Working Effectively With Legacy Code Pearsoncmg

Bring new power, performance, and scalability to your existing Perl code! Cure whatever ails your Perl code! Maintain, optimize, and scale any Perl software... whether you wrote it or not Perl software engineering best practices for enterprise environments Includes case studies and code in a fun-to-read format Today's Perl developers spend 60-80% of their time working with existing Perl code. Now, there's a start-to-finish guide to understanding that code, maintaining it, updating it, and refactoring it for maximum performance and reliability. Peter J. Scott, lead author of Perl Debugged, has written the first systematic guide to Perl software engineering. Through extensive examples, he shows how to bring powerful discipline, consistency, and structure to any Perl program-new or old. You'll discover how to: Scale existing Perl code to serve larger network, Web, enterprise, or e-commerce applications Rewrite, restructure, and upgrade any Perl program for improved performance Bring standards and best practices to your entire library of Perl software Organize Perl code into modules and components that are easier to reuse Upgrade code written for earlier versions of Perl Write and execute better tests for your software...or anyone else's Use Perl in team-based, methodology-driven environments Document your Perl code more effectively and efficiently If you've ever inherited Perl code that's hard to maintain, if you write Perl code others will read, if you want to write code that'll be easier for you to maintain, the book that comes to your rescue is Perl Medic. If you code in Perl, you need to read this book.–Adam Turoff, Technical Editor, The Perl Review. Perl Medic is more than a book. It is a well-crafted strategy for approaching, updating, and furthering the cause of inherited Perl programs.–Allen Wyke, co-author of several computer books including JavaScript Unleashed and Pure JavaScript. Scott's explanations of complex material are smooth and deceptively simple. He knows his subject matter and his craft-he makes it look easy. Scott remains relentless practical-even the 'Analysis' chapter is filled with code and tests to run.–Dan Livingston, author of several computer books including Advanced Flash 5: Actionscript in Action

Summary As a developer, you may inherit projects built on existing codebases with design patterns, usage assumptions, infrastructure, and tooling from another time and another team. Fortunately, there are ways to breathe new life into legacy projects so you can maintain, improve, and scale them without fighting their limitations. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Book Re-Engineering Legacy Software is an experience-driven guide to revitalizing inherited projects. It covers refactoring, quality metrics, toolchain and workflow, continuous integration, infrastructure automation, and organizational culture. You'll learn techniques for introducing dependency injection for code modularity, quantitatively measuring quality, and automating infrastructure. You'll also develop practical processes for deciding whether to rewrite or refactor, organizing teams, and convincing management that quality matters. Core topics include deciphering and modularizing awkward code structures, integrating and automating tests, replacing outdated build systems, and using tools like Vagrant and Ansible for infrastructure automation. What's Inside Refactoring legacy codebases Continuous inspection and integration Automating legacy infrastructure New tests for old code Modularizing monolithic projects About the Reader This book is written for developers

and team leads comfortable with an OO language like Java or C#. About the Author Chris Birchall is a senior developer at the Guardian in London, working on the back-end services that power the website. Table of Contents PART 1 GETTING STARTED Understanding the challenges of legacy projects Finding your starting point PART 2 REFACTORING TO IMPROVE THE CODEBASE Preparing to refactor Refactoring Re-architecting The Big Rewrite PART 3 BEYOND REFACTORING—IMPROVING PROJECT WORKFLOWAND INFRASTRUCTURE Automating the development environment Extending automation to test, staging, and production environments Modernizing the development, building, and deployment of legacy software Stop writing legacy code!

This book details Jay Fields' strong opinions on the best way to test, while acknowledging alternative styles and various contexts in which tests are written. Whether you prefer Jay Fields' style or not, this book will help you write better Unit Tests. From the Preface: Over a dozen years ago I read Refactoring for the first time; it immediately became my bible. While Refactoring isn't about testing, it explicitly states: If you want to refactor, the essential precondition is having solid tests. At that time, if Refactoring deemed it necessary, I unquestionably complied. That was the beginning of my quest to create productive unit tests. Throughout the 12+ years that followed reading Refactoring I made many mistakes, learned countless lessons, and developed a set of guidelines that I believe make unit testing a productive use of programmer time. This book provides a single place to examine those mistakes, pass on the lessons learned, and provide direction for those that want to test in a way that I've found to be the most productive. The book does touch on some theory and definition, but the main purpose is to show you how to take tests that are causing you pain and turn them into tests that you're happy to work with.

