

Working Effectively With Legacy Code (Robert C Martin Series)

The latest title in Addison Wesley's world-renowned Robert C. Martin Series on better software development, Code That Fits in Your Head offers indispensable practical advice for writing code at a sustainable pace, and controlling the complexity that causes too many software projects to spin out of control. Reflecting decades of experience consulting on software projects and helping development teams succeed, Mark Seemann shares proven practices and heuristics, supported by realistic advice. His guidance ranges from checklists to teamwork, encapsulation to decomposition, API design to unit testing and troubleshooting. Throughout, Seemann illuminates his insights with up-to-date code examples drawn from a start to finish sample project. Seemann's examples are written in C#, and designed to be clear and useful to every object-oriented enterprise developer, whether they use C#, Java, or another language. Code That Fits in Your Head is accompanied by the complete code base for this sample application, organized in a Git repository to facilitate further exploration of details that don't fit in the text.

This guide for programmers teaches how to practice Test Driven Development (TDD), also called Test First Development. Contrary to the accepted approach to testing, when you practice TDD you write tests for code before you write the code being tested. This text provides examples in Java.

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

Put into motion practical examples to master Test-Driven Development (TDD) and acceptance testing in Swift. This book uses a pragmatic approach to writing well-tested code and provides techniques that can be used to retrofit tests to legacy code bases. You'll be introduced to basic principles of TDD, such as Test First, Red-Green-Refactor, Remove Duplicate code, Dependency Injection, and Single Responsibility. Approaches covered include TDD, behavior-driven development (BDD), UI, and acceptance testing with common standard/open source frameworks. iOS Code Testing offers helpful instruction to teach iOS developers to retrospectively fit tests to legacy code, refactor legacy code so as to make the code more testable, install and configure a popular Swift BDD framework, practice BDD with Xcode, and create automated UI tests with Xcode. Additionally, many projects have legacy code bases. Legacy code is often seen as a blocker when it comes to implementing any kind of testing. What You Will Learn Fit test to legacy code retrospectively Install and configure popular Swift BDD frameworks Practice BDD with Xcode Who This Book Is For Software practitioners, such as Swift developers and mobile app testers.

Practical Skills for Software Professionals Working with Legacy Code
WORKING EFFECTIVELY WITH LEGACY CODE.

Perl Medic

Speed-Learning Agile Software Development

Growing Object-Oriented Software, Guided by Tests

Fit for Developing Software

Refactoring Workbook

"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!

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 Beigel 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

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.

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.

The Software Craftsman

The Art of Unit Testing

with examples in C#

Quality Code

Use Forensic Techniques to Arrest Defects, Bottlenecks, and Bad Design in Your Programs

Building Quality into Software

Becoming a Better Programmer

Your code is a testament to your skills as a developer. No matter what language you use, code should be clean, elegant, and uncluttered. By using test-driven development (TDD), you'll write code that's easy to understand, retains its elegance, and works for months, even years, to come. With this indispensable guide, you'll learn how to use TDD with three different languages: Go, JavaScript, and Python. Author Saleem Siddiqui shows you how to tackle domain complexity using a unit test-driven approach. TDD partitions requirements into small, implementable features, enabling you to solve problems irrespective of the languages and frameworks you use. With Learning Test-Driven Development at your side, you'll learn how to incorporate TDD into your regular coding practice. This book helps you: Use TDD's divide-and-conquer approach to tame domain complexity Understand how TDD works across languages, testing frameworks, and domain concepts Learn how TDD enables continuous integration Support refactoring and

redesign with TDD Learn how to write a simple and effective unit test harness in JavaScript Set up a continuous integration environment with the unit tests produced during TDD Write clean, uncluttered code using TDD in Go, JavaScript, and Python

"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.

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 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 Heuristics for Software Engineering

Working Effectively with Legacy Code

Beyond Legacy Code

A Handbook for People Who Care About Code

Refactoring to Patterns

Fix Technical Debt with Behavioral Code Analysis

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.

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.

This deck of index cards is arranged in four sections: concepts, planning, teamwork and coding. The front of the card lists the things you need to know and the back provides further detail.

For those considering Extreme Programming, this book provides no-nonsense advice on agile planning, development, delivery, and management taken from the authors' many years of experience. While plenty of books address the what and why of agile development, very few offer the information users can apply directly.

