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Testing Computer Software The Software Craftsman *Just Enough Software Architecture* **Agile Software Requirements** *Software Systems Architecture* **Lessons Learned in Software Testing** *Succeeding with Agile* Estimating Software Costs : Bringing Realism to Estimating Software Design for Flexibility *Pattern-Oriented Software Architecture, A Pattern Language for Distributed Computing* **Developing Safety-Critical Software Software Engineering** Composing Software *More about Software Requirements* The Stack **Software Architecture Software Engineering at Google** Making Software **Software Estimation Without Guessing Software Architecture in Practice Pattern-Oriented Software Architecture, A System of Patterns** *Managing Software Quality* **24 Deadly Sins of Software Security: Programming Flaws and How to Fix Them The Architecture of Computer Hardware, Systems Software, and Networking** *Software Quality Assurance* **Software Estimation Software Engineering in C** Empirical Methods and Studies in Software Engineering Constructing Correct Software Software Architect's Handbook *Software Sustainability* **Designing Secure Software Agile Processes in Software Engineering and Extreme Programming – Workshops Software Creativity 2.0 Agile Software Development: Principles, Patterns, and Practices What Every Engineer Should Know about Software Engineering** *Software Product Management Software Studies* **Software Engineering** The Software Requirements Memory Jogger

Software Systems Architecture Jun 22 2022 This guide for software architects builds upon legacies of best practice, explaining key areas and how to make architectural designs successful.

Lessons Learned in Software Testing May 21 2022 Decades of software testing experience condensed into the most important lessons learned. The world's leading software testing experts lend you their wisdom and years of experience to help you avoid the most common mistakes in testing software. Each lesson is an assertion related to software testing, followed by an explanation or example that shows you the how, when, and why of the testing lesson. More than just tips, tricks, and pitfalls to avoid, Lessons Learned in Software Testing speeds you through the critical testing phase of the software development project without the extensive trial and error it normally takes to do so. The ultimate resource for software testers and developers at every level of expertise, this guidebook features: * Over 200 lessons gleaned from over 30 years of combined testing experience * Tips, tricks, and common pitfalls to avoid by simply reading the book rather than finding out the hard way * Lessons for all key topic areas, including test design, test management, testing strategies, and bug reporting * Explanations and examples of each testing trouble spot help illustrate each lesson's assertion

Agile Processes in Software Engineering and Extreme Programming – Workshops Jan 25 2020 This open access book constitutes the research workshops, doctoral symposium and panel summaries presented at the 20th International Conference on Agile Software Development, XP 2019, held in Montreal, QC, Canada, in May 2019. XP is the premier agile software development conference combining research and practice. It is a hybrid forum where agile researchers, academics, practitioners, thought leaders, coaches, and trainers get together to present and discuss their most recent innovations, research results, experiences, concerns, challenges, and trends. Following this history, for both researchers and seasoned practitioners XP 2019 provided an informal environment to

network, share, and discover trends in Agile for the next 20 years. Research papers and talks submissions were invited for the three XP 2019 research workshops, namely, agile transformation, autonomous teams, and large scale agile. This book includes 15 related papers. In addition, a summary for each of the four panels at XP 2019 is included. The panels were on security and privacy; the impact of the agile manifesto on culture, education, and software practices; business agility – agile's next frontier; and Agile – the next 20 years.

What Every Engineer Should Know about Software Engineering Oct 22 2019 Do you¿ Use a computer to perform analysis or simulations in your daily work? Write short scripts or record macros to perform repetitive tasks? Need to integrate off-the-shelf software into your systems or require multiple applications to work together? Find yourself spending too much time working the kinks out of your code? Work with software engineers on a regular basis but have difficulty communicating or collaborating? If any of these sound familiar, then you may need a quick primer in the principles of software engineering. Nearly every engineer, regardless of field, will need to develop some form of software during their career. Without exposure to the challenges, processes, and limitations of software engineering, developing software can be a burdensome and inefficient chore. In What Every Engineer Should Know about Software Engineering, Phillip Laplante introduces the profession of software engineering along with a practical approach to understanding, designing, and building sound software based on solid principles. Using a unique question-and-answer format, this book addresses the issues and misperceptions that engineers need to understand in order to successfully work with software engineers, develop specifications for quality software, and learn the basics of the most common programming languages, development approaches, and paradigms.