Good software design is simple and easy to understand. Unfortunately, the average computer program today is so complex that no one could possibly comprehend how all the code works. This concise guide helps you understand the fundamentals of good design through scientific laws—principles you can apply to any programming language or project from here to eternity. Whether you’re a junior programmer, senior software engineer, or non-technical manager, you’ll learn how to create a sound plan for your software project, and make better decisions about the pattern and structure of your system. Discover why good software design has become the missing science Understand the ultimate purpose of software and the goals of good design Determine the value of your design now and in the future Examine real-world examples that demonstrate how a system changes over time Create designs that allow for the most change in the environment with the least change in the software Make easier changes in the future by keeping your code simpler now Gain better knowledge of your software’s behavior with more accurate tests

We're losing tens of billions of dollars a year on broken software, and great new ideas such as agile development and Scrum don't always pay off. But there's hope. The nine software development practices in Beyond Legacy Code are designed to solve the problems facing our industry. Discover why these practices work, not just how they work, and dramatically increase the quality and maintainability of any software project. These nine practices could save the software industry. Beyond Legacy Code is filled with practical, hands-on advice and a common-sense exploration of why technical

practices such as refactoring and test-first development are critical to building maintainable software. Discover how to avoid the pitfalls teams encounter when adopting these practices, and how to dramatically reduce the risk associated with building software--realizing significant savings in both the short and long term. With a deeper understanding of the principles behind the practices, you'll build software that's easier and less costly to maintain and extend. By adopting these nine key technical practices, you'll learn to say what, why, and for whom before how; build in small batches; integrate continuously; collaborate; create CLEAN code; write the test first; specify behaviors with tests; implement the design last; and refactor legacy code. Software developers will find hands-on, pragmatic advice for writing higher quality, more maintainable, and bug-free code. Managers, customers, and product owners will gain deeper insight into vital processes. By moving beyond the old-fashioned procedural thinking of the Industrial Revolution, and working together to embrace standards and practices that will advance software development, we can turn the legacy code crisis into a true Information Revolution.

Learn how to test iOS Applications! iOS Test-Driven Development introduces you to a broad range of concepts with regard to not only writing an application from scratch with testing in mind, but also applying these concepts to already written applications which have little or no tests written for their functionality. Who This Book Is For This book is for intermediate iOS developers who already know the basics of iOS and Swift development but want to learn how to write code which is both testable and maintainable. Topics Covered in iOS Test-Driven Development The TDD Cycle: Learn the concepts of Test-Driven Development and how to implement these concepts within an iOS application. Test Expressions and Expectations: Learn how to test both synchronous code using expressions and asynchronous code using expectations. Test RESTful Networking: Write tests to verify networking endpoints and the ability to mock the returned results. Test Authentication: Write tests which run against authenticated endpoints. Legacy Problems: Explore the problems legacy applications written without any unit tests or without thought of testing the code. Breaking Dependencies into Modules: Learn how to take dependencies within your code and compartmentalize these into their own modules with their own tests. Refactoring Large Classes: Learn how to refactor large unweilding classes into smaller more manageable and testable classes / objects. One thing you can count on: after reading this book, you'll be prepared to write testable applications which you can have confidence in making changes too with the knowledge your tests will catch breaking changes.

Working Effectively with Legacy CodeWORK EFFECT LEG CODE _p1Prentice Hall Professional

The Robert C. Martin Clean Code Collection consists of two bestselling eBooks: Clean Code: A Handbook of Agile Software Craftmanship The Clean Coder: A Code of Conduct for Professional Programmers In Clean Code, legendary software expert Robert C. Martin has teamed up with his colleagues from Object Mentor to distill their best agile practice of cleaning code “on the fly” into a book that will instill within you the values of a software craftsman and make you a better programmer--but only if you work at it. You will be challenged to think about what’s right about that code and what’s wrong with it. More important, you will be challenged to reassess your professional values and your commitment to your craft. In The Clean Coder, Martin introduces the

disciplines, techniques, tools, and practices of true software craftsmanship. This book is packed with practical advice--about everything from estimating and coding to refactoring and testing. It covers much more than technique: It is about attitude. Martin shows how to approach software development with honor, self-respect, and pride; work well and work clean; communicate and estimate faithfully; face difficult decisions with clarity and honesty; and understand that deep knowledge comes with a responsibility to act. Readers of this collection will come away understanding How to tell the difference between good and bad code How to write good code and how to transform bad code into good code How to create good names, good functions, good objects, and good classes How to format code for maximum readability How to implement complete error handling without obscuring code logic How to unit test and practice test-driven development What it means to behave as a true software craftsman How to deal with conflict, tight schedules, and unreasonable managers How to get into the flow of coding and get past writer's block How to handle unrelenting pressure and avoid burnout How to combine enduring attitudes with new development paradigms How to manage your time and avoid blind alleys, marshes, bogs, and swamps How to foster environments where programmers and teams can thrive When to say "No"--and how to say it When to say "Yes"--and what yes really means

