

## **Clean C Sustainable Software Development Patterns And Best Practices With C 17**

Python is currently used in many different areas. In all of these areas, experienced professionals can find examples of inefficiency, problems, and other perils, as a result of bad code. After reading this book, readers will understand these problems, and more importantly, understand how to correct them. Today, software engineers need to know not only how to program effectively but also how to develop proper engineering practices to make their codebase sustainable and healthy. This book emphasizes this difference between programming and software engineering. How can software engineers manage a living codebase that evolves and responds to changing requirements and demands over the length of its life? Based on their experience at Google, software engineers Titus Winters and Hyrum Wright, along with technical writer Tom Manshreck, present a candid and insightful look at how some of the world's leading practitioners construct and maintain software. This book covers Google's unique engineering culture, processes, and tools and how these aspects contribute to the effectiveness of an engineering organization. You'll explore three fundamental principles that software organizations

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should keep in mind when designing, architecting, writing, and maintaining code: How time affects the sustainability of software and how to make your code resilient over time How scale affects the viability of software practices within an engineering organization What trade-offs a typical engineer needs to make when evaluating design and development decisions

The latest title in Addison Wesley's world-renowned Robert C. Martin Series on better software development, *Code That Fits in Your Head* offers indispensable practical advice for writing code at a sustainable pace, and controlling the complexity that causes too many software projects to spin out of control. Reflecting decades of experience consulting on software projects and helping development teams succeed, Mark Seemann shares proven practices and heuristics, supported by realistic advice. His guidance ranges from checklists to teamwork, encapsulation to decomposition, API design to unit testing and troubleshooting. Throughout, Seemann illuminates his insights with up-to-date code examples drawn from a start to finish sample project. Seemann's examples are written in C#, and designed to be clear and useful to every object-oriented enterprise developer, whether they use C#, Java, or another language. *Code That Fits in Your Head* is accompanied by the complete code base for this sample application, organized in a Git repository

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to facilitate further exploration of details that don't fit in the text.

Learn how to program using the updated C++17 language. You'll start with the basics and progress through step-by-step examples to become a working C++ programmer. All you need are *Beginning C++17* and any recent C++ compiler and you'll soon be writing real C++ programs. There is no assumption of prior programming knowledge. All language concepts that are explained in the book are illustrated with working program examples, and all chapters include exercises for you to test and practice your knowledge. Code downloads are provided for all examples from the text and solutions to the exercises. This latest edition has been fully updated to the latest version of the language, C++17, and to all conventions and best practices of so-called modern C++. *Beginning C++17* also introduces the elements of the C++ Standard Library that provide essential support for the C++17 language.

What You'll Learn

- Define variables and make decisions
- Work with arrays and loops, pointers and references, strings, and more
- Write your own functions, types, and operators
- Discover the essentials of object-oriented programming
- Use overloading, inheritance, virtual functions and polymorphism
- Write generic function templates and class templates

Get up to date with modern C++ features: auto type declarations, move semantics,

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lambda expressions, and more Examine the new additions to C++17 Who This Book Is For Programmers new to C++ and those who may be looking for a refresh primer on the C++17 programming language in general.

This volume includes papers presented at the 4th International Conference on Sustainable Design and Manufacturing (SDM-17) held in Bologna, Italy, in April 2017. The conference covered a wide range of topics from cutting-edge sustainable product design and service innovation, sustainable processes and technology for the manufacturing of sustainable products, sustainable manufacturing systems and enterprises, decision support for sustainability, and the study of the societal impact of sustainability including research for circular economy. Application areas are wide and varied, and the book provides an excellent overview of the latest research and development in the area of Sustainable Design and Manufacturing.

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and

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comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures

This volumes consists of 59 peer-reviewed papers, presented at the International Conference on Sustainable Design and Manufacturing (SDM-16) held in Chania, Crete Greece in April 2016. Leading-edge research into sustainable design and manufacturing aims to enable the manufacturing industry to grow by adopting more advanced technologies, and at the same time improve its sustainability by reducing its environmental impact. SDM-16 covers a wide range of topics from sustainable product design and service innovation,

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sustainable process and technology for the manufacturing of sustainable products, sustainable manufacturing systems and enterprises, decision support for sustainability, and the study of societal impact of sustainability including research for circular economy. Application areas are wide and varied.