Software Design for Flexibility Feb 18 2022 Strategies for building large systems that can be easily adapted for new situations with only minor programming modifications. Time pressures encourage programmers to write code that works well for a narrow purpose, with no room to grow. But the best systems are evolvable; they can be adapted for new situations by adding code, rather than changing the existing code. The authors describe techniques they have found effective--over their combined 100-plus years of programming experience--that will help programmers avoid programming themselves into corners. The authors explore ways to enhance flexibility by: Organizing systems using combinators to compose mix-and-match parts, ranging from small functions to whole arithmetics, with standardized interfaces Augmenting data with independent annotation layers, such as units of measurement or provenance Combining independent pieces of partial information using unification or propagation Separating control structure from problem domain with domain models, rule systems and pattern matching, propagation, and dependency-directed backtracking Extending the programming language, using dynamically extensible evaluators

Software Engineering in C Jul 31 2020 1 Introduction To Programming.- 1.1 High-Level Programming Languages.- 1.2 History of C.- 1.3 ANSI Standard.- 1.4 Nature of C.- 2 C Essentials.- 2.1 Program Development.- 2.2 Functions.- 2.3 Anatomy of a C Function.- 2.4 Formatting Source Files.- 2.5 The main() Function.- 2.6 The printf() Function.- 2.7 The scanf() Function.- 2.8 The Preprocessor.- Exercises.- 3 Scalar Data Types.- 3.1 Declarations.- 3.2 Different Types of Integers.- 3.3 Different Kinds of Integer Constants.- 3.4 Floating-Point Types.- 3.5 Initialization.- 3.6 Finding the Address of an Object.- 3.7 Introduction to Pointers.- 3.8 Typedefs.- 3.9 Mixing Types.- 3.10 Explicit Conversions - Casts.- 3.11 Enumeration Types.- 3.12 The void Data Type.- Exercises.- 4 Control Flow.- 4.1 Conditional Branching.- 4.2 The switch Statement.- 4.3 Looping.- 4.4 Nested Loops.- 4.5 A Simple Calculator Program.- 4.6 The break and continue Statements.- 4.7 The goto Statement.- 4.8 Infinite Loops.- Exercises.- 5 Operators and Expressions.- 5.1 Precedence

and Associativity.- 5.2 Unary Minus Operator.- 5.3 Binary Arithmetic Operators.- 5.4 Arithmetic Assignment Operators.- 5.5 Increment and Decrement Operators.- 5.6 Comma Operator.- 5.7 Relational Operators.- 5.8 Logical Operators.- 5.9 Bit-Manipulation Operators.- 5.10 Bitwise Assignment Operators.- 5.11 Cast Operator.- 5.12 sizeof operator.- 5.13 Conditional Operator (?:).- 5.14 Memory Operators.- Exercises.- 6 Arrays and Pointers.- 6.1 Declaring an Array.- 6.2 How Arrays Are Stored in Memory.- 6.3 Initializing Arrays.- 6.4 Array Example: Encryption and Decryption.- 6.5 Pointer Arithmetic.- 6.6 Passing Pointers as Function Arguments.- 6.7 Accessing Array Elements Through Pointers.- 6.8 Passing Arrays as Function Arguments.- 6.9 Sorting Algorithms.- 6.10 Strings.- 6.11 Multidimensional Arrays.- 6.12 Arrays of Pointers.- 6.13 Pointers to Pointers.- Exercises.- 7 Storage Classes.- 7.1 Fixed vs. Automatic Duration.- 7.2 Scope.- 7.3 Global Variables.- 7.4 The register Specifier.- 7.5 Summary of Storage Classes.- 7.6 Dynamic Memory Allocation.- Exercises.- 8 Structures and Unions.- 8.1 Structures.- 8.2 Linked Lists.- 8.3 Unions.- 8.4 enum Declarations.- Exercises.- 9 Functions.- 9.1 Passing Arguments.- 9.2 Declarations and Calls.- 9.3 Pointers to Functions.- 9.4 Recursion.- 9.5 The main() Function.- 9.6 Complex Declarations.- Exercises.- 10 The C Preprocessor.- 10.1 Macro Substitution.- 10.2 Conditional Compilation.- 10.3 Include Facility.- 10.4 Line Control.- Exercises.- 11 Input and Output.- 11.1 Streams.- 11.2 Buffering.- 11.3 The Header File.- 11.4 Error Handling.- 11.5 Opening and Closing a File.- 11.6 Reading and Writing Data.- 11.7 Selecting an I/O Method.- 11.8 Unbuffered I/O.- 11.9 Random Access.- Exercises.- 12 Software Engineering.- 12.1 Product Specification.- 12.2 Software Design.- 12.3 Project Management and Cost Estimation.- 12.4 Software Tools for Software Production.- 12.5 Debugging.- 12.6 Testing.- 12.7 Performance Analysis.- 12.8 Documentation.- Exercises.- Appendix A The ANSI Runtime Library.- A.1 Function Names.- A.2 Header Files.- A.3 Synopses.- A.4 Functions vs. Macros.- A.5 Error Handling.- A.6 Diagnostics.- A.7 Character Handling.- A.8 Setting Locale Parameters.- A.9 Mathematics.- A.10 Non-Local Jumps.- A.11 Signal Handling.- A.12 Variable Argument Lists.- A.13 I/O Functions.- A.14 General Utilities.- A.15 String-Handling Functions.- A.16 Date and Time Functions.- Appendix B Syntax of ANSI C.- Appendix C Implementation Limits.- C.1 Translation Limits.- C.2 Numerical Limits.- Appendix D Differences Between the ANSI and K&R Standards.- D.1 Source Translation Differences.- D.2 Data Type Differences.- D.3 Statement Differences.- D.4 Expression Differences.- D.5 Storage Class and Initialization Differences.- D.6 Preprocessor Differences.- Appendix E Reserved Names.- Appendix F C Interpreter Listing.- Appendix G ASCII Codes.