The Open Source Perspective
Software Design X-Rays

What every programmer needs to know about cognition

Developer Testing

Refactoring

Evolutionary Database Design (paperback)

Transforming Legacy Code

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.

Working Effectively with Legacy Code WORK EFFECT LEG CODE _p1 Prentice Hall Professional

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.

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.

Refactoring Test Code

The Legacy Code Programmer's Toolbox

Effective Unit Testing

xUnit Test Patterns

Refactoring Databases

Python For Dummies

Making Software

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/>

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

Summary *Effective Unit Testing* is written to show how to write good tests—tests that are concise and to the point, expressive, useful, and maintainable. Inspired by Roy Osherove's bestselling *The Art of Unit Testing*, this book focuses on tools and practices specific to the Java world. It introduces you to emerging techniques like behavior-driven development and specification by example, and shows you how to add robust practices into your toolkit. **About Testing** Test the components before you assemble them into a full application, and you'll get better software. For Java developers, there's now a decade of experience

with well-crafted tests that anticipate problems, identify known and unknown dependencies in the code, and allow you to test components both in isolation and in the context of a full application. About this Book Effective Unit Testing teaches Java developers how to write unit tests that are concise, expressive, useful, and maintainable. Offering crisp explanations and easy-to-absorb examples, it introduces emerging techniques like behavior-driven development and specification by example. Programmers who are already unit testing will learn the current state of the art. Those who are new to the game will learn practices that will serve them well for the rest of their career. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book. About the Author Lasse Koskela is a coach, trainer, consultant, and programmer. He hacks on open source projects, helps companies improve their productivity, and speaks frequently at conferences around the world. Lasse is the author of Test Driven, also published by Manning. What's Inside A thorough introduction to unit testing Choosing best-of-breed tools Writing tests using dynamic languages Efficient test automation Table of Contents PART 1 FOUNDATIONS The promise of good tests In search of good Test doubles PART 2 CATALOG Readability Maintainability Trustworthiness PART 3 DIVERSIONS Testable design Writing tests in other JVM languages Speeding up test execution How do successful agile teams deliver bug-free, maintainable software—iteration after iteration? The answer is: By seamlessly combining development and testing. On such teams, the developers write testable code that enables them to verify it using various types of automated tests. This approach keeps regressions at bay and prevents “testing crunches”—which otherwise may occur near the end of an iteration—from ever happening. Writing testable code, however, is often difficult, because it requires knowledge and skills that cut across multiple disciplines. In Developer Testing, leading test expert and mentor Alexander Tarlinder presents concise, focused guidance for making new and legacy code far more testable. Tarlinder helps you answer questions like: When have I tested this enough? How many tests do I need to write? What should my tests verify? You ’ ll learn how to design for testability and utilize techniques like refactoring, dependency breaking, unit testing, data-driven testing, and test-driven development to achieve the highest possible confidence in your software. Through practical examples in Java, C#, Groovy, and Ruby, you ’ ll discover what works—and what doesn ’ t. You can quickly begin using Tarlinder ’ s technology-agnostic insights with most languages and toolsets while not getting buried in specialist details. The author helps you adapt your current programming style for testability, make a testing mindset “second nature,” improve your code, and enrich your day-to-day experience as a software professional. With this guide, you will Understand the discipline and vocabulary of testing from the developer ’ s standpoint Base developer tests on well-established testing techniques and best practices Recognize code constructs that impact testability Effectively name, organize, and execute unit tests Master the essentials of classic and “mockist-style” TDD Leverage test doubles with or without mocking frameworks Capture the benefits of programming by contract, even without runtime support for contracts Take control of dependencies between classes, components, layers, and tiers Handle combinatorial explosions of test cases, or scenarios requiring many similar tests Manage code duplication when it can ’ t be eliminated Actively maintain and improve your test suites Perform more advanced tests at the integration, system, and end-to-end levels Develop an understanding for how the organizational context influences quality assurance Establish well-balanced and effective testing strategies suitable for agile teams

