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5E4 - EMILIO RODNEY

Computer systems play an important role in our society. Software drives those systems. Massive investments of time and resources are made in developing and implementing these systems. Maintenance is inevitable. It is hard and costly. Considerable resources are required to keep the systems active and dependable. We cannot maintain software unless maintainability characters are built into the products and processes. There is an urgent need to reinforce software development practices based on quality and reliability principles. Though maintenance is a mini development lifecycle, it has its own problems. Maintenance issues need corresponding tools and techniques to address them. Software professionals are key players in maintenance. While development is an art and science, maintenance is a craft. We need to develop maintenance personnel to master this craft. Technology impact is very high in systems world today. We can no longer conduct business in the way we did before. That calls for reengineering systems and software. Even reengineered software needs maintenance, soon after its implementation. We have to take business knowledge, procedures, and data into the newly reengineered world. Software maintenance people can play an important role in this migration process. Software technology is moving into global and distributed networking environments. Client/server systems and object-orientation are on their way. Massively parallel processing systems and networking resources are changing database services into corporate data warehouses. Software engineering environments, rapid application development tools are changing the way we used to develop and maintain software. Software maintenance is moving from code maintenance to design maintenance, even onto specification maintenance. Modifications today are made at specification level, regenating the software components, testing and integrating them with the system. Eventually software maintenance has to manage the evolution and evolutionary characteristics of software systems. Software professionals have to maintain not only the software, but the momentum of change in systems and software. In this study, we observe various issues, tools and techniques, and the emerging trends in software technology with particular reference to maintenance. We are not searching for specific solutions. We are identifying issues and finding ways to manage them, live with them, and control their negative impact.

Maximize the impact and precision of your message! Now in its fourth edition, the Microsoft Manual of Style provides essential guidance to content creators, journalists, technical writers, editors, and everyone else who writes about computer technology. Direct from the Editorial Style Board at Microsoft—you get a comprehensive glossary of both general technology terms and those specific to Microsoft; clear, concise usage and style guidelines with helpful examples and alternatives; guidance on grammar, tone, and voice; and best practices for writing content for the web, optimizing for accessibility, and communicating to a worldwide audience. Fully updated and optimized for ease of use, the Microsoft Manual of Style is designed to help you communicate clearly, consistently, and accurately about technical topics—across a range of audiences and media.

By applying the principles in Adaptive Code, Second Edition, you can create code that adapts to new requirements and unforeseen scenarios without significant rework. Gary McLean Hall describes agile best practices, principles, and patterns for designing and writing code that can evolve more quickly and easily, with fewer errors, because it doesn't impede change. This concise, undogmatic book bridges theory and practice, demonstrating its principles and patterns with working C# code examples. Hall helps you: Organize and manage architectural dependencies Leverage best practice patterns -- and avoid anti-patterns Apply SOLID principles: single-responsibility, open/closed, Liskov substitution Manage interface versatility Perform unit testing and refactoring in tandem See how delegation and abstraction impact code adaptability Learn better ways to implement dependency interjection And much more Expanded and updated, this Second Edition adds new coverage of Kanban for BAU, Domain-Driven Design, Hexagonal Architecture, Test-Driven Development, and Test-First methodology. Hall also deepens and updates his discussions of unit testing, refactoring, and Pure Dependency Injection.

Novel in its approach to software design, development, and management, Building Software: A Practitioner's Guide shows you how to successfully build and manage a system. The approach the authors recommend is a simple, effective framework known as Solution Engineering Execution (SEE). Through SEE, you create a successful solution by following a high

Widely considered one of the best practical guides to programming, Steve McConnell's original CODE COMPLETE has been helping developers write better software for more than a decade. Now this classic book has been fully updated and revised with leading-edge practices—and hundreds of new code samples—illustrating the art and science of software construction. Capturing the body of knowledge available from research, academia, and everyday commercial practice, McConnell synthesizes the most effective techniques and must-know principles into clear, pragmatic guidance. No matter what your experience level, development environment, or project size, this book will inform and stimulate your thinking—and help you build the highest quality code. Discover the timeless techniques and strategies that help you: Design for minimum complexity and maximum creativity Reap the benefits of collaborative development Apply defensive programming techniques to reduce and flush out errors Exploit opportunities to refactor—or evolve—code, and do it safely Use construction practices that are right-weight for your project Debug problems quickly and effectively Resolve critical construction issues early and correctly Build quality into the beginning, middle, and end of your project