Agile Software Requirements Jul 23 2022 This text includes comprehensive solutions, proven processes and real-world insights for capturing requirements at the right level of detail without compromising agility.

Estimating Software Costs : Bringing Realism to Estimating Mar 19 2022 Deliver bug-free software projects on schedule and within budget Get a clear, complete understanding of how to estimate software costs, schedules, and quality using the real-world information contained in this comprehensive volume. Find out how to choose the correct hardware and software tools, develop an appraisal strategy, deploy tests and prototypes, and produce accurate software cost estimates. Plus, you'll get full coverage of cutting-edge estimating approaches using Java, object-oriented methods, and reusable components. Plan for and execute project-, phase-, and activity-level cost estimations Estimate regression, component, integration, and stress tests Compensate for inaccuracies in data collection, calculation, and analysis Assess software deliverables and data complexity Test design principles and operational characteristics using software prototyping Handle configuration change, research, quality control, and documentation costs "Capers Jones' work offers a unique

contribution to the understanding of the economics of software production. It provides deep insights into why our advances in computing are not matched with corresponding improvements in the software that drives it. This book is absolutely required reading for an understanding of the limitations of our technological advances." --Paul A. Strassmann, former CIO of Xerox, the Department of Defense, and NASA

More about Software Requirements Sep 13 2021 Provides solutions to a variety of problems associated with the software development process.

The Stack Aug 12 2021 A comprehensive political and design theory of planetary-scale computation proposing that The Stack—an accidental megastructure—is both a technological apparatus and a model for a new geopolitical architecture. What has planetary-scale computation done to our geopolitical realities? It takes different forms at different scales—from energy and mineral sourcing and subterranean cloud infrastructure to urban software and massive universal addressing systems; from interfaces drawn by the augmentation of the hand and eye to users identified by self—quantification and the arrival of legions of sensors, algorithms, and robots. Together, how do these distort and deform modern political geographies and produce new territories in their own image? In The Stack, Benjamin Bratton proposes that these different genres of computation—smart grids, cloud platforms, mobile apps, smart cities, the Internet of Things, automation—can be seen not as so many species evolving on their own, but as forming a coherent whole: an accidental megastructure called The Stack that is both a computational apparatus and a new governing architecture. We are inside The Stack and it is inside of us. In an account that is both theoretical and technical, drawing on political philosophy, architectural theory, and software studies, Bratton explores six layers of The Stack: Earth, Cloud, City, Address, Interface, User. Each is mapped on its own terms and understood as a component within the larger whole built from hard and soft systems intermingling—not only computational forms but also social, human, and physical forces. This model, informed by the logic of the multilayered structure of protocol "stacks," in which network technologies operate within a modular and vertical order, offers a comprehensive image of our emerging infrastructure and a platform for its ongoing reinvention. The Stack is an interdisciplinary design brief for a new geopolitics that works with and for planetary-scale computation. Interweaving the continental, urban, and perceptual scales, it shows how we can better build, dwell within, communicate with, and govern our worlds. thestack.org