The book will provide an excellent overview of the latest research and development in the area of Sustainable Design and Manufacturing.

Presents practical advice on the disciplines, techniques, tools, and practices of computer programming and how to approach software development with a sense of pride, honor, and self-respect.

Writing and running software is now as much a part of science as telescopes and test tubes, but most researchers are never taught how to do either well. As a result, it takes them longer to accomplish simple tasks than it should, and it is harder for them to share their work with others than it needs to be. This book introduces the concepts, tools, and skills that researchers need to get more done in less time and with less pain. Based on the practical experiences of its authors, who collectively have spent several decades teaching software skills to scientists, it covers everything graduate-level researchers need to automate their workflows, collaborate with colleagues, ensure that their results are trustworthy, and publish what they have built so that others can build on it. The book assumes only a basic knowledge of Python as a starting point, and shows readers how it, the Unix shell, Git, Make, and related tools can give them more time to focus on the research they actually want to do.

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Research Software Engineering with Python can be used as the main text in a one-semester course or for self-guided study. A running example shows how to organize a small research project step by step; over a hundred exercises give readers a chance to practice these skills themselves, while a glossary defining over two hundred terms will help readers find their way through the terminology. All of the material can be re-used under a Creative Commons license, and all royalties from sales of the book will be donated to The Carpentries, an organization that teaches foundational coding and data science skills to researchers worldwide.

Migrate your data to Salesforce and build low-maintenance and high-performing data integrations to get the most out of Salesforce and make it a "go-to" place for all your organization's customer information. When companies choose to roll out Salesforce, users expect it to be the place to find any and all Information related to a customer—the coveted Client 360° view. On the day you go live, users expect to see all their accounts, contacts, and historical data in the system. They also expect that data entered in other systems will be exposed in Salesforce automatically and in a timely manner. This book shows you how to migrate all your legacy data to Salesforce and then design integrations to your organization's mission-critical systems. As the Salesforce platform grows more powerful, it also grows in complexity. Whether you are migrating data to Salesforce, or integrating with Salesforce, it is important to understand how these complexities need to be reflected in your design. Developing Data Migrations and Integrations with Salesforce covers everything you need to know to migrate your data to Salesforce the right way, and how to design low-maintenance, high-performing data integrations with Salesforce. This book is written by a practicing Salesforce integration architect with dozens of Salesforce projects under

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his belt. The patterns and practices covered in this book are the results of the lessons learned during those projects. What You'll Learn Know how Salesforce's data engine is architected and why Use the Salesforce Data APIs to load and extract data Plan and execute your data migration to Salesforce Design low-maintenance, high-performing data integrations with Salesforce Understand common data integration patterns and the pros and cons of each Know real-time integration options for Salesforce Be aware of common pitfalls Build reusable transformation code covering commonly needed Salesforce transformation patterns Who This Book Is For Those tasked with migrating data to Salesforce or building ongoing data integrations with Salesforce, regardless of the ETL tool or middleware chosen; project sponsors or managers nervous about data tracks putting their projects at risk; aspiring Salesforce integration and/or migration specialists; Salesforce developers or architects looking to expand their skills and take on new challenges

Test-Driven Development (TDD) is now an established technique for delivering better software faster. TDD is based on a simple idea: Write tests for your code before you write the code itself. However, this "simple" idea takes skill and judgment to do well. Now there's a practical guide to TDD that takes you beyond the basic concepts. Drawing on a decade of experience building real-world systems, two TDD pioneers show how to let tests guide your development and "grow" software that is coherent, reliable, and maintainable. Steve Freeman and Nat Pryce describe the processes they use, the design principles they strive to achieve, and some of the tools that help them get the job done. Through an extended worked example, you'll learn how TDD works at multiple levels, using tests to drive the features and the object-oriented structure of the code, and using Mock Objects to discover and then