Get more out of your legacy systems: more performance, functionality, reliability, and manageability Is your code easy to change? Can you get nearly instantaneous feedback when you do change it? Do you understand it? If the answer to any of these questions is no, you have legacy code, and it is draining time and money away from your development efforts. In this book, Michael Feathers offers start-to-finish strategies for working more effectively with large, untested legacy code bases. This book draws on material Michael created for his renowned Object Mentor seminars: techniques Michael has used in mentoring to help hundreds of developers, technical managers, and testers bring their legacy systems under control. The topics covered include Understanding the mechanics of software change: adding features, fixing bugs, improving design, optimizing performance Getting legacy code into a test harness Writing tests that protect you against introducing new problems Techniques that can be used with any language or platform—with examples in Java, C++, C, and C# Accurately identifying where code changes need to be made Coping with legacy systems that aren't object-oriented Handling applications that don't seem to have any structure This book also includes a catalog of twenty-four dependency-breaking techniques that help you work with program elements in isolation and make safer changes.

Offers tutorials covering data-aware controls and Web pages, data organization, reusable code modules, reports, graphing, and contact and task managmement.

The author explains how he organized and supervised effective software development teams at the Microsoft company to come up with timely and high-quality commercial applications, offering a candid look at the group dynamics of software development. Original. (Advanced).

Hailed as a "must-have textbook" (CHOICE, January 2010), the first edition of Game Engine Architecture provided readers with a complete guide to the theory and practice of game engine software development. Updating the content to match today's landscape of game engine architecture, this second edition continues to thoroughly cover the major components that make up a typical commercial game engine. New to the Second Edition Information on new topics, including the latest variant of the C++ programming language, C++11, and the architecture of the eighth generation of gaming consoles, the Xbox One and PlayStation 4 New chapter on audio technology covering the fundamentals of the physics, mathematics, and technology that go into creating an AAA game audio engine Updated sections on multicore programming, pipelined CPU architecture and optimization, localization, pseudovectors and Grassman algebra, dual quaternions, SIMD vector math, memory alignment, and anti-aliasing Insight into the making of Naughty Dog's latest hit, The Last of Us The book presents the theory underlying various subsystems that comprise a commercial game engine as well as the data structures, algorithms, and software interfaces that are typically used to implement them. It primarily focuses on the engine itself, including a host of low-level foundation systems, the rendering engine, the collision system, the physics simulation, character animation, and audio. An in-depth discussion on the "gameplay foundation layer" delves into the game's object model, world editor, event system, and scripting system. The text also touches on some aspects of gameplay programming, including player mechanics, cameras, and AI. An awareness-building tool and a jumping-off point for further learning, Game Engine Architecture, Second Edition gives readers a solid understanding of both the theory and common practices employed within each of the engineering disciplines covered. The book will help readers on their journey through this fascinating and multifaceted field.

This book constitutes the refereed proceedings of the 8th IFIP WG 11.8 World Conference on Security Education, WISE 8, held in Auckland, New Zealand, in July 2013. It also includes papers from WISE 6, held in Bento Gonçalves, Brazil, in July 2009 and WISE 7, held in Lucerne, Switzerland in June 2011. The 34 revised papers presented were carefully reviewed and selected for inclusion in this volume. They represent a cross section of applicable research as well as case studies in security education.