Software Architecture in Practice Mar 07 2021 The award-winning and highly influential Software Architecture in Practice, Third Edition, has been substantially revised to reflect the latest developments in the field. In a real-world setting, the book once again introduces the concepts and best practices of software architecture—how a software system is structured and how that system's elements are meant to interact. Distinct from the details of implementation, algorithm, and data representation, an architecture holds the key to achieving system quality, is a reusable asset that can be applied to subsequent systems, and is crucial to a software organization's business strategy. The authors have structured this edition around the concept of architecture influence cycles. Each cycle shows how architecture influences, and is influenced by, a particular context in which architecture plays a critical role. Contexts include technical environment, the life cycle of a project, an organization's business profile, and the architect's professional practices. The authors also have greatly expanded their treatment of quality attributes, which remain central to their architecture philosophy—with an entire chapter devoted to each attribute—and broadened their treatment of architectural patterns. If you design, develop, or manage large software systems (or plan to do so), you will find this book to be a valuable resource for getting up to speed on the state of the art. Totally new material covers Contexts of software architecture: technical, project, business, and professional

Architecture competence: what this means both for individuals and organizations The origins of business goals and how this affects architecture Architecturally significant requirements, and how to determine them Architecture in the life cycle, including generate-and-test as a design philosophy; architecture conformance during implementation; architecture and testing; and architecture and agile development Architecture and current technologies, such as the cloud, social networks, and end-user devices

Testing Computer Software Oct 26 2022 This book will teach you how to test computer software under real-world conditions. The authors have all been test managers and software development managers at well-known Silicon Valley software companies. Successful consumer software companies have learned how to produce high-quality products under tight time and budget constraints. The book explains the testing side of that success. Who this book is for: * Testers and Test Managers * Project Managers-Understand the timeline, depth of investigation, and quality of communication to hold testers accountable for. * Programmers-Gain insight into the sources of errors in your code, understand what tests your work will have to pass, and why testers do the things they do. * Students-Train for an entry-level position in software development. What you will learn: * How to find important bugs quickly * How to describe software errors clearly * How to create a testing plan with a minimum of paperwork * How to design and use a bug-tracking system * Where testing fits in the product development process * How to test products that will be translated into other languages * How to test for compatibility with devices, such as printers * What laws apply to software quality

The Software Requirements Memory Jogger Jun 17 2019 A comprehensive reference for developing and managing precise software requirements shares guidelines for fostering communications between business and technical teams to maximize accuracy at the request and developmental levels.

Software Creativity 2.0 Dec 24 2019 Glass explores a critical, yet strangely neglected, question: What is the role of creativity in software engineering and computer programming? With his trademark easy-to-read style and practical approach, backed by research and personal experience, Glass takes on a wide range of related angles and implications. (Computer Books)

Software Estimation Without Guessing Apr 08 2021 Estimating software development often produces more angst than value, but it doesn't have to. Identify the needs behind estimate requests and determine how to meet those needs simply and easily. Choose estimation techniques based on current needs and available information, gaining benefit while reducing cost and effort. Detect bad assumptions that might sink your project if you don't adjust your plans. Discover what to do when an estimate is wrong, how to recover, and how to use that knowledge for future planning. Learn to communicate about estimates in a healthy and productive way, maximizing advantage to the organization and minimizing damage to the people. In a world where most developers hate estimation and most managers fear disappointment with the results, there is hope for both. It requires giving up some widely held misconceptions. Let go of the notion that "an estimate is an estimate" and estimate for the particular need you, and your organization, have. Realize that estimates have a limited shelf-life, and reestimate frequently if it's important. When reality differs from your estimate, don't lament; mine that disappointment for the gold that can be the longer-term jackpot. Estimate in comparison to past experience, by modeling the work mathematically, or a hybrid of both. Learn strategies for effective decomposition of work and aspects of the work that likely affect your estimates. Hedge your bets by comparing the results of different approaches. Find out what to do when an estimate proves wrong. And they will. They're estimates, after all. You'll discover that you can use estimates to warn you of danger so you can take appropriate action in time. Learn some crucial techniques to understand and communicate with those who

need to understand. Address both the technical and sociological aspects of estimation, and you'll help your organization achieve its desired goals with less drama and more benefit. What You Need: No software needed, just your past experience and concern for the outcomes.

Just Enough Software Architecture Aug 24 2022 This is a practical guide for software developers, and different than other software architecture books. Here's why: It teaches risk-driven architecting. There is no need for meticulous designs when risks are small, nor any excuse for sloppy designs when risks threaten your success. This book describes a way to do just enough architecture. It avoids the one-size-fits-all process tar pit with advice on how to tune your design effort based on the risks you face. It democratizes architecture. This book seeks to make architecture relevant to all software developers. Developers need to understand how to use constraints as guiderails that ensure desired outcomes, and how seemingly small changes can affect a system's properties. It cultivates declarative knowledge. There is a difference between being able to hit a ball and knowing why you are able to hit it, what psychologists refer to as procedural knowledge versus declarative knowledge. This book will make you more aware of what you have been doing and provide names for the concepts. It emphasizes the engineering. This book focuses on the technical parts of software development and what developers do to ensure the system works not job titles or processes. It shows you how to build models and analyze architectures so that you can make principled design tradeoffs. It describes the techniques software designers use to reason about medium to large sized problems and points out where you can learn specialized techniques in more detail. It provides practical advice. Software design decisions influence the architecture and vice versa. The approach in this book embraces drill-down/pop-up behavior by describing models that have various levels of abstraction, from architecture to data structure design.