Users can dramatically improve the design, performance, and manageability of object-oriented code without altering its interfaces or behavior. "Refactoring" shows users exactly how to spot the best opportunities for refactoring and exactly how to do it, step by step.

With the award-winning book Agile Software Development: Principles, Patterns, and Practices, 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 agile software and how it applies to programming in the .NET Framework.

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.

The Definitive Refactoring Guide, Fully Revamped for Ruby With refactoring, programmers can transform even the most chaotic software into well-designed systems that are far easier to evolve and maintain. What's more, they can do it one step at a time, through a series of simple, proven steps. Now, there's an authoritative and extensively updated version of Martin Fowler's classic refactoring book that utilizes Ruby examples and idioms throughout-not code adapted from Java or any other environment. The authors introduce a detailed catalog of more than 70 proven Ruby refactorings, with specific guidance on when to apply each of them, step-by-step instructions for using them, and example code illustrating how they work. Many of the authors' refactorings use powerful Ruby-specific features, and all code samples are available for download. Leveraging Fowler's original concepts, the authors show how to perform refactoring in a controlled, efficient, incremental manner, so you methodically improve your code's structure without introducing new bugs. Whatever your role in writing or maintaining Ruby code, this book will be an indispensable resource. This book will help you * Understand the core principles of refactoring and the reasons for doing it * Recognize "bad smells" in your Ruby code * Rework bad designs into well-designed code, one step at a time * Build tests to make sure your refactorings work properly * Understand the challenges of refactoring and how they can be overcome * Compose methods to package code properly * Move features between objects to place responsibilities where they fit best * Organize data to make it easier to work with * Simplify conditional expressions and make more effective use of polymorphism * Create interfaces that are easier to understand and use * Generalize more effectively * Perform larger refactorings that transform entire software systems and may take months

or years * Successfully refactor Ruby on Rails code

Summary The Mikado Method is a book written by the creators of this process. It describes a pragmatic, straightforward, and empirical method to plan and perform non-trivial technical improvements on an existing software system. The method has simple rules, but the applicability is vast. As you read, you'll practice a step-by-step system for identifying the scope and nature of your technical debt, mapping the key dependencies, and determining the safest way to approach the "Mikado"—your goal. About the Technology The game "pick-up sticks" is a good metaphor for the Mikado Method. You eliminate "technical debt" —the legacy problems embedded in nearly every software system— by following a set of easy-to-implement rules. You carefully extract each intertwined dependency until you expose the central issue, without collapsing the project. About the Book The Mikado Method presents a pragmatic process to plan and perform nontrivial technical improvements on an existing software system. The book helps you practice a step-by-step system for identifying the scope and nature of your technical debt, mapping the key dependencies, and determining a safe way to approach the "Mikado"—your goal. A natural by-product of this process is the Mikado Graph, a roadmap that reflects deep understanding of how your system works. This book builds on agile processes such as refactoring, TDD, and rapid feedback. It requires no special hardware or software and can be practiced by both small and large teams. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. What's Inside Understand your technical debt Surface the dependencies in legacy systems Isolate and resolve core concerns while creating minimal disruption Create a roadmap for your changes About the Authors Ola Ellnestam and Daniel Brolund are developers, coaches, and team leaders. They developed the Mikado Method in response to years of experience resolving technical debt in complex legacy systems. Table of Contents PART 1 THE BASICS OF THE MIKADO METHOD Meet the Mikado Method Hello, Mikado Method! Goals, graphs, and guidelines Organizing your work PART 2 PRINCIPLES AND PATTERNS FOR IMPROVING SOFTWARE Breaking up a monolith Emergent design Common restructuring patterns