Making a Game Demo: From Concept to Demo Gold provides a detailed and comprehensive guide to getting started in the computer game industry. Written by professional game designers and developers, this book combines the fields of design, art, scripting, and programming in one book to help you take your first steps toward creating a game demo.Discover how the use of documentation can help you organize the game design process; understand how to model and animate a variety of objects, including human characters; explore the basics of scripting with Lua; learn about texturing, vertex lighting, light mapping, motion capture, and collision checking.The companion CD contains all the code and other files needed for the tutorials, the Ka3D game engine, the Zax demo, all the images in the book, demo software, and more!

The importance of computer security has increased dramatically during the past few years. Bishop provides a monumental reference for the theory and practice of computer security. Comprehensive in scope, this book covers applied and practical elements, theory, and the reasons for the design of applications and security techniques.

As programmers, we've all seen source code that's so ugly and buggy it makes our brain ache. Over the past five years, authors Dustin Boswell and Trevor Foucher have analyzed hundreds of examples of "bad code" (much of it their own) to determine why they're bad and how they could be improved. Their conclusion? You need to write code that minimizes the time it would take someone else to understand it—even if that someone else is you. This book focuses on basic principles and practical techniques you can apply every time you write code. Using easy-to-digest code examples from different languages, each chapter dives into a different aspect of coding, and demonstrates how you can make your code easy to understand. Simplify naming, commenting, and formatting with tips that apply to every line of code Refine your program's loops, logic, and variables to reduce complexity and confusion Attack problems at the function level, such as reorganizing blocks of code to do one task at a time Write effective test code that is thorough and concise—as well as readable "Being aware of how the code you create affects those who look at it later is an important part of developing software. The authors did a great job in taking you through the different aspects of this challenge, explaining the details with instructive examples." —Michael Hunger, passionate Software Developer

In this new and improved third edition of the highly popular Game

Engine Architecture, Jason Gregory draws on his nearly two decades of experience at Midway, Electronic Arts and Naughty Dog to present both the theory and practice of game engine software development. In this book, the broad range of technologies and techniques used by AAA game studios are each explained in detail, and their roles within a real industrial-strength game engine are illustrated. New to the Third Edition This third edition offers the same comprehensive coverage of game engine architecture provided by previous editions, along with updated coverage of: computer and CPU hardware and memory caches, compiler optimizations, C++ language standardization, the IEEE-754 floating--point representation, 2D user interfaces, plus an entirely new chapter on hardware parallelism and concurrent programming. This book is intended to serve as an introductory text, but it also offers the experienced game programmer a useful perspective on aspects of game development technology with which they may not have deep experience. As always, copious references and citations are provided in this edition, making it an excellent jumping off point for those who wish to dig deeper into any particular aspect of the game development process. Key Features Covers both the theory and practice of game engine software development Examples are grounded in specific technologies, but discussion extends beyond any particular engine or API. Includes all mathematical background needed. Comprehensive text for beginners and also has content for senior engineers.

Good Code, Bad Code is a clear, practical introduction to writing code that's a snap to read, apply, and remember. With dozens of instantly-useful techniques, you'll find coding insights that normally take years of experience to master. In this fast-paced guide, Google software engineer Tom Long teaches you a host of rules to apply, along with advice on when to break them!

A wide-ranging discussion of the next generation of the Microsoft Windows Operating system. Not only does the book provide an exclusive, inside look at the architectural and programming underpinnings of Windows, but it also gives a detailed vision of the next important evolution of the Windows-centric office. (Operating Systems)

This book provides the software engineering fundamentals, principles and skills needed to develop and maintain high quality software products. It covers requirements specification, design, implementation, testing and management of software projects. It is aligned with the SWEBOK, Software Engineering Undergraduate Curriculum Guidelines and ACM Joint Task Force Curricula on Computing.

The effective and interrelated functioning of system reliability technology, human factors, and quality play an important role in the appropriate, efficient, and cost-effective delivery of health care. Simply put, it can save you time, money, and more importantly, lives. Over the years a large number of journal and conference proceedings articles on these topics have been published, but there are only a small number of books written on each individual topic, and virtually none that brings the pieces together into a unified whole.