Managing Software Quality Jan 05 2021 Managing Software Quality discusses the methods involved in the integration of process, document and code indicators when constructing an evolving picture of quality. Throughout the book the authors describe experiences gained in a four-year on-site validation of the framework, making this book particularly useful for project or program managers, software managers and software engineers. In particular they provide guidance to those in software development and software support who are interested in establishing a measurement programme that includes software quality prediction and assessment. The authors share numerous valuable lessons learned during the research and applications of software quality management.

Software Quality Assurance Oct 02 2020 This textbook offers undergraduate students an introduction to the main principles and some of the most popular techniques that constitute ‘software quality assurance’. The book seeks to engage students by placing an emphasis on the underlying foundations of modern quality-assurance techniques , using these to highlight why techniques work, as opposed to merely focussing on how they work. In doing so it provides readers with a comprehensive understanding of where software quality fits into the development lifecycle (spoiler: everywhere), and what the key quality assurance activities are. The book focuses on quality assurance in a way that typical, more generic software engineering reference books do not. It is structured so that it can (and should) be read from cover to cover throughout the course of a typical university module. Specifically, it is Concise: it is small enough to be readable in its entirety over the course of a typical software engineering module. Explanatory: topics are discussed not merely in terms of what they are, but also why they are the way they are – what events, technologies, and individuals or organisations helped to shape them into what they are now. Applied: topics are covered with a view to giving the reader a good idea of how they can be applied in practice, and by pointing, where possible, to evidence of their efficacy. The book starts from some of the most general notions (e.g. quality and development process), and

gradually homes-in on the more specific activities, assuming knowledge of the basic notions established in prior chapters. Each chapter concludes with a “Key Points” section, summarising the main issues that have been covered in the chapter. Throughout the book there are exercises that serve to remind readers of relevant parts in the book that have been covered previously, and give them the opportunity to reflect on a particular topic and refer to related references.

Agile Software Development: Principles, Patterns, and Practices Nov 22 2019 For courses in Object-Oriented Design, C++ Intermediate Programming, and Object-Oriented Programming. Written for software engineers in the trenches, this text focuses on the technology-the principles, patterns, and process-that help software engineers effectively manage increasingly complex operating systems and applications. There is also a strong emphasis on the people behind the technology. This text will prepare students for a career in software engineering and serve as an on-going education for software engineers.

Software Sustainability Mar 27 2020 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 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.

Constructing Correct Software May 29 2020 Links constructive software development to traditional problem-solving methods Not dependent on any particular specification language, but is based instead on their common core

Succeeding with Agile Apr 20 2022 Provides recommendations and case studies to help with the implementation of Scrum.

Software Architect's Handbook Apr 27 2020 A comprehensive guide to exploring software architecture concepts and implementing best practices Key Features Enhance your skills to grow your career as a software architect Design efficient software architectures using patterns and best practices Learn how software architecture relates to an organization as well as software development methodology Book Description The Software Architect's Handbook is a comprehensive guide to help developers, architects, and senior programmers advance their career in the software architecture domain. This book takes you through all the important concepts, right from design principles to different considerations at various stages of your career in software architecture. The book begins by covering the fundamentals, benefits, and purpose of software architecture. You will discover how software architecture relates to an organization, followed by identifying its significant quality attributes.

Once you have covered the basics, you will explore design patterns, best practices, and paradigms for efficient software development. The book discusses which factors you need to consider for performance and security enhancements. You will learn to write documentation for your architectures and make appropriate decisions when considering DevOps. In addition to this, you will explore how to design legacy applications before understanding how to create software architectures that evolve as the market, business requirements, frameworks, tools, and best practices change over time. By the end of this book, you will not only have studied software architecture concepts but also built the soft skills necessary to grow in this field. What you will learn Design software architectures using patterns and best practices Explore the different considerations for designing software architecture Discover what it takes to continuously improve as a software architect Create loosely coupled systems that can support change Understand DevOps and how it affects software architecture Integrate, refactor, and re-architect legacy applications Who this book is for The Software Architect's Handbook is for you if you are a software architect, chief technical officer (CTO), or senior developer looking to gain a firm grasp of software architecture.

