Exceptional C 47 Engineering Puzzles Programming Problems And Solutions

Finally, a great introduction to ANCI C++ for working programmers! Lippmann--who worked under the leadership of Bjarne Stroustrup, wrote the classic "C++ Primer", and now works as a C++ programmer at DreamWorks--teaches programmers exactly what they need to know to get immediate results. From start to finish, each concept and technique is presented through real programs designed to solve the problems C++ programmers are most likely to encounter.

This document constitutes a detailed set of lecture slides on the C++ programming language and is current with the C++14 standard. Many aspects of the language are covered from introductory to more advanced. This material includes: language basics (objects, types, values, operators, expressions, control-flow constructs, functions, and namespaces), classes, templates (function, class, alias, and variable templates; template specialization; and variadic templates), lambda expressions, inheritance and run-time polymorphism, exceptions (exception safety, RAII, and smart pointers), rvalue references (move semantics and perfect forwarding), concurrency (sequential consistency, atomic memory operations, data races; threads, mutexes, condition variables, promises and futures, atomics, and fences; happens-before and synchronizes-with relationships; and sequentially-consistent and other memory models). A number of best practices, tips, and idioms regarding the use of the language are also presented. Some aspects of the C++ standard library are covered, including: containers, iterators, and algorithms; the std::vector and std::basic_string classes; I/O streams; and time measurement. Various general programming-related topics are also presented, such as material on: good programming practices, finite-precision arithmetic, and software documentation.

Scott Meyers’s seminal C++ books– Effective C++ , More Effective C++ , and Effective STL –have been immensely helpful to hundreds of thousands of C++ programmers. All three are finally available together in this eBook collection. Effective C++ has been embraced by hundreds of thousands of programmers worldwide. The reason is clear: Scott Meyers’s practical approach to C++ describes the rules of thumb used by the experts to produce clear, correct, efficient code. The book is organized around 55 specific guidelines, each of which describes a way to write better C++. Each is backed by concrete examples. In More Effective C++, Meyers presents 35 ways to improve your programs and designs. Drawing on years of experience, Meyers explains how to write software that is more effective: more efficient, more robust, more consistent, more portable, and more reusable. In short, how to write C++ software that’s just plain better. In Effective STL, Meyers goes beyond describing what's in the STL to show you how to use it. Each of the book’s 50 guidelines is backed by Meyers’s legendary analysis and incisive examples, so you’ll learn not only what to do, but also when to do it–and why. Together in this collection, these books include the following important features: Expert guidance on the design of effective classes, functions, templates, and inheritance hierarchies. Applications of new “TR1” standard library functionality, along with comparisons to existing standard library components. Insights into differences between C++ and other languages (e.g., Java, C#, C) that help developers from those languages assimilate “the C++ way” of doing things. Proven methods for improving program efficiency, including incisive examinations of the time/space costs of C++ language features Comprehensive descriptions of advanced techniques used by C++ experts, including placement new, virtual constructors, smart pointers, reference counting, proxy classes, and double-dispatching Examples of the profound impact of exception handling on the structure and behavior of C++ classes and functions Practical treatments of new language features, including bool, mutable, explicit, namespaces, member templates, the Standard Template Library, and more. If your compilers don’t yet support these features, Meyers shows you how to get the job done without them. Advice on choosing among standard STL containers (like vector and list), nonstandard STL containers (like hash_set and hash_map), and non-STL containers (like bitset). Techniques to maximize the efficiency of the STL and the programs that use it. Insights into the behavior of iterators, function objects, and allocators, including things you should not do. Guidance for the proper use of algorithms and member functions whose names are the same (e.g., find), but whose actions differ in subtle (but important) ways. Discussions of potential portability problems, including straightforward ways to avoid them.

Features the best practices in the art and science of constructing software--topics include design, applying good techniques to construction, eliminating errors, planning, managing construction activities, and relating personal character to superior software. Original. (Intermediate)

Summary This bestseller has been updated and revised to cover all the latest changes to C++ 14 and 17! C++ Concurrency in Action, Second Edition teaches you everything you need to write robust and elegant multithreaded applications in C++17. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology You choose C++ when your applications need to run fast. Well-designed concurrency makes them go even faster. C++ 17 delivers strong support for the multithreaded, multiprocessor programming required for fast graphic processing, machine learning, and other performance-sensitive tasks. This exceptional book unpacks the features, patterns, and best practices of production-grade C++ concurrency. About the Book C++ Concurrency in Action, Second Edition is the definitive guide to writing elegant multithreaded applications in C++. Updated for C++ 17, it carefully addresses every aspect of concurrent development, from starting new threads to designing fully functional multithreaded algorithms and data structures. Concurrency master Anthony Williams presents examples and practical tasks in every chapter, including insights that will delight even the most experienced developer. What's inside Full coverage of new C++ 17 features Starting and managing threads Synchronizing concurrent operations Designing concurrent code Debugging multithreaded applications About the Reader Written for intermediate C and C++ developers. No prior experience with concurrency required. About the Author Anthony Williams has been an active member of the BSI C++ Panel since 2001 and is the developer of the just::thread Pro extensions to the C++ 11 thread library. Table of Contents Hello, world of concurrency in C++! Managing threads Sharing data between threads Synchronizing concurrent operations The C++ memory model and operations on atomic types Designing lock-based concurrent data structures Designing lock-free concurrent data structures Designing concurrent code Advanced thread management Parallel algorithms Testing and debugging multithreaded applications