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describe relationships between objects. Along the way, the book systematically addresses challenges that development teams encounter with TDD—from integrating TDD into your processes to testing your most difficult features. Coverage includes Implementing TDD effectively: getting started, and maintaining your momentum throughout the project Creating cleaner, more expressive, more sustainable code Using tests to stay relentlessly focused on sustaining quality Understanding how TDD, Mock Objects, and Object-Oriented Design come together in the context of a real software development project Using Mock Objects to guide object-oriented designs Succeeding where TDD is difficult: managing complex test data, and testing persistence and concurrency

Including considerations of sustainability in universities' activities has long since become mainstream. However, there is still much to be done with regard to the full integration of sustainability thinking into science and engineering curricula. Among the problems that hinder progress in this field, the lack of sound information on how to actually implement it is prominent. Created in order to address this need, this book presents a wealth of information on innovative approaches, methods and tools that may be helpful in translating sustainability principles into practice.

Best-selling author Bill Vaughn gives practical advice that VB developers can use immediately to make their data access code faster and easier to write and understand.

Looks at the principles and clean code, includes case studies showcasing the practices of writing clean code, and contains a list of heuristics and "smells" accumulated from the process of writing clean code.

Apply modern C++17 to the implementations of classic design patterns. As well as covering traditional design patterns, this book fleshes out new patterns and approaches that will be

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useful to C++ developers. The author presents concepts as a fun investigation of how problems can be solved in different ways, along the way using varying degrees of technical sophistication and explaining different sorts of trade-offs. Design Patterns in Modern C++ also provides a technology demo for modern C++, showcasing how some of its latest features (e.g., coroutines) make difficult problems a lot easier to solve. The examples in this book are all suitable for putting into production, with only a few simplifications made in order to aid readability. What You Will Learn Apply design patterns to modern C++ programming Use creational patterns of builder, factories, prototype and singleton Implement structural patterns such as adapter, bridge, decorator, facade and more Work with the behavioral patterns such as chain of responsibility, command, iterator, mediator and more Apply functional design patterns such as Monad and more Who This Book Is For Those with at least some prior programming experience, especially in C++.

Write maintainable, extensible, and durable software with modern C++. This book, updated for the C++20 standard, is a must for every developer, software architect, or team leader who is interested in good C++ code, and thus also wants to save development costs. If you want to teach yourself about writing clean C++, Clean C++ is exactly what you need. It is written to help C++ developers of all skill levels and shows by example how to write understandable, flexible, maintainable, and efficient C++ code. Even if you are a seasoned C++ developer, there are nuggets and data points in this book that you will find useful in your work. If you don't take care with your code, you can produce a large, messy, and unmaintainable beast in any programming language.

However, C++ projects in particular are prone to be messy and tend to slip into bad habits. Lots of C++ code that is written today looks as if it was written in the 1980s. It seems

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that C++ developers have been forgotten by those who preach Software Craftsmanship and Clean Code principles. The web is full of bad, but apparently very fast and highly optimized C++ code examples, with cruel syntax that completely ignores elementary principles of good design and well-written code. This book will explain how to avoid this scenario and how to get the most out of your C++ code. You'll find your coding becomes more efficient and, importantly, more fun. What You'll Learn Gain sound principles and rules for clean coding in C++ Carry out test driven development (TDD) Discover C++ design patterns and idioms Apply these design patterns Who This Book Is For Any C++ developer or software engineer with an interest in producing better code.

The #1 guide to using Visual Studio 2010 in team development: insider coverage of this huge release, from the leader of the VSTS team \* \*Focuses on succeeding with new VS 2010 ALM products in real-world environments, with exclusive 'Lessons Learned at Microsoft'. \*Thoroughly covers VS 2010's massive new capabilities for team development. \*Contains extensive new coverage of implementing Scrum and related practices. \*Covers the entire lifecycle: requirements, architecture, construction, build, test, and more This is the most practical, valuable guide for every member of the software team who intends to run or participate in software projects using Microsoft's Visual Studio 2010. Written by a top Microsoft Visual Studio development team leader and a leading Visual Studio implementation consultant, it focuses on the real challenges development organizations face. The authors identify powerful lessons and best practices learned at Microsoft, and cover the entire development lifecycle, from requirements gathering through testing and beyond. This edition adds extensive coverage of VS 2010's extensive new team features, as well as new coverage of using VS 2010 to actively support teams that practice Scrum.