This book is the "Hello, World" tutorial for building products, technologies, and teams in a startup environment. It's based on the experiences of the author, Yevgeniy (Jim) Brikman, as well as interviews with programmers from some of the most successful startups of the last decade, including Google, Facebook, LinkedIn, Twitter, GitHub, Stripe, Instagram, AdMob, Pinterest, and many others. Hello, Startup is a practical, how-to guide that consists of three parts: Products, Technologies, and Teams. Although at its core, this is a book for programmers, by programmers, only Part II (Technologies) is significantly technical, while the rest should be accessible to technical and non-technical audiences alike. If you’re at all interested in startups—whether you’re a programmer at the beginning of your career, a seasoned developer bored with large company

politics, or a manager looking to motivate your engineers—this book is for you.
"After many decades - and even more methodologies - software projects are still failing. Why? Managers see software development as a production line. Companies don't know how to manage software projects and hire good developers. Many developers still behave like factory workers, providing terrible service to their employers and clients. Agile was a big step forward, but not enough. What's missing? The right mindset - for both developers and their employers. As developers worldwide are recognizing, the right mindset is craftsmanship ... 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 you improve upon best-practice technical disciplines such as agile and lean, taking all your development projects to the next level. You'll 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. By placing greater professionalism, technical excellence, and customer satisfaction at the heart of what you do, you won't just deliver more value to everyone involved: you'll be happier and more fulfilled doing it"--Publisher's description.
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.
Jack the Ripper and legacy codebases have more in common than you'd think. Inspired by forensic psychology methods, you'll learn strategies to predict the future of your codebase, assess refactoring direction, and understand how your team influences the design. With its unique blend of forensic psychology and code analysis, this book arms you with the strategies you need, no matter what programming language you use. Software is a living entity that's constantly changing. To understand software systems, we need to know where they came from and how they evolved. By mining commit data and analyzing the history of your code, you can start fixes ahead of time to eliminate broken designs, maintenance issues, and team productivity bottlenecks. In this book, you'll learn forensic psychology techniques to successfully maintain your software. You'll create a geographic profile from your commit data to find hotspots, and apply temporal coupling concepts to uncover hidden relationships between unrelated areas in your code. You'll also measure the effectiveness of your code improvements. You'll learn how to apply these techniques on projects both large and small. For small projects, you'll get new insights into your design and how well the code fits your ideas. For large projects, you'll identify the good and the fragile parts. Large-scale development is also a social activity, and the team's dynamics influence code quality. That's why this book shows you how to uncover social biases when analyzing the evolution of your system. You'll use commit messages as eyewitness accounts to what is really happening in your code. Finally, you'll put it all together by tracking organizational problems in the code

and finding out how to fix them. Come join the hunt for better code! What You Need: You need Java 6 and Python 2.7 to run the accompanying analysis tools. You also need Git to follow along with the examples.

Refactoring has proven its value in a wide range of development projects–helping software professionals improve system designs, maintainability, extensibility, and performance. Now, for the first time, leading agile methodologist Scott Ambler and renowned consultant Pramodkumar Sadalage introduce powerful refactoring techniques specifically designed for database systems. Ambler and Sadalage demonstrate how small changes to table structures, data, stored procedures, and triggers can significantly enhance virtually any database design–without changing semantics. You'll learn how to evolve database schemas in step with source code–and become far more effective in projects relying on iterative, agile methodologies. This comprehensive guide and reference helps you overcome the practical obstacles to refactoring real-world databases by covering every fundamental concept underlying database refactoring. Using start-to-finish examples, the authors walk you through refactoring simple standalone database applications as well as sophisticated multi-application scenarios. You'll master every task involved in refactoring database schemas, and discover best practices for deploying refactorings in even the most complex production environments. The second half of this book systematically covers five major categories of database refactorings. You'll learn how to use refactoring to enhance database structure, data quality, and referential integrity; and how to refactor both architectures and methods. This book provides an extensive set of examples built with Oracle and Java and easily adaptable for other languages, such as C#, C++, or VB.NET, and other databases, such as DB2, SQL Server, MySQL, and Sybase. Using this book's techniques and examples, you can reduce waste, rework, risk, and cost–and build database systems capable of evolving smoothly, far into the future.