A gleeful and exhilarating tale of global conspiracy, complex code-breaking, high-tech data visualization, young love, rollicking adventure, and the secret to eternal life—mostly set in a hole-in-the-wall San Francisco bookstore The Great Recession has shuffled Clay Jannon out of his life as a San Francisco Web-design drone—and serendipity, sheer curiosity, and the ability to climb a ladder like a monkey has landed him a new gig working the night shift at Mr. Penumbra's 24-Hour Bookstore. But after just a few days on the job, Clay begins to realize that this store is even more curious than the name suggests. There are only a few customers, but they come in repeatedly and never seem to actually buy anything, instead "checking out" impossibly obscure volumes from strange corners of the store, all according to some elaborate, long-standing arrangement with the gnomic Mr. Penumbra. The store must be a front for something larger, Clay concludes, and soon he's embarked on a complex analysis of the customers' behavior and roped his friends into helping to figure out just what's going on. But once they bring their findings to Mr. Penumbra, it turns out the secrets extend far outside the walls of the bookstore. With irresistible brio and dazzling intelligence, Robin Sloan has crafted a literary adventure story for the twenty-first century, evoking both the fairy-tale charm of Haruki Murakami and the enthusiastic novel-of-ideas wizardry of Neal Stephenson or a young Umberto Eco, but with a unique and feisty sensibility that's rare to the world of literary fiction. Mr. Penumbra's 24-Hour Bookstore is exactly what it sounds like: an establishment you have to enter and will never want to leave, a modern-day cabinet of wonders ready to give a jolt of energy to every curious reader, no matter the time of day.

More Exceptional C++ continues where Herb Sutter's best-selling Exceptional C++ left off, delivering 40 puzzles that illuminate the most challenging -- and most powerful -- aspects of C++. More Exceptional C++ offers many new puzzles focused on generic programming and

