

C++ Network Programming

Volume 1

Mastering Complexity with ACE and Patterns

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C++ Network Programming, Volume I Douglas Schmidt, Stephen D. Huston, 2001-12-10 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

C++ Network Programming, Volume 1 Douglas C. Schmidt, Stephen D. Huston, 2001

Applied C++ Philip Romanik, Amy Muntz, 2003 This is an insightful guide to efficient practical solutions to real world C problems Concrete case studies run throughout the book and show how to develop quality C software

Pattern-Oriented Software Architecture, Patterns for Resource Management Michael Kircher, Prashant Jain, 2013-04-19 The first volume of the POSA pattern series introduced a broad spectrum of general purpose patterns in software design and architecture The second narrowed the focus to fundamental patterns for building sophisticated concurrent and networked software systems and applications This volume uses design patterns to present techniques for implementing effective resource management in a system The patterns are covered in detail making use of several examples providing directions to the readers on how to implement the presented patterns Additionally the volume presents a thorough introduction into resource management and a case study where the patterns are applied to the domain of mobile radio networks The patterns are grouped by different areas of resource management and hence address the complete lifecycle of resources resource acquisition coordination and release

C++ Network Programming Douglas C. Schmidt, Stephen D. Huston, 2003 Writing high quality networked applications is difficult it s expensive complicated and error prone This book picks up where volume one left off and guides C programmers through using the Adaptive

Communication Environment ACE the most complete toolkit available for networked programming **Generative Programming and Component Engineering** Don Batory, C Consel (Charles), Walid Taha, 2002-09-23 This book constitutes the refereed proceedings of the ACM SIGPLAN SIGSOFT Conference on Generative Programming and Component Engineering GPCE 2002 held in Pittsburgh PA USA in October 2002 The 18 revised full papers presented were carefully reviewed and selected from 39 submissions Among the topics covered are generative programming meta programming program specialization program analysis program transformation domain specific languages software architectures aspect oriented programming and component based systems *A Modular Architecture for Rapid Development of Model-based Real-time Systems* Walter Phillips, 2006 **C++ Template Metaprogramming** David Abrahams, Aleksey Gurtovoy, 2005 This book is aimed at any programmer who is comfortable with idioms of the Standard Template Library STL C power users will gain a new insight into their existing work and a new fluency in the domain of metaprogramming Intermediate level programmers who have learned a few advanced template techniques will see where these tricks fit in the big picture and will gain the conceptual foundation to use them with discipline Programmers who have caught the scent of metaprogramming but for whom it is still mysterious will finally gain a clear understanding of how when and why it works All readers will leave with a new tool of unprecedented power at their disposal the Boost Metaprogramming Library Jacket *Pattern-oriented Software Architecture: Patterns for resource management* Douglas C. Schmidt, Frank Buschmann, 1996 This fourth volume in the POSA series explores the concepts underlying patterns The goal is to bring together the POSA pattern theory in one volume allowing readers to deepen their understanding of what patterns are what they are not and how to use them successfully **Pattern-oriented Software Architecture** Douglas C. Schmidt, Frank Buschmann, 1996 This fourth volume in the POSA series explores the concepts underlying patterns The goal is to bring together the POSA pattern theory in one volume allowing readers to deepen their understanding of what patterns are what they are not and how to use them successfully **ICSE**, 2003 Software Reuse, 2004 On the Move to Meaningful Internet Systems ...: CoopIS, DOA, and ODBASE, 2003 **The Development of an Imaging Spectrometer Under ACE TAO CORBA Framework** Dat Nguyen, 2004 American Book Publishing Record, 2002 *Subject Guide to Books in Print*, 2001 The ACE Programmer's Guide Stephen D. Huston, James CE Johnson, Umar Syid, 2010-05-15 The ADAPTIVE Communication Environment ACE is an open source software toolkit created to solve network programming challenges Written in C with the help of 30 core developers and 1 700 contributors this portable middleware has evolved to encapsulate and augment a wide range of native OS capabilities essential to support performance driven software systems The ACE Programmer's Guide is a practical hands on guide to ACE for C programmers building networked applications and next generation middleware The book first introduces ACE to beginners It then explains how you can tap design patterns frameworks and ACE to produce effective easily maintained software systems with less time and effort The book features discussions of programming aids

interprocess communication IPC issues process and thread management shared memory the ACE Service Configurator framework timer management classes the ACE Naming Service and more

Hands-On Network Programming with C Lewis Van Winkle, 2019-05-13 A comprehensive guide to programming with network sockets implementing internet protocols designing IoT devices and much more with C Key Features Apply your C and 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 Windows Linux and macOS Book Description Network programming enables processes to communicate with each other over a computer network but it is a complex task that requires programming with multiple libraries and protocols With its support for third party libraries and structured documentation C is an ideal language to write network programs Complete with step by step explanations of essential concepts and practical examples this C network programming book begins with the fundamentals of Internet Protocol TCP and UDP You ll explore client server and peer to peer models for information sharing and connectivity with remote computers The book will also cover HTTP and HTTPS for communicating between your browser and website and delve into hostname resolution with DNS which is crucial to the functioning of the modern web As you advance you ll gain insights into asynchronous socket programming and streams and explore debugging and error handling Finally you ll study network monitoring and implement 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 You ll work with 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 Explore Simple Mail Transfer Protocol SMTP for electronic mail transmission 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 get started with network programming this book is for you Basic knowledge of C programming is assumed

The ACE Programmer's Guide Stephen D. Huston, James C. E. Johnson, Umar Syyid, 2003 If you re designing software and systems that must be portable flexible extensible predictable reliable and affordable this book and the ACE toolkit will enable you to be more effective in all of these areas Even after spending over a decade developing ACE and using it to build networked software applications I find that I ve learned a great deal from this book and I m confident that you will too Douglas C Schmidt Inventor of ACE from the Foreword This book is a must have for every ACE programmer For the beginner it explains step by step how to start using ACE For the more experienced programmer it explains in detail the features used daily and is a perfect reference manual It would have saved me a lot of time if this book had been available some years ago Johnny Willemsen Senior Software Engineer Remedy IT The

Netherlands With a large C code base we rely on ACE to enable a cross platform client server framework for data quality and data integration ACE has improved our design and smoothed over OS idiosyncrasies without sacrificing performance or flexibility The combination of online reference materials and printed big picture guides is indispensable for us and The ACE Programmer s Guide earns top shelf status in my office John Lilley Chief Scientist DataLever Corporation In SITA air ground division we are one of the major suppliers of communication services to the airline industry We started using ACE about a year ago and are now moving most of our new communication related development to it I can say that using this toolkit can reduce the development and testing time by at least 50% in our type of application Jean Millo Senior Architect SITA The ADAPTIVE Communication Environment ACE is an open source software toolkit created to solve network programming challenges Written in C with the help of 30 core developers and 1 700 contributors this portable middleware has evolved to encapsulate and augment a wide range of native OS capabilities essential to support performance driven software systems The ACE Programmer s Guide is a practical hands on guide to ACE for C programmers building networked applications and next generation middleware The book first introduces ACE to beginners It then explains how you can tap design patterns frameworks and ACE to produce effective easily maintained software systems with less time and effort The book features discussions of programming aids inches *Mastering Complexity with ACE and Patters* ,2002

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