Working Effectively with Unit Tests

Test-driven Development

Re-Engineering Legacy Software

Test-Driven iOS Development

Coders at Work

Nine Practices to Extend the Life (and Value) of Your Software

More Working Effectively with Legacy Code

Peter Seibel interviews 15 of the most interesting computer

programmers alive today in Coders at Work, offering a companion

volume to Apress's highly acclaimed best-seller *Founders at Work* by Jessica Livingston. As the words "at work" suggest, Peter Seibel focuses on how his interviewees tackle the day-to-day work of programming, while revealing much more, like how they became great programmers, how they recognize programming talent in others, and what kinds of problems they find most interesting. Hundreds of people have suggested names of programmers to interview on the *Coders at Work* web site: www.codersatwork.com. The complete list was 284 names. Having digested everyone's feedback, we selected 15 folks who've been kind enough to agree to be interviewed: Frances Allen: Pioneer in optimizing compilers, first woman to win the Turing Award (2006) and first female IBM fellow Joe Armstrong: Inventor of Erlang Joshua Bloch: Author of the Java collections framework, now at Google Bernie Cosell: One of the main software guys behind the original ARPANET IMPs and a master debugger Douglas Crockford: JSON founder, JavaScript architect at Yahoo! L. Peter Deutsch: Author of Ghostscript, implementer of Smalltalk-80 at Xerox PARC and Lisp 1.5 on PDP-1 Brendan Eich: Inventor of JavaScript, CTO of the Mozilla Corporation Brad Fitzpatrick: Writer of LiveJournal, OpenID, memcached, and Perlbal Dan Ingalls: Smalltalk implementor and designer Simon Peyton Jones: Coinventor of Haskell and lead designer of Glasgow Haskell Compiler Donald Knuth: Author of *The Art of Computer Programming* and creator of TeX Peter Norvig: Director of Research at Google and author of the standard text on AI Guy Steele: Coinventor of Scheme and part of the Common Lisp Gang of Five, currently working on Fortress Ken Thompson: Inventor of UNIX Jamie Zawinski: Author of XEmacs and early Netscape/Mozilla hacker

& 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

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 OCUit 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 OCUit 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.

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. The 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.

Brutal Refactoring

Framework for Integrated Tests

iOS Code Testing

Professionalism, Pragmatism, Pride

Design and Deploy Production-Ready Software

A guide for Java developers

Test-Driven Development and Behavior-Driven Development with Swift

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 measurement, 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 integration 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 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 WORKFLOW AND INFRASTRUCTURE Automating the development environment Extending automation to test, staging, and production environments Modernizing the development, build, and deployment of legacy software Stop writing legacy code!

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? Do you understand it? If the answer to any of these questions is no, you have legacy code, and it's draining time and money away from your development efforts. In this book, Michael Featherer shares 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 that 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 Get

legacy code into a test harness Writing tests that protect you against introducing new pro
Techniques that can be used with any language or platform—with examples in Java, C++, C,
Accurately identifying where code changes need to be made Coping with legacy systems th
object-oriented Handling applications that don't seem to have any structure This book also
catalog of twenty-four dependency-breaking techniques that help you work with program e
isolation and make safer changes.

Python is one of the most powerful, easy-to-read programming languages around, but it doe
limitations. This general purpose, high-level language that can be extended and embedded is
option for many programming problems, but a poor solution to others. Python For Dummies
quick-and-easy guide to getting the most out of this robust program. This hands-on book w
everything you need to know about building programs, debugging code, and simplifying devel
as well as defining what actions it can perform. You'll wrap yourself around all of its advanc
features and become an expert Python user in no time. This guide gives you the tools you ne
Master basic elements and syntax Document, design, and debug programs Work with string
pro Direct a program with control structures Integrate integers, complex numbers, and mod
lists, stacks, and queues Create an organized dictionary Handle functions, data, and namesp
Construct applications with modules and packages Call, create, extend, and override classes
the Internet to enhance your library Understand the new features of Python 2.5 Packed wi
idioms and great resources to maximize your productivity, Python For Dummies is the ultima
stop information guide. In a matter of minutes you'll be familiar with Python's building blocks,
strings, dictionaries, and sets; and be on your way to writing the program that you've dream
Automated testing is a cornerstone of agile development. An effective testing strategy will
functionality more aggressively, accelerate user feedback, and improve quality. However, for
developers, creating effective automated tests is a unique and unfamiliar challenge. xUnit Te
Patterns is the definitive guide to writing automated tests using xUnit, the most popular un
framework in use today. Agile coach and test automation expert Gerard Meszaros describes
patterns for making tests easier to write, understand, and maintain. He then shows you ho
them more robust and repeatable--and far more cost-effective. Loaded with information, th
feels like three books in one. The first part is a detailed tutorial on test automation that co
everything from test strategy to in-depth test coding. The second part, a catalog of 18 fre
encountered "test smells," provides trouble-shooting guidelines to help you determine the ro
of problems and the most applicable patterns. The third part contains detailed descriptions
pattern, including refactoring instructions illustrated by extensive code samples in multiple
programming languages.