the C++ Standard Template Library, including important techniques such as traits and predicates, as well as key considerations in using standard containers and algorithms -- many of them never covered elsewhere. More Exceptional C++ contains a detailed new section (and two appendices) on optimization in single- and multithreaded environments. It also provides important new insights on crucial topics first introduced in Exceptional C++, including exception safety, generic programming, and memory management. For all C++ programmers.
Principles of Quantitative Development is a practical guide to designing, building and deploying a trading platform. It is also a lucid and succinct exposé on the trade life cycle and the business groups involved in managing it, bringing together the big picture of how a trade flows through the systems, and the role of a quantitative professional in the organization. The book begins by looking at the need and demand for in-house trading platforms, addressing the current trends in the industry. It then looks at the trade life cycle and its participants, from beginning to end, and then the functions within the front, middle and back office, giving the reader a full understanding and appreciation of the perspectives and needs of each function. The book then moves on to platform design, addressing all the fundamentals of platform design, system architecture, programming languages and choices. Finally, the book focuses on some of the more technical aspects of platform design and looks at traditional and new languages and approaches used in modern quantitative development. The book is accompanied by a CD-ROM, featuring a fully working option pricing tool with source code and project building instructions, illustrating the design principles discussed, and enabling the reader to develop a mini-trading platform. The book is also accompanied by a website http://pqd.thulasidas.com that contains updates and companion materials.
Accelerated C# 3.0 is the fastest path to C# mastery. All C# programmers need to know and understand how C# really works but very few books address this. No other book covers the subject in the depth that this one does. It teaches both core C# language concepts and how to use them in high-performance code. All programmers moving to C# from any language or moving up to C# 3.0 from C# 2005 will find this book well worth buying, reading, and using as a reference.
“This is Effective C++ volume three – it’s really that good.” – Herb Sutter, independent consultant and secretary of the ISO/ANSI C++ standards committee “There are very few books which all C++ programmers must have. Add Effective STL to that list.” – Thomas Becker, Senior Software Engineer, Zephyr Associates, Inc., and columnist, C/C++ Users Journal C++’s Standard Template Library is revolutionary, but learning to use it well has always been a challenge. Until now. In this book, best-selling author Scott Meyers (Effective C++ , and More Effective C++) reveals the critical rules of thumb employed by the experts – the things they almost always do or almost always avoid doing – to get the most out of the library. Other books describe what’s in the STL. Effective STL shows you how to use it. Each of the book’s 50 guidelines is backed by Meyers’ legendary analysis and incisive examples, so you’ll learn not only what to do, but also when to do it – and why. Highlights of Effective STL include: Advice on choosing among standard STL containers (like vector and list), nonstandard STL containers (like hash_set and hash_map), and non-STL containers (like bitset). Techniques to maximize the efficiency of the STL and the programs that use it. Insights into the behavior of iterators, function objects, and allocators, including things you should not do. Guidance for the proper use of algorithms and member functions whose names are the same (e.g., find), but whose actions differ in subtle (but important) ways. Discussions of potential portability problems, including straightforward ways to avoid them. Like Meyers’ previous books, Effective STL is filled with proven wisdom that comes only from experience. Its clear, concise, penetrating style makes it an essential resource for every STL programmer.
Software "style" is about finding the perfect balance between overhead and functionality... elegance and maintainability... flexibility and excess. In Exceptional C++ Style , legendary C++ guru Herb Sutter presents 40 new programming scenarios designed to analyze not only the what but the why and help you find just the right balance in your software. Organized around practical problems and solutions, this book offers new insight into crucial C++ details and interrelationships, and new strategies for today's key C++ programming techniques--including generic programming, STL, exception safety, and more. You'll find answers to questions like: What can you learn about library design from the STL itself? How do you avoid making templated code needlessly non-generic? Why shouldn't you specialize function templates? What should you do instead? How does exception safety go beyond try and catch statements? Should you use exception specifications, or not? When and how should you "leak" the private parts of a class? How do you make classes safer for versioning? What's the real memory cost of using standard containers? How can using const really optimize your code? How does writing inline affect performance? When does code that looks wrong actually compile and run perfectly, and why should you care? What's wrong with the design of std::string? Exceptional C++ Style will help you design, architect, and code with style--and achieve greater robustness and performance in all your C++ software.
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.
Organized in a practical problem-and-solution format, More Exceptional C++ picks up where the widely acclaimed Exceptional C++ leaves off, providing successful strategies for solving real-world problems in C++. Drawing from years of in-the-trenches experience, Herb Sutter provides tested techniques and practical solutions for programmers designing modern software systems with C++, from small projects to enterprise applications. Built around forty programming puzzles, More Exceptional C++ helps you understand the rules and issues critical to successful software design and development in C++. New themes included in this sequel place a strong emphasis on generic programming, memory management, and using the C++ standard library, including coverage of important techniques like traits and predicates. Also included are guidelines and considerations to remember when using standard containers and algorithms--topics rarely covered in-depth in other sources. Readers will find solutions to such

important questions as: What pitfalls might you encounter when using std::map and std::set, and how can you safely avoid them? What kinds of predicates are safe to use with the STL, what kinds aren't, and why? What techniques are available for writing powerful generic template code that can change its own behavior based on the capabilities of the types it's given to work with? When and how should you optimize your code? Why can (and do) fancy optimizations get us into trouble? And how can some of these answers change if you're writing multithread-safe code? Does exception safety affect class design, or can it be retrofitted in as an afterthought? How can you avoid the Siamese Twin problem when combining inheritance-based libraries from different vendors? How can you safely use auto_ptr, and then use common design patterns to adapt it to avoid common pitfalls? Can you use auto_ptr as a class member? What must you know before you elect to use it that way? Plus one of the most frequently recurring questions about modern C++: When and how should you use namespaces, anyway? A must-have for the serious programmer, More Exceptional C++ provides a thorough and pragmatic understanding of the language while showing you how to write exceptional code in C++. 020170434XB11092001.

Are you preparing for a programming interview? Would you like to work at one of the Internet giants, such as Google, Facebook, Amazon, Apple, Microsoft or Netflix? Are you looking for a software engineer position? Are you studying computer science or programming? Would you like to improve your programming skills? If the answer to any of these questions is yes, this book is for you! The book contains very detailed answers and explanations for the most common dynamic programming problems asked in programming interviews. The solutions consist of cleanly written code, with plenty of comments, accompanied by verbal explanations, hundreds of drawings, diagrams and detailed examples, to help you get a good understanding of even the toughest problems. The goal is for you to learn the patterns and principles needed to solve even dynamic programming problems that you have never seen before. Here is what you will get: A 180-page book presenting dynamic programming problems that are often asked in interviews. Multiple solutions for each problem, starting from simple but naive answers that are gradually improved until reaching the optimal solution. Plenty of detailed examples and walkthroughs, so that you can see right away how the solution works. 350+ drawings and diagrams which cater towards visual learners. Clear and detailed verbal explanations of how to approach the problems and how the code works. Analysis of time and space complexity. Discussion of other variants of the same problem, with solutions. Unit tests, including the reasoning behind choosing each one (edge case identification, performance evaluation etc.). Suggestions regarding what clarification questions you should ask, for each problem. Multiple solutions to the problems, where appropriate. General Python implementation tips. Wishing you the best of luck with your interviews!