Write Truly Great iOS and OS X Code with Objective-C 2.0! Effective Objective-C 2.0 will help you harness all of Objective-C's expressive power to write OS X or iOS code that works superbly well in production environments. Using the concise, scenario-driven style pioneered in Scott Meyers' best-selling Effective C++, Matt Galloway brings together 52 Objective-C best practices, tips, shortcuts, and realistic code examples that are available nowhere else. Through real-world examples, Galloway uncovers little-known Objective-C quirks, pitfalls, and intricacies that powerfully impact code behavior and performance. You'll learn how to choose the most efficient and effective way to accomplish key tasks when multiple options exist, and how to write code that's easier to understand, maintain, and improve. Galloway goes far beyond the core language, helping you integrate and leverage key Foundation framework classes and modern system libraries, such as Grand Central Dispatch. Coverage includes Optimizing interactions and relationships between Objective-C objects Mastering interface and API design: writing classes that feel "right at home" Using protocols and

categories to write maintainable, bug-resistant code Avoiding memory leaks that can still occur even with Automatic Reference Counting (ARC) Writing modular, powerful code with Blocks and Grand Central Dispatch Leveraging differences between Objective-C protocols and multiple inheritance in other languages Improving code by more effectively using arrays, dictionaries, and sets Uncovering surprising power in the Cocoa and Cocoa Touch frameworks

Object-Oriented Reengineering Patterns collects and distills successful techniques in planning a reengineering project, reverse-engineering, problem detection, migration strategies and software redesign. This book is made available under the Creative Commons Attribution-ShareAlike 3.0 license. You can either download the PDF for free, or you can buy a softcover copy from lulu.com. Additional material is available from the book's web page at http://scg.unibe.ch/oorp

Another day without Test-Driven Development means more time wasted chasing bugs and watching your code deteriorate. You thought TDD was for someone else, but it's not! It's for you, the embedded C programmer. TDD helps you prevent defects and build software with a long useful life. This is the first book to teach the hows and whys of TDD for C programmers. TDD is a modern programming practice C developers need to know. It's a different way to program---unit tests are written in a tight feedback loop with the production code, assuring your code does what you think. You get valuable feedback every few minutes. You find mistakes before they become bugs. You get early warning of design problems. You get immediate notification of side effect defects. You get to spend more time adding valuable features to your product. James is one of the few experts in applying TDD to embedded C. With his 1.5 decades of training,coaching, and practicing TDD in C, C++, Java, and C# he will lead you from being a novice in TDD to using the techniques that few have mastered. This book is full of code written for embedded C programmers. You don't just see the end product, you see code and tests evolve. James leads you through the thought process and decisions made each step of the way. You'll learn techniques for test-driving code right nextto the hardware, and you'll learn design principles and how to apply them to C to keep your code clean and flexible. To run the examples in this book, you will need a C/C++ development environment on your machine, and the GNU GCC tool chain or Microsoft Visual Studio for C++ (some project conversion may be needed).

& Most software practitioners deal with inherited code; this book teaches them how to optimize it & & Workbook approach facilitates the learning process & & Helps you identify where problems in a software application exist or are likely to exist

In 1994, Design Patterns changed the landscape of object-oriented development by introducing classic solutions to recurring design problems. In 1999, Refactoring revolutionized design by introducing an effective process for improving code. With the highly anticipated Refactoring to Patterns , Joshua

Kerievsky has changed our approach to design by forever uniting patterns with the evolutionary process of refactoring. This book introduces the theory and practice of pattern-directed refactorings: sequences of low-level refactorings that allow designers to safely move designs to, towards, or away from pattern implementations. Using code from real-world projects, Kerievsky documents the thinking and steps underlying over two dozen pattern-based design transformations. Along the way he offers insights into pattern differences and how to implement patterns in the simplest possible ways. Coverage includes: A catalog of twenty-seven pattern-directed refactorings, featuring real-world code examples Descriptions of twelve design smells that indicate the need for this book's refactorings General information and new insights about patterns and refactoring Detailed implementation mechanics: how low-level refactorings are combined to implement high-level patterns Multiple ways to implement the same pattern–and when to use each Practical ways to get started even if you have little experience with patterns or refactoring Refactoring to Patterns reflects three years of refinement and the insights of more than sixty software engineering thought leaders in the global patterns, refactoring, and agile development communities. Whether you're focused on legacy or "greenfield" development, this book will make you a better software designer by helping you learn how to make important design changes safely and effectively.

CD-ROM contains cross-referenced code.