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WORK EFFECT LEG CODE _p1

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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 The Fit open source testing framework brings unprecedented agility to the entire development process. Fit for Developing Software shows you how to use Fit to clarify business rules, express them with concrete examples, and organize the examples into test tables that drive testing throughout the software lifecycle. Using a realistic case study, Rick Mugridge and Ward Cunningham—the creator of Fit—introduce each of Fit's underlying concepts and techniques, and explain how you can put Fit to work incrementally, with the lowest possible risk. Highlights include Integrating Fit into your development processes Using Fit to promote effective communication between businesspeople, testers, and developers Expressing business rules that define calculations, decisions, and business processes Connecting Fit tables to the system with "fixtures" that check whether tests are actually satisfied Constructing tests for code evolution, restructuring, and other changes to legacy systems Managing the quality and evolution of tests A companion Web site (<http://fit.c2.com/>) that offers additional resources and source code "A great book with deep insights into the bridge between programming and the human mind." - Mike Taylor, CGI Your brain responds in a predictable way when it encounters new or difficult tasks. This unique book teaches you concrete techniques rooted in cognitive science that will improve the way you learn and think about code. In The Programmer's Brain: What every programmer needs to know about cognition you will learn: Fast and effective ways to master new programming languages Speed reading skills to quickly comprehend new code Techniques to unravel the meaning of

complex code Ways to learn new syntax and keep it memorized Writing code that is easy for others to read Picking the right names for your variables Making your codebase more understandable to newcomers Onboarding new developers to your team Learn how to optimize your brain's natural cognitive processes to read code more easily, write code faster, and pick up new languages in much less time. This book will help you through the confusion you feel when faced with strange and complex code, and explain a codebase in ways that can make a new team member productive in days! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Take advantage of your brain's natural processes to be a better programmer. Techniques based in cognitive science make it possible to learn new languages faster, improve productivity, reduce the need for code rewrites, and more. This unique book will help you achieve these gains. About the book The Programmer's Brain unlocks the way we think about code. It offers scientifically sound techniques that can radically improve the way you master new technology, comprehend code, and memorize syntax. You'll learn how to benefit from productive struggle and turn confusion into a learning tool. Along the way, you'll discover how to create study resources as you become an expert at teaching yourself and bringing new colleagues up to speed. What's inside Understand how your brain sees code Speed reading skills to learn code quickly Techniques to unravel complex code Tips for making codebases understandable About the reader For programmers who have experience working in more than one language. About the author Dr. Felienne Hermans is an associate professor at Leiden University in the Netherlands. She has spent the last decade researching programming, how to learn and how to teach it. Table of Contents PART 1 ON READING CODE BETTER 1 Decoding your confusion while coding 2 Speed reading for code 3 How to learn programming syntax quickly 4 How to read complex code PART 2 ON THINKING ABOUT CODE 5 Reaching a deeper understanding of code 6 Getting better at solving programming problems 7 Misconceptions: Bugs in thinking PART 3 ON WRITING BETTER CODE 8 How to get better at naming things 9 Avoiding bad code and cognitive load: Two frameworks 10 Getting better at solving complex problems PART 4 ON COLLABORATING ON CODE 11 The act of writing code

12 Designing and improving larger systems 13 How to onboard new developers

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

A Practical Guide

The Pragmatic Programmer

Reflections on the Craft of Programming

What Really Works, and Why We Believe It

Learning Test-Driven Development

The Mikado Method

Code Quality

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–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, including property-based testing Implement the Pragmatic Starter Kit Delight your users Written as a series of self-contained sections and filled with classic and fresh anecdotes, thoughtful examples, and interesting analogies, The Pragmatic Programmer illustrates the best approaches and major pitfalls of many different aspects of software development. Whether you're a new coder, an experienced programmer, or a manager responsible for software projects, use these lessons daily, and you'll quickly see improvements in personal productivity, accuracy, and job satisfaction. You'll learn skills and develop habits and attitudes that form the foundation for long-term success in your career. You'll become a Pragmatic

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