The Boost Graph Library (BGL) is the first C++ library to apply the principles of generic programming to the construction of the advanced data structures and algorithms used in graph computations. Problems in such diverse areas as Internet packet routing, molecular biology, scientific computing, and telephone network design can be solved by using graph theory. This book presents an in-depth description of the BGL and provides working examples designed to illustrate the application of BGL to these real-world problems. Written by the BGL developers, The Boost Graph Library: User Guide and Reference Manual gives you all the information you need to take advantage of this powerful new library. Part I is a complete user guide that begins by introducing graph concepts, terminology, and generic graph algorithms. This guide also takes the reader on a tour through the major features of the BGL; all motivated with example problems. Part II is a comprehensive reference manual that provides complete documentation of all BGL concepts, algorithms, and classes. Readers will find coverage of: Graph terminology and concepts Generic programming techniques in C++ Shortest-path algorithms for Internet routing Network planning problems using the minimum-spanning tree algorithms BGL algorithms with implicitly defined graphs BGL Interfaces to other graph libraries BGL concepts and algorithms BGL classes–graph, auxiliary, and adaptor Groundbreaking in its scope, this book offers the key to unlocking the power of the BGL for the C++ programmer looking to extend the reach of generic programming beyond the Standard Template Library.

Modern C++ Design, Andrei Alexandrescu opens new vistas for C++ programmers. Displaying extraordinary creativity and programming virtuosity, Alexandrescu offers a cutting-edge approach to design that unites design patterns, generic programming, and C++, enabling programmers to achieve expressive, flexible, and highly reusable code. This book introduces the concept of generic components–reusable design templates that produce boilerplate code for compiler consumption–all within C++. Generic components enable an easier and more seamless transition from design to application code, generate code that better expresses the original design intention, and support the reuse of design structures with minimal recoding. The author describes the specific C++ techniques and features that are used in building generic components and goes on to implement industrial strength generic components for real-world applications. Recurring issues that C++ developers face in their day-to-day activity are discussed in depth and implemented in a generic way. These include: Policy-based design for flexibility Partial template specialization Typelists–powerful type manipulation structures Patterns such as Visitor, Singleton, Command, and Factories Multi-method engines For each generic component, the book presents the fundamental problems and design options, and finally implements a generic solution. In addition, an accompanying Web site, http://www.awl.com/cseng/titles/0-201-70431-5, makes the code implementations available for the generic components in the book and provides a free, downloadable C++ library, called Loki, created by the author. Loki provides out-of-the-box functionality for virtually any C++ project. Get a value-added service! Try out all the examples from this book at www.codesaw.com. CodeSaw is a free online learning tool that allows you to experiment with live code from your book right in your browser.

This book provides the fastest path to VB expertise for programmers transitioning to VB from another object-oriented language. It quickly brings experienced Java, C#, and C++ programmers to a high level of proficiency in VB. It also provides in-depth advice on the wise use of VB to exploit the power of the .NET Common Language Runtime (CLR). Coverage carefully describes how VB works, discusses the most important issues for professional VB coding, and demonstrates with precise examples how to design and code effective VB programs. Its succinctness and clarity make it appropriate for anyone familiar with any object-oriented language.

Exceptional C++ , incorporated with the latest standard in C++ programming,shows by example how to go about sound software engineering in standard C++. Do you enjoy solving thorny C++ problems and puzzles? Do you relish writing robust and extensible code? Then take a few minutes and challenge yourself with some tough C++ design and programming problems. The puzzles and problems in Exceptional C++ not only entertain, they will help you hone your skills to become the sharpest C++ programmer you can be. Many of these problems are culled from the famous Guru of the Week feature of the Internet newsgroup comp.lang.c++.moderated, expanded and updated to conform to the official ISO/ANSI C++ Standard. Each problem is rated according to difficulty and is designed to illustrate subtle programming mistakes or design considerations. After you've had a chance to attempt a solution yourself, the book then dissects the code, illustrates what went wrong, and shows how the problem can be fixed. Covering a broad range of C++ topics, the problems and solutions address critical issues such as:

Generic programming and how to write reusable templates Exception safety issues and techniques Robust class design and inheritance Compiler firewalls and the Pimpl Idiom Name lookup, namespaces, and the Interface Principle Memory management issues and techniques Traps, pitfalls, and anti-idioms Optimization Try your skills against the C++ masters and come away with the insight and experience to create more efficient, effective, robust, and portable C++ code.