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Throughout, the authors focus on showing how to use VS 2010 to reduce waste, increase transparency, and accelerate the flow of value to the end customer. Coverage includes: \*

- \*Requirements: vision, user stories, use cases, storyboards, satisfiers/dissatisfiers, and more
- \*Running the project: self-managing teams, metrics, sprints, and dashboards
- \*'Value-up' views of software architecture, construction, and testing.
- \*Build and lab: check-in, team build, continuous integration, build verification tests, reporting, deployment, and lab automation/virtualization.
- \*Troubleshooting the project: overcoming issues ranging from scope creep to build failures

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Agile Values and Principles for a New Generation “In the journey to all things Agile, Uncle Bob has been there, done that, and has the both the t-shirt and the scars to show for it. This delightful book is part history, part personal stories, and all wisdom. If you want to understand what Agile is and how it came to be, this is the book for you.” –Grady Booch “Bob’s frustration colors every sentence of Clean Agile, but it’s a justified frustration. What is in the world of Agile development is nothing compared to what could be. This book is Bob’s perspective on what to focus on to get to that ‘what could be.’ And he’s been there, so it’s worth listening.” –Kent Beck “It’s good to read Uncle Bob’s take on Agile. Whether just beginning, or a seasoned Agilista, you would do well to read this book. I agree with almost all of it. It’s just some of the parts make me realize my own shortcomings, dammit. It made me double-check our code coverage (85.09%).” –Jon Kern Nearly twenty years after the Agile Manifesto was first presented, the legendary Robert C. Martin (“Uncle Bob”) reintroduces Agile values and principles for a new generation—programmers and nonprogrammers alike. Martin, author of Clean Code and other highly influential software

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development guides, was there at Agile's founding. Now, in *Clean Agile: Back to Basics*, he strips away misunderstandings and distractions that over the years have made it harder to use Agile than was originally intended. Martin describes what Agile is in no uncertain terms: a small discipline that helps small teams manage small projects . . . with huge implications because every big project is comprised of many small projects. Drawing on his fifty years' experience with projects of every conceivable type, he shows how Agile can help you bring true professionalism to software development. Get back to the basics—what Agile is, was, and should always be. Understand the origins, and proper practice, of SCRUM Master essential business-facing Agile practices, from small releases and acceptance tests to whole-team communication. Explore Agile team members' relationships with each other, and with their product. Rediscover indispensable Agile technical practices: TDD, refactoring, simple design, and pair programming. Understand the central roles values and craftsmanship play in your Agile team's success. If you want Agile's true benefits, there are no shortcuts: You need to do Agile right. *Clean Agile: Back to Basics* will show you how, whether you're a developer, tester, manager, project manager, or customer. Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

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

How do successful agile teams deliver bug-free, maintainable software—iteration after iteration? The answer is: By seamlessly combining development and testing. On such teams, the developers write testable code that enables them to verify it using various types of automated tests. This

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approach keeps regressions at bay and prevents “testing crunches”—which otherwise may occur near the end of an iteration—from ever happening. Writing testable code, however, is often difficult, because it requires knowledge and skills that cut across multiple disciplines. In *Developer Testing*, leading test expert and mentor Alexander Tarlinder presents concise, focused guidance for making new and legacy code far more testable. Tarlinder helps you answer questions like: When have I tested this enough? How many tests do I need to write? What should my tests verify? You’ll learn how to design for testability and utilize techniques like refactoring, dependency breaking, unit testing, data-driven testing, and test-driven development to achieve the highest possible confidence in your software. Through practical examples in Java, C#, Groovy, and Ruby, you’ll discover what works—and what doesn’t. You can quickly begin using Tarlinder’s technology-agnostic insights with most languages and toolsets while not getting buried in specialist details. The author helps you adapt your current programming style for testability, make a testing mindset “second nature,” improve your code, and enrich your day-to-day experience as a software professional. With this guide, you will

