improve software quality, reduce time-to-market, promote teamwork, eliminate time wasted on inconsequential matters, and simplify maintenance. Now, two of the world's most respected C++ experts distill the rich collective experience of the global C++ community into a set of coding standards that every developer and development team can understand and use as a basis for their own coding standards. The authors cover virtually every facet of C++ programming: design and coding style, functions, operators, class design, inheritance, construction/destruction, copying, assignment, namespaces, modules, templates, genericity, exceptions, STL containers and algorithms, and more. Each standard is described concisely, with practical examples. From type definition to error handling, this book presents C++ best practices, including some that have only recently been identified and standardized-techniques you may not know even if you've used C++ for years. Along the way, you'll find answers to questions like What's worth standardizing--and what isn't? What are the best ways to code for scalability? What are

the elements of a rational error handling policy? How (and why) do you avoid unnecessary initialization, cyclic, and definitional dependencies? When (and how) should you use static and dynamic polymorphism together? How do you practice "safe" overriding? When should you provide a no-fail swap? Why and how should you prevent exceptions from propagating across module boundaries? Why shouldn't you write namespace declarations or directives in a header file? Why should you use STL vector and string instead of arrays? How do you choose the right STL search or sort algorithm? What rules should you follow to ensure type-safe code? Whether you're working alone or with others, C++ Coding Standards will help you write cleaner code--and write it faster, with fewer hassles and less frustration.

Modern C++ Programming Cookbook, Second Edition steps up your C++ knowledge by deep-diving into the most important language and library features, including containers, algorithms, regular expressions, threads, and more. This edition comes updated with new recipes on core C++20 features, including modules, concepts, and coroutines, and C++20 ...

Provides a simple explanation of what makes different materials soft or hard and how they are used for different jobs because of their hardness or softness.

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