This book provides the fastest path to C# mastery for programmers transitioning from another object-oriented language. Any C# programmer, at any experience level, will find it enlightening. It describes how C# works in thorough detail, discusses the most important issues for expert C# coding, and demonstrates with short and precise examples how to design and code effective C# programs. Its succinctness and clarity make it appropriate for anyone familiar with any object-oriented language; its depth will impress even expert programmers. Readers will rapidly become expert in C# by learning how to do things the right way, right from the start.

The overwhelming majority of bugs and crashes in computer programming stem from problems of memory access, allocation, or deallocation. Such memory related errors are also notoriously difficult to debug. Yet the role that memory plays in C and C++ programming is a subject often overlooked in courses and in books because it requires specialised knowledge of operating systems, compilers, computer architecture in addition to a familiarity with the languages themselves. Most professional programmers learn entirely through experience of the trouble it causes. This 2004 book provides students and professional programmers with a concise yet comprehensive view of the role memory plays in all aspects of programming and program behaviour. Assuming only a basic familiarity with C or C++, the author describes the techniques, methods, and tools available to deal with the problems related to memory and its effective use.

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.

NEW YORK TIMES BESTSELLER • This instant classic explores how we can change our lives by changing our habits. NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The Wall Street Journal • Financial Times In The Power of Habit, award-winning business reporter Charles Duhigg takes us to the thrilling edge of scientific discoveries that explain why habits exist and how they can be changed. Distilling vast amounts of information into engrossing narratives that take us from the boardrooms of Procter & Gamble to the sidelines of the NFL to the front lines of the civil rights movement, Duhigg presents a whole new understanding of human nature and its potential. At its core, The Power of Habit contains an exhilarating argument: The key to exercising regularly, losing weight, being more productive, and achieving success is understanding how habits work. As Duhigg shows, by harnessing this new science, we can transform our businesses, our communities, and our lives. With a new Afterword by the author “Sharp, provocative, and useful.”—Jim Collins “Few [books] become essential manuals for business and living. The Power of Habit is an exception. Charles Duhigg not only explains how habits are formed but how to kick bad ones and hang on to the good.”—Financial Times “A flat-out great read.”—David Allen, bestselling author of Getting Things Done: The Art of Stress-Free Productivity “You’ll never look at yourself, your organization, or your world quite the same way.”—Daniel H. Pink, bestselling author of Drive and A Whole New Mind “Entertaining . . . enjoyable . . . fascinating . . . a serious look at the science of habit formation and change.”—The New York Times Book Review

This document, which consists of approximately 2500 lecture slides, offers a wealth of information on many topics relevant to programming in C++, including coverage of the C++ language itself, the C++ standard library and a variety of other libraries, numerous software tools, and an assortment of other programming-related topics. The coverage of the C++ language and standard library is current with the C++17 standard. This document, which consists of approximately 2500 lecture slides, offers a wealth of information on many topics relevant to programming in C++, including coverage of the C++ language itself, the C++ standard library and a variety of other libraries, numerous software tools, and an assortment of other programming-related topics. The coverage of the C++ language and standard library is current with the C++17 standard. C++ PROGRAMMING LANGUAGE. Many aspects of the C++ language are covered from introductory to more advanced. This material includes: the preprocessor, language basics (objects, types, values, operators, expressions, control-flow constructs, functions, and namespaces), classes, templates (function, class, variable, and alias templates, variadic templates, template specialization, and SFINAE), lambda expressions, inheritance (run-time polymorphism and CRTP), exceptions (exception safety and RAII), smart pointers, memory management (new and delete operators and expressions, placement new, and allocators), rvalue references (move semantics and perfect forwarding), concurrency (memory models, and happens-before and synchronizes-with relationships), compile-time computation, and various other topics (e.g., copy elision and initialization). C++ STANDARD LIBRARY AND VARIOUS OTHER LIBRARIES. Various aspects of the C++ standard library are covered including: containers, iterators, algorithms, I/O streams, time measurement, and concurrency support (threads, mutexes, condition variables, promises and futures, atomics, and fences). A number of Boost libraries are discussed, including the Intrusive, Iterator, and Container libraries. The OpenGL library and GLSL are discussed at length, along with several related libraries, including: GLFW, GLUT, and GLM. The CGAL library is also discussed in some detail. SOFTWARE TOOLS. A variety of software tools are discussed, including: static analysis tools (e.g., Clang Tidy and Clang Static Analyzer), code sanitizers (e.g., ASan, LSan, MSan, TSan, and UBSan), debugging and testing tools (e.g., Valgrind, LLVM XRay, and Catch2), performance analysis tools (e.g., Perf, PAPI, Gprof, and Valgrind/Callgrind), build tools (e.g., CMake and Make), version control systems (e.g., Git), code coverage analysis tools (e.g., Gcov, LLVM Cov, and Lcov), online C++ compilers (e.g., Compiler Explorer and C++ Insights), and code completion tools (e.g., YouCompleteMe, and LSP clients/servers).