Reed's guide includes detailed coverage of architecting VB enterprise applications and features working examples and step-by-step instructions for planning and development of an order entry system, detailing do's and don't's for analysis, design and construction. CD-ROM contains several templates for applying UML, as well as complete Rational Rose models for the sample applications.

Get best-in-class engineering practices to help you write more-robust, bug-free code. Two Microsoft .NET development experts share real-world examples and proven methods for optimizing the software development life cycle—from avoiding costly programming pitfalls to making your development team more efficient. Managed code developers at all levels will find design, prototyping, implementation, debugging, and testing tips to boost the quality of their code—today. Optimize each stage of the development process—from design to testing—and produce higher-quality applications. Use metaprogramming to reduce code complexity, while increasing flexibility and maintainability Treat performance as a feature—and manage it throughout the development life cycle Apply best practices for application scalability Employ preventative security measures to ward off malicious attacks Practice defensive programming to catch bugs before run time Incorporate automated builds, code analysis, and testing into the daily engineering process Implement better source-control management and check-in procedures Establish a quality-driven, milestone-based project rhythm—and improve your results!

Opening moves; The organization; The competition; The customer; The design; Development; The middle game; Ship mode; The launch; Appendix; Index.

A handbook for game development with coverage of both team management topics, such as task tracking and creating the technical design document, and outsourcing strategies for contents, such as motion capture and voice-over talent. It covers various aspects of game development.

Apply a Wide Variety of Design Processes to a Wide Category of Design Problems Design of Biomedical Devices and Systems, Third Edition continues to provide a real-world approach to the design of biomedical engineering devices and/or systems. Bringing together information on the design and initiation of design projects from several sources, this edition strongly emphasizes and further clarifies the standards of design procedure. Following the best practices for conducting and completing a design project, it outlines the various steps in the design process in a basic, flexible, and logical order. What’s New in the Third Edition: This latest edition contains a new chapter on biological engineering design, a new chapter on the FDA regulations for items other than devices such as drugs, new end-of-chapter problems, new case studies, and a chapter on product development. It adds mathematical modeling tools, and provides new information on FDA regulations and standards, as well as clinical trials and sterilization methods. Familiarizes the reader with medical devices, and their design, regulation, and use Considers safety aspects of the devices Contains an enhanced pedagogy Provides an overview of basic design issues Design of Biomedical Devices and Systems, Third Edition covers the design of biomedical engineering devices and/or systems, and is designed to support bioengineering and biomedical engineering students and novice engineers entering the medical device market.

As medical devices become even more intricate, concerns about efficacy, safety, and reliability continue to be raised. Users and patients both want the device to operate as specified, perform in a safe manner, and continue to perform over a long period of time without failure. Following in the footsteps of the bestselling second edition, Reliable D

Although Reliability Engineering can trace its roots back to World War II, its application to medical devices is relatively recent, and its treatment in the published literature has been quite limited. With the medical device industry among the fastest growing segments of the US economy, it is vital that the engineering, biomedical, manufacturing, and design communities have up-to-date information on current developments, tools, and techniques. Medical Device Reliability and Associated Areas fills this need with broad yet detailed coverage of the field. It addresses a variety of topics related - directly and indirectly - to reliability, including human error in health care systems and software quality assurance.

With emphasis on concepts rather than mathematical rigor, a multitude of examples, exercises, tables, and references, this is one resource that everyone connected to the medical device industry must have.

Describes how to put software security into practice, covering such topics as risk analysis, coding policies, Agile Methods, cryptographic standards, and threat tree patterns.

This book combines elementary theory from computer science with real-world challenges in global geodetic observation, based on examples from the Geodetic Observatory Wettzell, Germany. It starts with a step-by-step introduction to developing stable and safe scientific software to run successful software projects. The use of software toolboxes is another essential aspect that leads to the application of generative programming. An example is a generative network middleware that simplifies communication. One of the book’s main focuses is on explaining a potential strategy involving autonomous production cells for space geodetic techniques. The complete software design of a satellite laser ranging system is taken as an example. Such automated systems are then combined for global interaction using secure communication tunnels for remote access. The network of radio telescopes is used as a reference. Combined observatories form coordinated multi-agent systems and offer solutions for operational aspects of the Global Geodetic Observing System (GGOS) with regard to “Industry 4.0”.

