

Pragmatic Thinking And Learning Refactor Your Wetware Pragmatic Programmers

These are the proven, effective agile practices that will make you a better developer. You'll learn pragmatic ways of approaching the development process and your personal coding techniques. You'll learn about your own attitudes, issues with working on a team, and how to best manage your learning, all in an iterative, incremental, agile style. You'll see how to apply each practice, and what benefits you can expect. Bottom line: This book will make you a better developer.

Printed in full color. To keep doing what you love, you need to maintain your own systems, not just the ones you write code for. Regular exercise and proper nutrition help you learn, remember, concentrate, and be creative--skills critical to doing your job well. Learn how to change your work habits, master exercises that make working at a computer more comfortable, and develop a plan to keep fit, healthy, and sharp for years to come. Small changes to your habits can improve your health--without getting in the way of your work. The Healthy Programmer gives you a daily plan of action that's incremental and iterative just like the software development processes you're used to. Every tip, trick, and best practice is backed up by the advice of doctors, scientists, therapists, nutritionists, and numerous fitness experts. We'll review the latest scientific research to understand how being healthy is good for your body and mind. You'll start by adding a small amount of simple activity to your day--no trips to the gym needed. You'll learn how to mitigate back pain, carpal tunnel syndrome, headaches, and many other common sources of pain. You'll also learn how to refactor your diet to properly fuel your body without gaining weight or feeling hungry. Then, you'll turn the exercises and activities into a pragmatic workout methodology that doesn't interfere with the demands of your job and may actually improve your cognitive skills. You'll also learn the secrets of prominent figures in the software community who turned their health around by making diet and exercise changes. Throughout, you'll track your progress with a "companion iPhone app". Finally, you'll learn how to make your healthy lifestyle pragmatic, attainable, and fun. If you're going to live well, you should enjoy it. Disclaimer This book is intended only as an informative guide for those wishing to know more about health issues. In no way is this book intended to replace, countermand, or conflict with the advice given to you by your own healthcare provider including Physician, Nurse Practitioner, Physician Assistant, Registered Dietician, and other licensed professionals. Keep in mind that results vary from person to person. This book is not intended as a substitute for medical or nutritional advice from a healthcare provider or dietician. Some people have a medical history and/or condition and/or nutritional requirements that warrant individualized recommendations and, in some cases, medications and healthcare surveillance. Do not start, stop, or change medication and dietary recommendations without professional medical and/or Registered Dietician advice. A healthcare provider should be consulted if you are on medication or if there are any symptoms that may require diagnosis or medical attention. Do not change your diet if you are ill, or on medication except under the supervision of a healthcare provider. Neither this, nor any other book or discussion forum is intended to take the place of personalized medical care of treatment provided by your healthcare provider. This book was current as of January, 2013 and as new information becomes available through research, experience, or changes to product contents, some of the data in this book may become invalid. You should seek the most up to date information on your medical care and treatment from your health care professional. The ultimate decision concerning care should be made between you and your healthcare provider. Information in this book is general and is offered with no guarantees on the part of the author, editor or The Pragmatic Programmers, LLC. The author, editors and publisher disclaim

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all liability in connection with the use of this book.

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

Awareness of design smells – indicators of common design problems – helps developers or software engineers understand mistakes made while designing, what design principles were overlooked or misapplied, and what principles need to be applied properly to address those smells through refactoring. Developers and software engineers may "know" principles and patterns, but are not aware of the "smells" that exist in their design because of wrong or mis-application of principles or patterns. These smells tend to contribute heavily to technical debt – further time owed to fix projects thought to be complete – and need to be addressed via proper refactoring. *Refactoring for Software Design Smells* presents 25 structural design smells, their role in identifying design issues, and potential refactoring solutions. Organized across common areas of software design, each smell is presented with diagrams and examples illustrating the

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poor design practices and the problems that result, creating a catalog of nuggets of readily usable information that developers or engineers can apply in their projects. The authors distill their research and experience as consultants and trainers, providing insights that have been used to improve refactoring and reduce the time and costs of managing software projects. Along the way they recount anecdotes from actual projects on which the relevant smell helped address a design issue. Contains a comprehensive catalog of 25 structural design smells (organized around four fundamental design principles) that contribute to technical debt in software projects Presents a unique naming scheme for smells that helps understand the cause of a smell as well as points toward its potential refactoring Includes illustrative examples that showcase the poor design practices underlying a smell and the problems that result Covers pragmatic techniques for refactoring design smells to manage technical debt and to create and maintain high-quality software in practice Presents insightful anecdotes and case studies drawn from the trenches of real-world projects