An Introduction to Programming by the Inventor of C++ Preparation for Programming in the Real World The book assumes that you aim eventually to write non-trivial programs, whether for work in software development or in some other technical field. Focus on Fundamental Concepts and Techniques The book explains fundamental concepts and techniques in greater depth than traditional introductions. This approach will give you a solid foundation for writing useful, correct, maintainable, and efficient code. Programming with Today's C++ (C++11 and C++14) The book is an introduction to programming in general, including object-oriented programming and generic programming. It is also a

solid introduction to the C++ programming language, one of the most widely used languages for real-world software. The book presents modern C++ programming techniques from the start, introducing the C++ standard library and C++11 and C++14 features to simplify programming tasks. For Beginners--And Anyone Who Wants to Learn Something New The book is primarily designed for people who have never programmed before, and it has been tested with many thousands of first-year university students. It has also been extensively used for self-study. Also, practitioners and advanced students have gained new insight and guidance by seeing how a master approaches the elements of his art. Provides a Broad View The first half of the book covers a wide range of essential concepts, design and programming techniques, language features, and libraries. Those will enable you to write programs involving input, output, computation, and simple graphics. The second half explores more specialized topics (such as text processing, testing, and the C programming language) and provides abundant reference material. Source code and support supplements are available from the author's website.

Decades of research have demonstrated that the parent-child dyad and the environment of the familyâ€"which includes all primary caregiversâ€"are at the foundation of children's well- being and healthy development. From birth, children are learning and rely on parents and the other caregivers in their lives to protect and care for them. The impact of parents may never be greater than during the earliest years of life, when a child's brain is rapidly developing and when nearly all of her or his experiences are created and shaped by parents and the family environment. Parents help children build and refine their knowledge and skills, charting a trajectory for their health and well-being during childhood and beyond. The experience of parenting also impacts parents themselves. For instance, parenting can enrich and give focus to parents' lives; generate stress or calm; and create any number of emotions, including feelings of happiness, sadness, fulfillment, and anger. Parenting of young children today takes place in the context of significant ongoing developments. These include: a rapidly growing body of science on early childhood, increases in funding for programs and services for families, changing demographics of the U.S. population, and greater diversity of family structure. Additionally, parenting is increasingly being shaped by technology and increased access to information about parenting. Parenting Matters identifies parenting knowledge, attitudes, and practices associated with positive developmental outcomes in children ages 0-8; universal/preventive and targeted strategies used in a variety of settings that have been effective with parents of young children and that support the identified knowledge, attitudes, and practices; and barriers to and facilitators for parents' use of practices that lead to healthy child outcomes as well as their participation in effective programs and services. This report makes recommendations directed at an array of stakeholders, for promoting the wide-scale adoption of effective programs and services for parents and on areas that warrant further research to inform policy and practice. It is meant to serve as a roadmap for the future of parenting policy, research, and practice in the United States.

Exceptional C++47 Engineering Puzzles, Programming Problems, and SolutionsAddison-Wesley Professional

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 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.

0672324806.ld The definitive guide to the latest version of Borlands powerful C++Builder. Provides complete coverage of C++Builder Web Services development, now a key component of C++Builder. Borland C++Builder remains best in class IDE over the past 5 years for C++ solutions. Written by a team of top C++Builder experts with expertise in a variety of technical areas related to C++ application development. C++Builder 6 Developers Guide is revised for the latest version of C++Builder, the biggest update to C++Builder in years. C++Builder is an ANSI C++ IDE. The version 6 adds BizShape, a tool to build Web Services using XML/SOAP, .NET, and BizTalk from Microsoft, and SunONE from Sun Microsystems. Other new components include WebSnap for Web application development, DataSnap for database development, and CLX, which allows cross-platform development for Unix and Linux. The new NetCLX Internet components allow development of cross-platform applications with Apache, Microsoft IIS, and Netscape Web Server applications. C++Builder 6 Developers Guide continues as the definitive guide for Borlands C++Builder, providing a clear and concise reference for C++ developers. C++Builder Developers Guide is a unique combination of over 35 C++Builder experts from around the globe. This team brings hundreds of thousands of working hours in professional software development to the creation of this extensive work. Leading the team are Jarrod Hollingworth, Bob Swart, Mark Cashman. and Paul Gustavson. Jarrod is running Backslash (http://www.backslash.com;au), loping software applications for the Internet and key business sectors and working as a software development consultant. Bob (aka. Dr.Bob) is an internationally recognized UK Borland Connections member and an independent technical author, trainer, and consultant using C++Builder, Kylix, and Delphi based in The Netherlands. Mark Cashman is an independent C++ developer in the U.S.