Systems programming provides the foundation for the world's computation. Writing performance-sensitive code requires a programming language that puts programmers in control of how memory, processor time, and other system resources are used. The Rust systems programming language combines that control with a modern type system that catches broad classes of common mistakes, from memory management errors to data races between threads. With this practical guide, experienced systems programmers will learn how to successfully bridge the gap between performance and safety using Rust. Jim Blandy, Jason Orendorff, and Leonora Tindall demonstrate how Rust's features put programmers in control over memory consumption and processor use by combining predictable performance with memory safety and trustworthy concurrency. You'll learn: Rust's fundamental data types and the core concepts of ownership and borrowing How to write flexible, efficient code with traits and generics How to write fast, multithreaded code without data races Rust's key power tools: closures, iterators, and asynchronous programming Collections, strings and text, input and output, macros, unsafe code, and foreign function interfaces This revised, updated edition covers the Rust 2021 Edition.

Are you working on a codebase where cost overruns, death marches, and heroic fights with legacy code monsters are the norm? Battle these adversaries with novel ways to identify and prioritize technical debt, based on behavioral data from how developers work with code. And that's just for starters. Because good code involves social design, as well as technical design, you can find surprising dependencies between people and code to resolve coordination bottlenecks among teams. Best of all, the techniques build on behavioral data that you already have: your version-control system. Join the fight for better code! Use statistics and data science to uncover both problematic code and the behavioral patterns of the developers who build your software. This combination gives you insights you can't get from the code alone. Use these insights to prioritize refactoring needs, measure their effect, find implicit dependencies

between different modules, and automatically create knowledge maps of your system based on actual code contributions. In a radical, much-needed change from common practice, guide organizational decisions with objective data by measuring how well your development teams align with the software architecture. Discover a comprehensive set of practical analysis techniques based on version-control data, where each point is illustrated with a case study from a real-world codebase. Because the techniques are language neutral, you can apply them to your own code no matter what programming language you use. Guide organizational decisions with objective data by measuring how well your development teams align with the software architecture. Apply research findings from social psychology to software development, ensuring you get the tools you need to coach your organization towards better code. If you're an experienced programmer, software architect, or technical manager, you'll get a new perspective that will change how you work with code. What You Need: You don't have to install anything to follow along in the book. TThe case studies in the book use well-known open source projects hosted on GitHub. You'll use CodeScene, a free software analysis tool for open source projects, for the case studies. We also discuss alternative tooling options where they exist.

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.

Automated testing is a cornerstone of agile development. An effective testing strategy will deliver new functionality more aggressively, accelerate user feedback, and improve quality. However, for many developers, creating effective automated tests is a unique and unfamiliar challenge. xUnit Test Patterns is the definitive guide to writing automated tests using xUnit, the most popular unit testing framework in use today. Agile coach and test automation expert Gerard Meszaros describes 68 proven patterns for making tests easier to write, understand, and maintain. He then shows you how to make them more robust and repeatable--and far more cost-effective. Loaded with information, this book feels like three books in one. The first part is a detailed tutorial on test automation that covers everything from test strategy to in-depth test coding. The second part, a catalog of 18 frequently encountered "test smells," provides trouble-shooting guidelines to help you determine the root cause of problems and the most applicable patterns. The third part contains detailed descriptions of each pattern, including refactoring instructions illustrated by extensive code samples in multiple programming languages.

The Linux Enterprise Cluster explains how to take a number of inexpensive computers with limited resources, place them on a normal computer network, and install free software so that the computers act together like one powerful server. This makes it possible to build a very inexpensive and reliable business system for a small business or a large corporation. The book includes information on how to build a high-availability server pair using the Heartbeat package, how to use the Linux Virtual Server load balancing software, how to configure a reliable printing system in a Linux cluster environment, and how to build a job scheduling system in Linux with no single point of failure. The book also includes information on high availability techniques that can be used with or without a cluster, making it helpful for System Administrators even if they are not building a cluster. Anyone interested in deploying Linux in an environment where low cost computer reliability is important will find this book useful. The CD-ROM includes the Linux kernel, ldirectord software, the Mon monitoring package, the Ganglia package, OpenSSH, rsync, SystemImager, Heartbeat, and all the figures and illustrations used in the book.

Page 26: How can I avoid off-by-one errors? Page 143: Are Trojan Horse attacks for real? Page 158: Where should I look when my application can't handle its workload? Page 256: How can I detect memory leaks? Page 309: How do I target my application to international markets?