Software Product Management Sep 20 2019 This book gives a comprehensive overview on Software Product Management (SPM) for beginners as well as best practices, methodology and in-depth discussions for experienced product managers. This includes product strategy, product planning, participation in strategic management activities and orchestration of the functional units of the company. The book is based on the results of the International Software Product Management Association (ISPMA) which is led by a group of SPM experts from industry and research with the goal to foster software product management excellence across industries. This book can be used as textbook for ISPMA-based education and as guide for anybody interested in SPM as one of the most exciting and challenging disciplines in the business of software. Hans-Bernd Kittlaus is the Chairman of ISPMA and owner and managing director of InnoTivum Consulting, Germany. Samuel Fricker is Board Member of ISPMA and Professor at FHNW, Switzerland.

Composing Software Oct 14 2021 All software design is composition: the act of breaking complex problems down into smaller problems and composing those solutions. Most developers have a limited understanding of compositional techniques. It's time for that to change.In "Composing Software", Eric Elliott shares the fundamentals of composition, including both function composition and object composition, and explores them in the context of JavaScript. The book covers the foundations of both functional programming and object oriented programming to help the reader better understand how to build and structure complex applications using simple building blocks.You'll learn: Functional programmingObject compositionHow to work with composite data structuresClosuresHigher order functionsFunctors (e.g., array.map)Monads (e.g., promises)TransducersLensesAll of this in the context of JavaScript, the most used programming language in the world. But the learning doesn't stop at JavaScript. You'll be able to apply these lessons to any language. This book is about the timeless principles of software composition and its lessons will outlast the hot languages and frameworks of today. Unlike most programming books, this one may still be relevant 20 years from now.This book began life as a popular blog post series that attracted hundreds of thousands of readers and influenced the way software is built at many high growth tech startups and fortune 500 companies

24 Deadly Sins of Software Security: Programming Flaws and How to Fix Them Dec 04 2020 "What makes this book so important is that it reflects the experiences of two of the industry's most experienced hands at getting real-world engineers to understand just what they're being asked for when they're asked to write secure code. The book reflects Michael Howard's

and David LeBlanc's experience in the trenches working with developers years after code was long since shipped, informing them of problems." -- From the Foreword by Dan Kaminsky, Director of Penetration Testing, IOActive Eradicate the Most Notorious Insecure Designs and Coding Vulnerabilities Fully updated to cover the latest security issues, 24 Deadly Sins of Software Security reveals the most common design and coding errors and explains how to fix each one-or better yet, avoid them from the start. Michael Howard and David LeBlanc, who teach Microsoft employees and the world how to secure code, have partnered again with John Viega, who uncovered the original 19 deadly programming sins. They have completely revised the book to address the most recent vulnerabilities and have added five brand-new sins. This practical guide covers all platforms, languages, and types of applications. Eliminate these security flaws from your code: SQL injection Web server- and client-related vulnerabilities Use of magic URLs, predictable cookies, and hidden form fields Buffer overruns Format string problems Integer overflows C++ catastrophes Insecure exception handling Command injection Failure to handle errors Information leakage Race conditions Poor usability Not updating easily Executing code with too much privilege Failure to protect stored data Insecure mobile code Use of weak password-based systems Weak random numbers Using cryptography incorrectly Failing to protect network traffic Improper use of PKI Trusting network name resolution

Developing Safety-Critical Software Dec 16 2021 The amount of software used in safety-critical systems is increasing at a rapid rate. At the same time, software technology is changing, projects are pressed to develop software faster and more cheaply, and the software is being used in more critical ways. Developing Safety-Critical Software: A Practical Guide for Aviation Software and DO-178C Compliance equips you with the information you need to effectively and efficiently develop safety-critical, life-critical, and mission-critical software for aviation. The principles also apply to software for automotive, medical, nuclear, and other safety-critical domains. An international authority on safety-critical software, the author helped write DO-178C and the U.S. Federal Aviation Administration’s policy and guidance on safety-critical software. In this book, she draws on more than 20 years of experience as a certification authority, an avionics manufacturer, an aircraft integrator, and a software developer to present best practices, real-world examples, and concrete recommendations. The book includes: An overview of how software fits into the systems and safety processes Detailed examination of DO-178C and how to effectively apply the guidance Insight into the DO-178C-related documents on tool qualification (DO-330), model-based development (DO-331), object-oriented technology (DO-332), and formal methods (DO-333) Practical tips for the successful development of safety-critical software and certification Insightful coverage of some of the more challenging topics in safety-critical software development and verification, including real-time operating systems, partitioning, configuration data, software reuse, previously developed software, reverse engineering, and outsourcing and offshoring An invaluable reference for systems and software managers, developers, and quality assurance personnel, this book provides a wealth of information to help you develop, manage, and approve safety-critical software more confidently.