A Microsoft developer examines the problem of programming "bugs," showing how and where developers make mistakes along the development process and providing ways users can detect errors early. Original.

A wealth of open and free software is available today for Windows developers who want to extend the development environment, reduce development effort, and increase productivity. This encyclopedic guide explores more than 100 free and open source tools available to programmers who build applications for Windows desktops and servers.

Managing a software development project is a complex process. There are lots of deliverables to produce, standards and procedures to observe, plans and budgets to meet, and different people to manage. Project management doesn't just start and end with designing and building the system. Once you've specified, designed and built (or bought) the system it still needs to be properly tested, documented and settled into the live environment. This can seem like a maze to the inexperienced project manager, or even to the experienced project manager unused to a particular environment. A Hacker's Guide to Project Management acts as a guide through this maze. It's aimed specifically at those managing a project or leading a team for the first time, but it will also help more experienced managers who are either new to software development, or dealing with a new part of the software life-cycle. This book: describes the process of software development, how projects can fail and how to avoid those failures outlines the key skills of a good project manager, and provides practical advice on how to gain and deploy those skills takes the reader step-by-step through the main stages of the project, explaining what must be done, and what must be avoided at each stage suggests what to do if things start to go wrong! The book will also be useful to designers and architects, describing important design techniques, and discussing the important discipline of Software Architecture. This new edition: has been fully revised and updated to reflect current best practices in software development includes a range of different life-cycle models and new design techniques now uses the Unified Modelling Language throughout

Harness the full power of the Visual Studio IDE to take your coding skills to the next level by learning about IDE productivity practices and exclusive techniques Key FeaturesIncrease your productivity by leveraging Visual Studio 2019's improvements and featuresExplore powerful editing, code intelligence, and source code control features to increase productivityDelve into VS’s powerful, untapped features such as custom project templates and extensionsBook Description Visual Studio 2019 (VS 2019) and Visual Studio Code (VS Code) are powerful professional development tools that help you to develop applications for any platform with ease. Whether you want to create web, mobile, or desktop applications, Microsoft Visual Studio is your one-stop solution. This book demonstrates some of the most sophisticated capabilities of the tooling and shows you how to use the integrated development environment (IDE) more efficiently to be more productive. You’ll begin by gradually building on concepts, starting with the basics. The introductory chapters cover shortcuts, snippets, and numerous optimization tricks, along with debugging techniques, source control integration, and other important IDE features that will help you make your time more productive. With that groundwork in place, more advanced concepts such as the inner workings of project and item templates are covered. You will also learn how to write quality, secure code more efficiently as well as discover how certain Visual Studio features work 'under the hood'. By the end of this Visual Studio book, you’ll have learned how to write more secure code faster than ever using your knowledge of the extensions and processes that make developing successful solutions more enjoyable and repeatable. What you will learnUnderstand the similarities and differences between VS 2019 and VS CodeGet to grips with numerous keyboard shortcuts to improve efficiencyDiscover IDE tips and tricks that make it easier to write codeExperiment with code snippets that make it easier to write repeating code patternsFind out how to customize project and item templates with the help of hands-on exercisesUse Visual Studio extensions for ease and improved productivityDelve into Visual Studio’s behind the scene operationsWho this book is for This book is for C# and .NET developers who want to become more efficient and take advantage of features they may not be aware of in the IDE. Those looking to increase their productivity and write quality code more quickly by fully utilizing the power of the Visual Studio IDE will also find this book useful.