Page 394: How should I name my code's identifiers? Page 441: How can I find and improve the code coverage of my tests? Diomidis Spinellis' first book, Code Reading, showed programmers how to understand and modify key functional properties of software. Code Quality focuses on non-functional properties, demonstrating how to meet such critical requirements as reliability, security, portability, and maintainability, as well as efficiency in time and space. Spinellis draws on hundreds of examples from open source projects--such as the Apache web and application servers, the BSD Unix systems, and the HSQLDB Java database--to illustrate concepts and techniques that every professional software developer will be able to appreciate and apply immediately. Complete files for the open source code illustrated in this book are available online at: http://www.spinellis.gr/codequality/

"This is a warm and reassuring book that will equip you to read, understand, and update legacy code in any language." --Kate Gregory "It is easy to forget that outside the world of software development, the word legacy has another meaning. A positive meaning, a gift of wealth from the past to the present for the future. This book will help you reclaim the word." --Kevlin Henney If you're like most software developers, you have to deal with legacy code. But working with legacy code is challenging! This book will teach you how to be happy, efficient and successful when working with legacy code. Here are the skills that The Legacy Code Programmer's Toolbox will teach you: - how to deal with legacy code efficiently and with a positive approach, - 10 techniques how to understand legacy code, - 5 ways to reduce the size of long functions, - a technique to turn legacy code to your advantage to improve your programming skills, - how to be in a motivated mindset, - the power of knowledge of your codebase, how to acquire it and make every person in your team acquire it too, - how to find the source of a bug quickly in a large and unfamiliar codebase, - where to focus your refactoring efforts so that they make your life easier, - and many more things to be efficient and happy when working with legacy code!

As iOS apps become increasingly complex and business-critical, iOS developers must ensure consistently superior code quality. This means adopting best practices for creating and testing iOS apps. Test-Driven Development (TDD) is one of the most powerful of these best practices. Test-Driven iOS Development is the first book 100% focused on helping you successfully implement TDD and unit testing in an iOS environment. Long-time iOS/Mac developer Graham Lee helps you rapidly integrate TDD into your existing processes using Apple’s Xcode 4 and the OCUnit unit testing framework. He guides you through constructing an entire Objective-C iOS app in a test-driven manner, from initial specification to functional product. Lee also introduces powerful patterns for applying TDD in iOS development, and previews powerful automated testing capabilities that will soon arrive on the iOS platform. Coverage includes Understanding the purpose, benefits, and costs of unit testing in iOS environments Mastering the principles of TDD, and applying them in areas from app design to refactoring Writing usable, readable, and repeatable iOS unit tests Using OCUnit to set up your Xcode project for TDD Using domain analysis to identify the classes and interactions your app needs, and designing it accordingly Considering third-party tools for iOS unit testing Building networking code in a test-driven manner Automating testing of view controller code that interacts with users Designing to interfaces, not implementations Testing concurrent code that typically runs in the background Applying TDD to existing apps Preparing for Behavior Driven Development (BDD) The only iOS-specific guide to TDD and unit testing, Test-Driven iOS Development covers both essential concepts and practical implementation.

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 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

Making significant changes to large, complex codebases is a daunting task--one that's nearly impossible to do successfully unless you have the right team, tools, and mindset. If your application is in need of a substantial overhaul and you're unsure how to go about implementing those changes in a sustainable way, then this book is for you. Software engineer Maude Lemaire walks you through the entire refactoring process from start to finish. You'll learn from her experience driving performance and refactoring efforts at Slack during a period of critical growth, including two case studies illustrating the impact these techniques can have in the real world. This book will help you achieve a newfound ability to productively introduce important changes in your codebase. Understand how code degrades and why some degradation is inevitable Quantify and qualify the state of your codebase before refactoring Draft a well-scoped execution plan with strategic milestones Win support from engineering leadership Build and coordinate a team best suited for the project Communicate effectively inside and outside your team Adopt best practices for successfully executing the refactor Summary The Art of Unit Testing, Second Edition guides you step by step from writing your first simple tests to developing robust test sets that are maintainable, readable, and trustworthy. You'll master the foundational ideas and quickly move to high-value subjects like mocks, stubs, and isolation, including frameworks such as Moq, FakeItEasy, and Typemock Isolator. You'll explore test patterns and organization, working with legacy code, and even "untestable" code. Along the way, you'll learn about integration testing and techniques and tools for testing databases and other technologies. About this Book You know you should be unit testing, so why aren't you doing it? If you're new to unit testing, if you find unit testing tedious, or if you're just not getting enough payoff for the effort you put into it, keep reading. The Art of Unit Testing, Second Edition guides you step by step from writing your first simple unit tests to building complete test sets that are maintainable, readable, and trustworthy. You'll move quickly to more complicated subjects like mocks and stubs, while learning to use isolation (mocking) frameworks like Moq, FakeItEasy, and Typemock Isolator. You'll explore test patterns and organization, refactor code applications, and learn how to test "untestable" code. Along the way, you'll learn about integration testing and techniques for testing with databases. The examples in the book use C#, but will benefit anyone using a statically typed language such as Java or C++. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. What's Inside Create readable, maintainable, trustworthy tests Fakes, stubs, mock objects, and isolation (mocking) frameworks Simple dependency injection techniques Refactoring legacy code About the Author Roy Osherove has been coding for over 15 years, and he consults and trains teams worldwide on the gentle art of unit testing and test-driven development. His blog is at ArtOfUnitTesting.com. Table of Contents PART 1 GETTING STARTED The basics of unit