Designing Secure Software Feb 24 2020 What every software professional should know about security. Designing Secure Software consolidates Loren Kohnfelder’s more than twenty years of experience into a concise, elegant guide to improving the security of technology products. Written for a wide range of software professionals, it emphasizes building security into software design early and involving the entire team in the process. The book begins with a discussion of core concepts like trust, threats, mitigation, secure design patterns, and cryptography. The second part, perhaps this book’s most unique and important

contribution to the field, covers the process of designing and reviewing a software design with security considerations in mind. The final section details the most common coding flaws that create vulnerabilities, making copious use of code snippets written in C and Python to illustrate implementation vulnerabilities. You'll learn how to: • Identify important assets, the attack surface, and the trust boundaries in a system • Evaluate the effectiveness of various threat mitigation candidates • Work with well-known secure coding patterns and libraries • Understand and prevent vulnerabilities like XSS and CSRF, memory flaws, and more • Use security testing to proactively identify vulnerabilities introduced into code • Review a software design for security flaws effectively and without judgment Kohnfelder's career, spanning decades at Microsoft and Google, introduced numerous software security initiatives, including the co-creation of the STRIDE threat modeling framework used widely today. This book is a modern, pragmatic consolidation of his best practices, insights, and ideas about the future of software.

Pattern-Oriented Software Architecture, A System of Patterns Feb 06 2021 Pattern - Oriented Software Architecture A System of Patterns Frank Buschmann, Regine Meunier, Hans Rohnert, Peter Sommerlad, Michael Stal of Siemens AG, Germany Pattern-oriented software architecture is a new approach to software development. This book represents the progression and evolution of the pattern approach into a system of patterns capable of describing and documenting large-scale applications. A pattern system provides, on one level, a pool of proven solutions to many recurring design problems. On another it shows how to combine individual patterns into heterogeneous structures and as such it can be used to facilitate a constructive development of software systems. Uniquely, the patterns that are presented in this book span several levels of abstraction, from high-level architectural patterns and medium-level design patterns to low-level idioms. The intention of, and motivation for, this book is to support both novices and experts in software development. Novices will gain from the experience inherent in pattern descriptions and experts will hopefully make use of, add to, extend and modify patterns to tailor them to their own needs. None of the pattern descriptions are cast in stone and, just as they are borne from experience, it is expected that further use will feed in and refine individual patterns and produce an evolving system of patterns. Visit our Web Page http://www.wiley.com/compbooks/

The Software Craftsman Sep 25 2022 In The Software Craftsman, Sandro Mancuso explains what craftsmanship means to the developer and his or her organization, and shows how to live it every day in your real-world development environment. Mancuso shows how software craftsmanship fits with and helps students improve upon best-practice technical disciplines such as agile and lean, taking all development projects to the next level. Readers will learn how to change the disastrous perception that software developers are the same as factory workers, and that software projects can be run like factories.

Software Engineering Nov 15 2021 Each and every chapter covers the contents up to a reasonable depth necessary for the intended readers in the field. The book consists in all about 1200 exercises based on the topics and sub-topics covered. Keeping in view the emerging trends in newly emerging scenario with new dimension of software engineering, the book specially includes the following chapters, but not limited to these only. This book explains all the notions related to software engineering in a very systematic way, which is of utmost importance to the novice readers in the field of software Engineering.

Software Engineering Jul 19 2019 "The ninth edition of Software Engineering presents a broad perspective of software engineering, focusing on the processes and techniques fundamental to the creation of reliable, software systems. Increased coverage of agile methods and software reuse, along with coverage of 'traditional' plan-driven software engineering, gives readers the most up-to-date view of the field currently available. Practical case

studies, a full set of easy-to-access supplements, and extensive web resources make teaching the course easier than ever."--Publisher's website.

Software Studies Aug 20 2019 This collection of short expository, critical and speculative texts offers a field guide to the cultural, political, social and aesthetic impact of software. Experts from a range of disciplines each take a key topic in software and the understanding of software, such as algorithms and logical structures.

Software Estimation Sep 01 2020 Covers software estimation techniques with information on how to successfully estimate scheduling, cost, and project activities.