- Understand the discipline and vocabulary of testing from the developer’s standpoint
- Base developer tests on well-established testing techniques and best practices
- Recognize code constructs that impact testability
- Effectively name, organize, and execute unit tests
- Master the essentials of classic and “mockist-style” TDD
- Leverage test doubles with or without mocking frameworks
- Capture the benefits of programming by contract, even without runtime support for contracts
- Take control of dependencies between classes, components, layers, and tiers
- Handle combinatorial explosions of test cases, or scenarios requiring many similar tests
- Manage code duplication when it can’t be eliminated
- Actively maintain and

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improve your test suites Perform more advanced tests at the integration, system, and end-to-end levels Develop an understanding for how the organizational context influences quality assurance Establish well-balanced and effective testing strategies suitable for agile teams

A recent survey stated that 52% of embedded projects are late by 4-5 months. This book can help get those projects in on-time with design patterns. The author carefully takes into account the special concerns found in designing and developing embedded applications specifically concurrency, communication, speed, and memory usage. Patterns are given in UML (Unified Modeling Language) with examples including ANSI C for direct and practical application to C code. A basic C knowledge is a prerequisite for the book while UML notation and terminology is included. General C programming books do not include discussion of the constraints found within embedded system design. The practical examples give the reader an understanding of the use of UML and OO (Object Oriented) designs in a resource-limited environment. Also included are two chapters on state machines. The beauty of this book is that it can help you today. . Design Patterns within these pages are immediately applicable to your project Addresses embedded system design concerns such as concurrency, communication, and memory usage Examples contain ANSI C for ease of use with C programming code

- New York Times bestseller • The 100 most substantive solutions to reverse global warming, based on meticulous research by leading scientists and policymakers around the world “At this point in time, the Drawdown book is exactly what is needed; a credible, conservative solution-by-solution narrative that we can do it. Reading it is an effective inoculation against the widespread perception of doom that humanity cannot and will not solve the climate crisis.

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Reported by-effects include increased determination and a sense of grounded hope.” —Per Espen Stoknes, Author, *What We Think About When We Try Not To Think About Global Warming* “There’s been no real way for ordinary people to get an understanding of what they can do and what impact it can have. There remains no single, comprehensive, reliable compendium of carbon-reduction solutions across sectors. At least until now. . . . The public is hungry for this kind of practical wisdom.” —David Roberts, *Vox* “This is the ideal environmental sciences textbook—only it is too interesting and inspiring to be called a textbook.” —Peter Kareiva, Director of the Institute of the Environment and Sustainability, UCLA In the face of widespread fear and apathy, an international coalition of researchers, professionals, and scientists have come together to offer a set of realistic and bold solutions to climate change. One hundred techniques and practices are described here—some are well known; some you may have never heard of. They range from clean energy to educating girls in lower-income countries to land use practices that pull carbon out of the air. The solutions exist, are economically viable, and communities throughout the world are currently enacting them with skill and determination. If deployed collectively on a global scale over the next thirty years, they represent a credible path forward, not just to slow the earth’s warming but to reach drawdown, that point in time when greenhouse gases in the atmosphere peak and begin to decline. These measures promise cascading benefits to human health, security, prosperity, and well-being—giving us every reason to see this planetary crisis as an opportunity to create a just and livable world.

This book focuses on software sustainability, regarded in terms of how software is or can be developed while taking into consideration environmental, social, and economic dimensions. The sixteen chapters cover various related

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issues ranging from technical aspects like energy-efficient programming techniques, formal proposals related to energy efficiency measurement, patterns to build energy-efficient software, the role of developers on energy efficient software systems and tools for detecting and refactoring code smells/energy bugs; to human aspects like its impact on software sustainability or the adaptation of ACM/IEEE guidelines for student and professional education and; and an economics-driven architectural evaluation for sustainability. Also aspects as the elements of governance and management that organizations should consider when implementing, assessing and improving Green IT or the relationship between software sustainability and the Corporate Social Responsibility of software companies are included. The chapters are complemented by usage scenarios and experience reports on several domains as cloud applications, agile development or e-Health, among others. As a whole, the chapters provide a complete overview of the various issues related to sustainable software development. The target readership for this book includes CxOs, (e.g. Chief Information Officers, Chief Executive Officers, Chief Technology Officers, etc.) software developers, software managers, auditors, business owners, and quality professionals. It is also intended for students of software engineering and information systems, and software researchers who want to know the state of the art regarding software sustainability.