Paul Gustavson lives in Virginia and is a senior systems engineer for Synetics, Inc., a U.S.-based company providing knowledge management, systems engineering, and enterprise management services.

Advanced Metaprogramming in Classic C++ aims to be both an introduction and a reference to C++ template metaprogramming (TMP); TMP is presented in the book as a set of techniques that will bring a new style in C++ and make code exceptionally clear and efficient. The book deals with language aspects, design patterns, examples and applications (seen as case studies). Special emphasis is put on small reusable techniques that will improve the quality of daily work. What makes the book exceptional is the level of understanding of the concepts involved imparted by the author. This is not just a rote overview of metaprogramming. You will truly understand difficult topics like static assertions, how to write metafunctions, overload resolution, lambda expressions, and many others. More than that, you will work through them with practical examples guided by the author's frank explanations. This book requires you to think and to learn and to understand the language so that you can program at a higher level.

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.

This document, which consists of approximately 2900 lecture slides, offers a wealth of information on many topics relevant to programming in C++, including coverage of the C++ language itself, the C++ standard library and a variety of other libraries, numerous software tools, and an assortment of other programming-related topics. The coverage of the C++ language and standard library is current with the C++20 standard. C++ PROGRAMMING LANGUAGE. Many aspects of the C++ language are covered from introductory to more advanced. This material includes: the preprocessor, language basics (objects, types, values, operators, expressions, control-flow constructs, functions, namespaces, and comparison), classes, templates (function, class, variable, and alias templates, variadic templates, template specialization, and SFINAE), concepts, lambda expressions, inheritance (run-time polymorphism and CRTP), exceptions (exception safety and RAII), smart pointers, memory management (new and delete operators and expressions, placement new, and allocators), rvalue references (move semantics and perfect forwarding), coroutines, concurrency (memory models, and happens-before and synchronizes-with relationships), modules, compile-time computation, and various other topics (e.g., copy elision and initialization). C++ STANDARD LIBRARY AND VARIOUS OTHER LIBRARIES. Various aspects of the C++ standard library are covered including: containers, iterators, algorithms, ranges, I/O streams, time measurement, and concurrency support (threads, mutexes, condition variables, promises and futures, atomics, and fences). A number of Boost libraries are discussed, including the Intrusive, Iterator, and Container libraries. The OpenGL library and GLSL are discussed at length, along with several related libraries, including: GLFW, GLUT, and GLM. The CGAL library is also discussed in some detail. SOFTWARE TOOLS. A variety of software tools are discussed, including: static analysis tools (e.g., Clang Tidy and Clang Static Analyzer), code sanitizers (e.g., ASan, LSan, MSan, TSan, and UBSan), debugging and testing tools (e.g., Valgrind, LLVM XRay, and Catch2), performance analysis tools (e.g., Perf, PAPI, Gprof, and Valgrind/Callgrind), build tools (e.g., CMake and Make), version control systems (e.g., Git), code coverage analysis tools (e.g., Gcov, LLVM Cov, and Lcov), online C++ compilers (e.g., Compiler Explorer and C++ Insights), and code completion tools (e.g., YouCompleteMe, and LSP clients/servers). OTHER TOPICS. An assortment of other programming-related topics are also covered, including: data structures, algorithms, computer arithmetic (e.g., floating-point arithmetic and interval arithmetic), cache-efficient algorithms, vectorization, good programming practices, software documentation, software testing (e.g., static and dynamic testing, and structural coverage analysis), and compilers and linkers (e.g., Itanium C++ ABI).

This is an insightful guide to efficient, practical solutions to real-world C++ problems. Concrete case studies run throughput the book and show how to develop quality C++ software.

Bjarne Stroustrup's own C++ In-Depth Series is now available all together in one attractive gift box, at a special reduced price! All books in this series have been hand-picked by Bjarne Stroustrup, the creator of the C++ programming language, as being worthy additions to the C++ literature. They give programmers concise, focused guides to specific topics. The series' practical approach is designed to lift professionals to the next level in their programming skills. They are all written by acknowledged experts. The books included are: Modern C++ Design, by Andrei Alexandrescu Accelerated C++, by Andrew Koenig and Barbara Moo Essential C++, by Stan Lippman Exceptional C++, by Herb Sutter More Exceptional C++, by Herb Sutter These are five great books of use to all C++ programmers. They are gathered into one handsome and sturdy gift box, and they are specially priced at over $30 off the cost of buying them individually. The C++ In-Depth Box Set will be a welcome gift for any C++ programmer. 0201775816B12112002