Software Architecture Jul 11 2021 Software architecture is foundational to the development of large, practical software-intensive applications. This brand-new text covers all facets of software architecture and how it serves as the intellectual centerpiece of software development and evolution. Critically, this text focuses on supporting creation of real implemented systems. Hence the text details not only modeling techniques, but design, implementation, deployment, and system adaptation -- as well as a host of other topics -- putting the elements in context and comparing and contrasting them with one another. Rather than focusing on one method, notation, tool, or process, this new text/reference widely surveys software architecture techniques, enabling the instructor and practitioner to choose the right tool for the job at hand. Software Architecture is intended for upper-division undergraduate and graduate courses in software architecture, software design, component-based software engineering, and distributed systems; the text may also be used in introductory as well as advanced software engineering courses.

Making Software May 09 2021 Many claims are made about how certain tools, technologies, and practices improve software development. But which claims are verifiable, and which are merely wishful thinking? In this book, leading thinkers such as Steve McConnell, Barry Boehm, and Barbara Kitchenham offer essays that uncover the truth and unmask myths commonly held among the software development community. Their insights may surprise you. Are some programmers really ten times more productive than others? Does writing tests first help you develop better code faster? Can code metrics predict the number of bugs in a piece of software? Do design patterns actually make better software? What effect does personality have on pair programming? What matters more: how far apart people are geographically, or how far apart they are in the org chart? Contributors include: Jorge Aranda Tom Ball Victor R. Basili Andrew Begel Christian Bird Barry Boehm Marcelo Cataldo Steven Clarke Jason Cohen Robert DeLine Madeline Diep Hakan Erdogmus Michael Godfrey Mark Guzdial Jo E. Hannay Ahmed E. Hassan Israel Herraiz Kim Sebastian Herzig Cory Kapser Barbara Kitchenham Andrew Ko Lucas Layman Steve McConnell Tim Menzies Gail Murphy Nachi Nagappan Thomas J. Ostrand Dewayne Perry Marian Petre Lutz Prechelt Rahul Premraj Forrest Shull Beth Simon Diomidis Spinellis Neil Thomas Walter Tichy Burak Turhan Elaine J. Weyuker Michele A. Whitecraft Laurie Williams Wendy M. Williams Andreas Zeller Thomas Zimmermann

Software Engineering at Google Jun 10 2021 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 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

Empirical Methods and Studies in Software Engineering Jun 29 2020 Nowadays, societies crucially depend on high-quality software for a large part of their functionalities and activities. Therefore, software professionals, researchers, managers, and practitioners alike have to competently decide what software technologies and products to choose for which purpose. For various reasons, systematic empirical studies employing strictly scientific methods are hardly practiced in software engineering. Thus there is an unquestioned need for developing improved and better-qualified empirical methods, for their application in practice and for dissemination of the results. This book describes different kinds of empirical studies and methods for performing such studies, e.g., for planning, performing, analyzing, and reporting such studies. Actual studies are presented in detail in various chapters dealing with inspections, testing, object-oriented techniques, and component-based software engineering.

The Architecture of Computer Hardware, Systems Software, and Networking Nov 03 2020 The Architecture of Computer Hardware, Systems Software and Networking is designed help students majoring in information technology (IT) and information systems (IS) understand the structure and operation of computers and computer-based devices. Requiring only basic computer skills, this accessible textbook introduces the basic principles of system architecture and explores current technological practices and trends using clear, easy-to-understand language. Throughout the text, numerous relatable examples, subject-specific illustrations, and in-depth case studies reinforce key learning points and show students how important concepts are applied in the real world. This fully-updated sixth edition features a wealth of new and revised content that reflects today's technological landscape. Organized into five parts, the book first explains the role of the computer in information systems and provides an overview of its components. Subsequent sections discuss the representation of data in the computer, hardware architecture and operational concepts, the basics of computer networking, system software and operating systems, and various interconnected systems and components. Students are introduced to the material using ideas already familiar to them, allowing them to gradually build upon what they have learned without being overwhelmed and develop a deeper knowledge of computer architecture.

Pattern-Oriented Software Architecture, A Pattern Language for Distributed Computing Jan 17 2022 The eagerly awaited Pattern-Oriented Software Architecture (POSA) Volume 4 is about a pattern language for distributed computing. The authors will guide you through the best practices and introduce you to key areas of building distributed software systems. POSA 4 connects many stand-alone patterns, pattern collections and pattern languages from the existing body of literature found in the POSA series. Such patterns relate to and are useful for distributed computing to a single language. The panel of experts provides you with a consistent and coherent holistic view on the craft of building distributed systems. Includes a foreword by Martin Fowler A must read for practitioners who want practical advice to develop a comprehensive language integrating patterns from key literature.