Comprehensively covers the definition, methodology, and current applications of the principles of sustainability and resiliency in every engineering discipline This book contains detailed information about sustainability and resiliency principles and applications in engineering practice, and provides

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information on how to use scientific tools for sustainability assessment that help engineers select the best alternative for each project or activity. Logically organized around the three pillars of sustainability—environment, economy, and society—it is a primary resource for students and professionals alike. *Sustainable Engineering: Drivers, Metrics, Tools, and Applications* offers numerous ways to help engineers contribute towards global sustainable development while solving some of the grand challenges the world is facing today. The first part of the book covers the environmental, economic, and social impacts associated with project/product development as well as society as a whole. This is followed by a section devoted to sustainability metrics and assessment tools, which includes material flow analysis and material budget, carbon footprint analysis, life cycle assessment, environmental health risk assessment, and more. Next comes an in-depth examination of sustainable engineering practices, including sustainable energy engineering, sustainable waste management, and green and sustainable buildings. The book concludes with a look at how sustainable engineering may be applied to different engineering (i.e. environmental, chemical, civil, materials, infrastructure) projects. Some of the key features of this book include the following: Provides a complete and sensible understanding of the important

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concepts of sustainability, resiliency, and sustainable engineering Offers detailed explanations of sustainable engineering practices in waste management and remediation of contaminated sites, civil construction and infrastructure, and climate geoengineering Presents a set of case studies across different engineering disciplines such as bio/chemical, environmental, materials, construction, and infrastructure engineering that demonstrate the practical applicability of sustainability assessment tools to diverse projects Includes questions at the end of each chapter as well as a solutions manual for academic adopters The depth of coverage found in Sustainable Engineering: Drivers, Metrics, Tools, and Applications makes it an ideal textbook for graduate students across all engineering disciplines and a handy resource for active professionals. This book is a printed edition of the Special Issue "Sustainable Business Models" that was published in Sustainability

Go from competent C++ developer to skilled designer or architect using this book as your C++ design master class. This title will guide you through the design and implementation of a fun, engaging case study. Starting with a quick exploration of the requirements for building the application, you'll delve into selecting an appropriate architecture, eventually designing and implementing all of the necessary modules to meet the project's requirements. By the

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conclusion of Practical C++ Design, you'll have constructed a fully functioning calculator that builds and executes on multiple platforms. Access to the complete source code will help speed your learning. Utilize the Model-View-Controller pattern to determine the optimal architecture for the calculator; the observer pattern to design an event system; the singleton pattern as you design the calculator's central data repository, a reusable stack; the command pattern to design a command system supporting unlimited undo/redo; and the abstract factory pattern for a cross-platform plugin infrastructure to make the calculator extensible.

**What You Will Learn** Read a specification document and translate it into a practical C++ design Understand trade-offs in selecting between alternative design scenarios Gain practical experience in applying design patterns to realistic development scenarios Learn how to effectively use language elements of modern C++ to create a lasting design Develop a complete C++ program from a blank canvas through to a fully functioning, cross platform application Read, modify, and extend existing, high quality code Learn the fundamentals of API design, including class, module, and plugin interfaces **Who This Book Is For** The experienced C++ developer ready to take the next step to becoming a skilled C++ designer.