Children are already learning at birth, and they develop and learn at a rapid pace in their early years. This provides a critical foundation for lifelong progress, and the adults who provide for the care and the education of young children bear a great responsibility for their health, development, and learning. Despite the fact that they share the same objective - to nurture young children and secure their future success - the various practitioners who contribute to the care and the education of children from birth through age 8 are not acknowledged as a workforce unified by the common knowledge

and competencies needed to do their jobs well. Transforming the Workforce for Children Birth Through Age 8 explores the science of child development, particularly looking at implications for the professionals who work with children. This report examines the current capacities and practices of the workforce, the settings in which they work, the policies and infrastructure that set qualifications and provide professional learning, and the government agencies and other funders who support and oversee these systems. This book then makes recommendations to improve the quality of professional practice and the practice environment for care and education professionals. These detailed recommendations create a blueprint for action that builds on a unifying foundation of child development and early learning, shared knowledge and competencies for care and education professionals, and principles for effective professional learning. Young children thrive and learn best when they have secure, positive relationships with adults who are knowledgeable about how to support their development and learning and are responsive to their individual progress. Transforming the Workforce for Children Birth Through Age 8 offers guidance on system changes to improve the quality of professional practice, specific actions to improve professional learning systems and workforce development, and research to continue to build the knowledge base in ways that will directly advance and inform future actions. The recommendations of this book provide an opportunity to improve the quality of the care and the education that children receive, and ultimately improve outcomes for children.

This book teaches you all necessary (problem-independent) tools and techniques needed to implement and perform sophisticated scientific numerical simulations. Thus, it is suited for undergraduate and graduate students who want to become experts in computer simulations in Physics, Chemistry, Biology, Engineering, Computer Science and other fields.

C++ Template Metaprogramming sheds light on the most powerful idioms of today's C++, at long last delivering practical metaprogramming tools and techniques into the hands of the everyday programmer. A metaprogram is a program that generates or manipulates program code. Ever since generic programming was introduced to C++, programmers have discovered myriad "template tricks" for manipulating programs as they are compiled, effectively eliminating the barrier between program and metaprogram. While excitement among C++ experts about these capabilities has reached the community at large, their practical application remains out of reach for most programmers. This book explains what metaprogramming is and how it is best used. It provides the foundation you'll need to use the template metaprogramming effectively in your own work. 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. Note: CD materials are only available with the print edition.

This document, which consists of over 2000 lecture slides, offers a wealth of information on many topics relevant to programming in C++, including coverage of the C++ language itself, the C++ standard library and a variety of other libraries, numerous software tools, and an assortment of other programming-related topics. The coverage of the C++ language and standard library is current with the C++17 standard. C++ PROGRAMMING LANGUAGE. Many aspects of the C++ language are covered from introductory to more advanced. This material includes: the preprocessor, language basics (objects, types, values, operators, expressions, control-flow constructs, functions, and namespaces), classes, templates (function, class, variable, and alias templates, variadic templates, template specialization, and SFINAE), lambda expressions, inheritance (run-time polymorphism and CRTP), exceptions (exception safety and RAII), smart pointers, memory management (new and delete operators and expressions, placement new, and allocators), rvalue references (move semantics and perfect forwarding), concurrency (memory models, and happens-before and synchronizes-with relationships). C++ STANDARD LIBRARY AND VARIOUS OTHER LIBRARIES. Various aspects of the C++ standard library are covered including: containers, iterators, algorithms, I/O streams, time measurement, and concurrency support (threads, mutexes, condition variables, promises and futures, atomics, and fences). A number of Boost libraries are discussed, including the Intrusive, Iterator, and Container libraries. The OpenGL library and GLSL are discussed at length, along with several related libraries, including: GLFW, GLUT, and GLM. The CGAL library is also discussed in some detail. SOFTWARE TOOLS. A variety of software tools are discussed, including: static analysis tools (e.g., Clang Tidy), code sanitizers (e.g., ASan, UBSan, and TSan), debugging and testing tools (e.g., Catch2), performance analysis tools (e.g., Perf, PAPI, Gprof, and Valgrind/Callgrind), build tools (e.g., CMake and Make), and version control systems (e.g., Git). OTHER TOPICS. An assortment of other programming-related topics are also covered, including: data structures, algorithms, computer arithmetic (e.g., floating-point arithmetic and interval arithmetic), cache-efficient algorithms, vectorization, good programming practices, and software documentation.

This book presents a large collection of exercises for learning to program in C++. A study plan for learning C++ based on a collection of video lectures and supplemental reading is also provided.

The puzzles and problems in Exceptional C++ not only entertain, they will help you hone your skills to become the sharpest C++ programmer you can be. Many of these problems are culled from the famous Guru of the Week feature of the Internet newsgroup comp.lang.c++, moderated, expanded and updated to conform to the official ISO/ANSI C++ Standard. Try your skills against the C++ masters and come away with the insight and experience to create more efficient, effective, robust, and portable C++ code.