testing A first unit test PART 2 CORE TECHNIQUES Using stubs to break dependencies Interaction testing using mock objects Isolation (mocking) frameworks Digging deeper into isolation frameworks PART 3 THE TEST CODE Test hierarchies and organization The pillars of good unit tests PART 4 DESIGN AND PROCESS Integrating unit testing into the organization Working with legacy code Design and testability

A single dramatic software failure can cost a company millions of dollars - but can be avoided with simple changes to design and architecture. This new edition of the best-selling industry standard shows you how to create systems that run longer, with fewer failures, and recover better when bad things happen. New coverage includes DevOps, microservices, and cloud-native architecture. Stability antipatterns have grown to include systemic problems in large-scale systems. This is a must-have pragmatic guide to engineering for production systems. If you're a software developer, and you don't want to get alerts every night for the rest of your life, help is here. With a combination of case studies about huge losses - lost revenue, lost reputation, lost time, lost opportunity - and practical, down-to-earth advice that was all gained through painful experience, this book helps you avoid the pitfalls that cost companies millions of dollars in downtime and reputation. Eighty percent of project life-cycle cost is in production, yet few books address this topic. This updated edition deals with the production of today's systems - larger, more complex, and heavily virtualized - and includes information on chaos engineering, the discipline of applying randomness and deliberate stress to reveal systematic problems. Build systems that survive the real world, avoid downtime, implement zero-downtime upgrades and continuous delivery, and make cloud-native applications resilient. Examine ways to architect, design, and build software - particularly distributed systems - that stands up to the typhoon winds of a flash mob, a Slashdotting, or a link on Reddit. Take a hard look at software that failed the test and find ways to make sure your software survives. To skip the pain and get the experience...get this book.

Explains the importance of the test-driven environment in assuring quality while developing software, introducing patterns, principles, and techniques for testing any software system.

“One of the most significant books in my life.” –Obie Fernandez, Author, The Rails Way “Twenty years ago, the first edition of The Pragmatic Programmer completely changed the trajectory of my career. This new edition could do the same for yours.” –Mike Cohn, Author of Succeeding with Agile, Agile Estimating and Planning, and User Stories Applied “. . . filled with practical advice, both technical and professional, that will serve you and your projects well for years to come.” –Andrea Goulet, CEO, Corgibytes, Founder, LegacyCode.Rocks “. . . lightning does strike twice, and this book is proof.” –VM (Vicky) Brasseur, Director of Open Source Strategy, Juniper Networks The Pragmatic Programmer is one of those rare tech books you’ll read, re-read, and read again over the years. Whether you’re new to the field or an experienced practitioner, you’ll come away with fresh insights each and every time. Dave Thomas and Andy Hunt wrote the first edition of this influential book in 1999 to help their clients create better software and rediscover the joy of coding. These lessons have helped a generation of programmers examine the very essence of software development, independent of any particular language, framework, or methodology, and the Pragmatic philosophy has spawned hundreds of books, screencasts, and audio books, as well as thousands of careers and success stories. Now, twenty years later, this new edition re-examines what it means to be a modern programmer. Topics range from personal responsibility and career development to architectural techniques for keeping your code flexible and easy to adapt and reuse. Read this book, and you’ll learn how to: Fight software rot Learn continuously Avoid the trap of duplicating knowledge Write flexible, dynamic, and adaptable code Harness the power of basic tools Avoid programming by coincidence Learn real requirements Solve the underlying problems of concurrent code Guard against security vulnerabilities Build teams of Pragmatic Programmers Take responsibility for your work and career Test ruthlessly and effectively,

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