This is the eBook of the printed book and may not

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include any media, website access codes, or print supplements that may come packaged with the bound book. In just one hour a day, you'll have all the skills you need to begin programming in C++. With this complete tutorial, you'll quickly master the basics, and then move on to more advanced features and concepts. Completely updated for the C++14 standard, with a preview of C++17, this book presents the language from a practical point of view, helping you learn how to use C++ to create faster, simpler, and more efficient C++ applications. Master the fundamentals of C++ and object-oriented programming Understand how C++ features help you write compact and efficient code using concepts such as lambda expressions, move constructors, and assignment operators Learn best practices and avoid pitfalls via useful Do's and Don'ts Learn the Standard Template Library, including containers and algorithms used in most real-world C++ applications Test your knowledge and expertise with exercises at the end of every lesson Learn on your own time, at your own pace: No previous programming experience required Write fast and powerful C++ programs, compile the source code, and create executable files Learn object-oriented programming concepts such as encapsulation, abstraction, inheritance, and polymorphism Use the Standard Template Library's algorithms and containers to write feature-rich yet stable C++ applications Learn

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how automatic type deduction helps simplify C++ code Develop sophisticated programming techniques using lambda expressions, smart pointers, and move constructors Master the features of C++ by learning from programming experts Learn C++ features that allow you to program compact and high-performance C++ applications Preview what's new in C++17

This book offers a selection of papers from the 2016 International Conference on Software Process Improvement (CIMPS'16), held between the 12th and 14th of October 2016 in Aguascalientes, Aguascalientes, México. The CIMPS'16 is a global forum for researchers and practitioners to present and discuss the most recent innovations, trends, results, experiences and concerns in the different aspects of software engineering with a focus on, but not limited to, software processes, security in information and communication technology, and big data. The main topics covered include: organizational models, standards and methodologies, knowledge management, software systems, applications and tools, information and communication technologies and processes in non-software domains (mining, automotive, aerospace, business, health care, manufacturing, etc.) with a clear focus on software process challenges. With the award-winning book *Agile Software Development: Principles, Patterns, and Practices*,

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Robert C. Martin helped bring Agile principles to tens of thousands of Java and C++ programmers. Now .NET programmers have a definitive guide to agile methods with this completely updated volume from Robert C. Martin and Micah Martin, *Agile Principles, Patterns, and Practices in C#*. This book presents a series of case studies illustrating the fundamentals of Agile development and Agile design, and moves quickly from UML models to real C# code. The introductory chapters lay out the basics of the agile movement, while the later chapters show proven techniques in action. The book includes many source code examples that are also available for download from the authors' Web site. Readers will come away from this book understanding Agile principles, and the fourteen practices of Extreme Programming Spiking, splitting, velocity, and planning iterations and releases Test-driven development, test-first design, and acceptance testing Refactoring with unit testing Pair programming Agile design and design smells The five types of UML diagrams and how to use them effectively Object-oriented package design and design patterns How to put all of it together for a real-world project Whether you are a C# programmer or a Visual Basic or Java programmer learning C#, a software development manager, or a business analyst, *Agile Principles, Patterns, and Practices in C#* is the first book you should read to understand

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agile software and how it applies to programming in the .NET Framework.

This is the first book that presents a comprehensive overview of sustainability aspects in software engineering. Its format follows the structure of the SWEBOK and covers the key areas involved in the incorporation of green aspects in software engineering, encompassing topics from requirement elicitation to quality assurance and maintenance, while also considering professional practices and economic aspects. The book consists of thirteen chapters, which are structured in five parts. First the “Introduction” gives an overview of the primary general concepts related to Green IT, discussing what Green in Software Engineering is and how it differs from Green by Software Engineering. Next “Environments, Processes and Construction” presents green software development environments, green software engineering processes and green software construction in general. The third part, “Economic and Other Qualities,” details models for measuring how well software supports green software engineering techniques and for performing trade-off analyses between alternative green practices from an economic perspective. “Software Development Process” then details techniques for incorporating green aspects at various stages of software development, including requirements engineering, design, testing, and maintenance. In

closing, “Practical Issues” addresses the repercussions of green software engineering on decision-making, stakeholder participation and innovation management. The audience for this book includes software engineering researchers in academia and industry seeking to understand the challenges and impact of green aspects in software engineering, as well as practitioners interested in learning about the state of the art in Green in Software Engineering.

A guide to XP leads the developer, project manager, and team leader through the software development planning process, offering real world examples and tips for reacting to changing environments quickly and efficiently.