If you’re passionate about programming and want to get better at it, you’ve come to the right source. Code Craft author Pete Goodliffe presents a collection of useful techniques and approaches to the art and craft of programming that will help boost your career and your well-being. Goodliffe presents sound advice that he’s learned in 15 years of professional programming. The book’s standalone chapters span the range of a software developer’s life—dealing with code, learning the trade, and improving performance—with no language or industry bias. Whether you’re a seasoned developer, a neophyte professional, or a hobbyist, you’ll find valuable tips in five independent categories: Code-level techniques for crafting lines of code, testing, debugging, and coping with complexity Practices, approaches, and attitudes: keep it simple, collaborate well, reuse, and create malleable code Tactics for learning effectively, behaving ethically, finding challenges, and avoiding stagnation Practical ways to complete things: use the right tools, know what “done” looks like, and seek help from colleagues Habits for working well with others, and pursuing development as a social activity

Aware that many students need a careful introduction to programming and that they respond well to graphical illustration, this concise book adopts a visual approach to programming. Throughout the text, programs that use graphical images are emphasized to clearly demonstrate all the important programming principles. The authors use a spiral approach to programming concepts; introducing concepts simply early on, then in a more sophisticated way later, (e.g., objects are integrated throughout five chapters). Java for Students emphasizes the use of applets but also shows how to program free-standing applications. The authors have been careful to put together a text that covers the powerful features of Java and presents the language to students as both a fun and useful tool.

Enid Mumford (1924-2006) was a pioneer in the sociotechnical design of computer systems. Prof Mumford's work successfully investigated the introduction and implementation of computer systems by large corporations and governments. Mumford's ETHICS approach to software development emphasizes user participation, thus avoiding many of the problems of introducing new systems. It takes a holistic view of organizations, unifying both social and technological solutions. This updated edition of Mumford's book, Designing Human Systems, describes how modern agile programming techniques complement the ETHICS method. Together, the two methods cover both user and developer issues. This integrated approach offers an improved methodology for successful software development projects.

The authors look at the problem of bad code in a new way. Packed with advice based on the authors' decades of experience in the computer security field, this concise and highly readable book explains why so much code today is filled with vulnerabilities, and tells readers what they must do to avoid writing code that can be exploited by attackers. Writing secure code isn't easy, and there are no quick fixes to bad code. To build code that repels attack, readers need to be vigilant through each stage of the entire code lifecycle: Architecture, Design, Implementation, Testing and Operations. Beyond the technical, Secure Coding sheds new light on the economic, psychological, and sheer practical reasons why security vulnerabilities are so ubiquitous today. It presents a new way of thinking about these vulnerabilities and ways that developers can compensate for the factors that have produced such unsecured software in the past.

Covers topics such as the importance of secure systems, threat modeling, canonical representation issues, solving database input, denial-of-service attacks, and security code reviews and checklists.

Write code that can adapt to changes. By applying this book’s principles, you can create code that accommodates new requirements and unforeseen scenarios without significant rewrites. Gary McLean Hall describes Agile best practices, principles, and patterns for designing and writing code that can evolve more quickly and easily, with fewer errors, because it doesn’t impede change. Now revised, updated, and expanded, Adaptive Code, Second Edition adds indispensable practical insights on Kanban, dependency inversion, and creating reusable abstractions. Drawing on over a decade of Agile consulting and development experience, McLean Hall has updated his best-seller with deeper coverage of unit testing, refactoring, pure dependency injection, and more. Master powerful new ways to: • Write code that enables and complements Scrum, Kanban, or any other Agile framework • Develop code that can survive major changes in requirements • Plan for adaptability by using dependencies, layering, interfaces, and design patterns • Perform unit testing and refactoring in tandem, gaining more value from both • Use the “golden master” technique to make legacy code adaptive • Build SOLID code with single-responsibility, open/closed, and Liskov substitution principles • Create smaller interfaces to support more-diverse client and architectural needs • Leverage dependency injection best practices to improve code adaptability • Apply dependency inversion with the Stairway pattern, and avoid related anti-patterns About You This book is for programmers of all skill levels seeking more-practical insight into design patterns, SOLID principles, unit testing, refactoring, and related topics. Most readers will have programmed in C#, Java, C++, or similar object-oriented languages, and will be familiar with core procedural programming techniques.

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.