Sustainable Manufacturing and Design draws together research and practices from a wide range of disciplines to help engineers design more environmentally sustainable products. Sustainable manufacturing requires that the entire manufacturing enterprise adopts sustainability goals at a system-level in decision-making, hence the scope of this book covers a wide range of viewpoints in response. Advice on recyclability, zero landfill design, sustainable quality systems, and product take-back issues make this a highly usable guide to the challenges facing engineering designers today. Contributions from around the globe are included, helping to form an international view of an issue that

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requires a global response. Addresses methods to reduce energy and material waste through manufacturing design Helps to troubleshoot manufacturability problems that can arise in sustainable design Includes coverage of the legislative, cultural and social impacts of sustainable manufacturing, promoting a holistic view of the subject

Write maintainable, extensible, and durable software with modern C++. This book is a must for every developer, software architect, or team leader who is interested in good C++ code, and thus also wants to save development costs. If you want to teach yourself about writing clean C++, Clean C++ is exactly what you need. It is written to help C++ developers of all skill levels and shows by example how to write understandable, flexible, maintainable, and efficient C++ code. Even if you are a seasoned C++ developer, there are nuggets and data points in this book that you will find useful in your work. If you don't take care with your code, you can produce a large, messy, and unmaintainable beast in any programming language. However, C++ projects in particular are prone to be messy and tend to slip into bad habits. Lots of C++ code that is written today looks as if it was written in the 1980s. It seems that C++ developers have been forgotten by those who preach Software Craftsmanship and Clean Code principles. The Web is full of bad, but apparently

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very fast and highly optimized C++ code examples, with cruel syntax that completely ignores elementary principles of good design and well-written code. This book will explain how to avoid this scenario and how to get the most out of your C++ code. You'll find your coding becomes more efficient and, importantly, more fun. What You'll Learn Gain sound principles and rules for clean coding in C++ Carry out test driven development (TDD) Discover C++ design patterns and idioms Apply these design patterns Who This Book Is For Any C++ developer and software engineer with an interest in producing better code.

This Python coding book will help you understand the problems that arise due to inefficient code, demonstrating to you how to correct them.

In the current scenario in which climate change dominates our lives and in which we all need to combat and drastically reduce the emission of greenhouse gases, renewable energies play key roles as present and future energy sources.

Renewable energies vary across a wide range, and therefore, there are related studies for each type of energy. This Special Issue is composed of studies integrating the latest research innovations and knowledge focused on all types of renewable energy: onshore and offshore wind, photovoltaic, solar, biomass, geothermal, waves, tides, hydro, etc. Authors were invited submit review and research

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papers focused on energy resource estimation, all types of TRL converters, civil infrastructure, electrical connection, environmental studies, licensing and development of facilities, construction, operation and maintenance, mechanical and structural analysis, new materials for these facilities, etc. Analyses of a combination of several renewable energies as well as storage systems to progress the development of these sustainable energies were welcomed.

Today's programmers don't develop software systems from scratch. Instead, they spend their time fixing, extending, modifying, and enhancing existing software. Legacy systems often turn into an unwieldy mess that becomes increasingly difficult to modify, and with architecture that continually accumulates technical debt. Carola Lilienthal has analyzed more than 300 software systems written in Java, C#, C++, PHP, ABAP, and TypeScript and, together with her teams, has successfully refactored them. This book condenses her experience with monolithic systems, architectural and design patterns, layered architectures, domain-driven design, and microservices. With more than 200 color images from real-world systems, good and sub-optimal sample solutions are presented in a comprehensible and thorough way, while recommendations and suggestions based on practical projects allow the reader to directly apply the author's knowledge to their daily work. "Throughout the book, Dr. Lilienthal

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has provided sound advice on diagnosing, understanding, disentangling, and ultimately preventing the issues that make software systems brittle and subject to breakage. In addition to the technical examples that you'd expect in a book on software architecture, she takes the time to dive into the behavioral and human aspects that impact sustainability and, in my experience, are inextricably linked to the health of a codebase. She also expertly zooms out, exploring architecture concepts such as domains and layers, and then zooms in to the class level where your typical developer works day-to-day. This holistic approach is crucial for implementing long-lasting change." From the Foreword of Andrea Goulet CEO, Corgibytes, Founder, Legacy Code Rocks

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