Tap into the wisdom of experts to learn what every programmer should know, no matter what language you use. With the 97 short and extremely useful tips for programmers in this book, you'll expand your skills by adopting new approaches to old problems, learning appropriate best practices, and honing your craft through sound advice. With contributions from some of the most experienced and respected practitioners in the industry--including Michael Feathers, Pete Goodliffe, Diomidis Spinellis, Cay Horstmann, Verity Stob, and many more--this book contains practical knowledge and principles that you can apply to all kinds of projects. A few of the 97 things you should know: "Code in the Language of the Domain" by Dan North "Write Tests for People" by Gerard Meszaros "Convenience Is Not an -ility" by Gregor Hohpe "Know Your IDE" by Heinz Kabutz "A Message to the Future" by Linda Rising "The Boy Scout Rule" by Robert C. Martin (Uncle Bob) "Beware the Share" by Udi Dahan

For weeks, months—nay!—from the very moment you were born, you've felt it calling to you. At long last you'll be united with the programming language you've been longing for: Clojure! As a Lisp-style functional programming language, Clojure lets you write robust and elegant code, and because it runs on the Java Virtual Machine, you can take advantage of the vast Java ecosystem. Clojure for the Brave and True offers a "dessert-first" approach: you'll start playing with real programs immediately, as you steadily acclimate to the abstract but powerful features of Lisp and functional programming. Inside you'll find an offbeat, practical guide to Clojure, filled with quirky sample programs that catch cheese thieves and track glittery vampires. Learn how to: –Wield Clojure's core functions –Use Emacs for Clojure development –Write macros to modify Clojure itself –Use Clojure's tools to simplify concurrency and parallel programming Clojure for the Brave and True assumes no prior experience with Clojure, the Java Virtual Machine, or functional programming. Are you ready, brave reader, to meet your true destiny? Grab your best pair of parentheses—you're about to embark on an epic journey into the world of Clojure!

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

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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.

A fascinating exploration of how insights from computer algorithms can be applied to our everyday lives, helping to solve common decision-making problems and illuminate the workings of the human mind All our lives are constrained by limited space and time, limits that give rise to a particular set of problems. What should we do, or leave undone, in a day or a lifetime? How much messiness should we accept? What balance of new activities and familiar favorites is the most fulfilling? These may seem like uniquely human quandaries, but they are not: computers, too, face the same constraints, so computer scientists have been grappling with their version of such issues for decades. And the solutions they've found have much to teach us. In a dazzlingly interdisciplinary work, acclaimed author Brian Christian and cognitive scientist Tom Griffiths show how the algorithms used by computers can also untangle very human questions. They explain how to have better hunches and when to leave things to chance, how to deal with overwhelming choices and how best to connect with others. From finding a spouse to finding a parking spot, from organizing one's inbox to understanding the workings of memory, Algorithms to Live By transforms the wisdom of computer science into strategies for human living.

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

Mathematics is beautiful--and it can be fun and exciting as well as practical. Good Math is your guide to some of the most intriguing topics from two thousand years of mathematics: from Egyptian fractions to Turing machines; from the real meaning of numbers to proof trees, group symmetry, and mechanical computation. If you've ever wondered what lay beyond the proofs you struggled to complete in high school geometry, or what limits the capabilities of computer on your desk, this is the book for you. Why do Roman numerals persist? How do we know that some infinities are larger than others? And how can we know for certain a program will ever finish? In this fast-paced tour of modern and not-so-

modern math, computer scientist Mark Chu-Carroll explores some of the greatest breakthroughs and disappointments of more than two thousand years of mathematical thought. There is joy and beauty in mathematics, and in more than two dozen essays drawn from his popular "Good Math" blog, you'll find concepts, proofs, and examples that are often surprising, counterintuitive, or just plain weird. Mark begins his journey with the basics of numbers, with an entertaining trip through the integers and the natural, rational, irrational, and transcendental numbers. The voyage continues with a look at some of the oddest numbers in mathematics, including zero, the golden ratio, imaginary numbers, Roman numerals, and Egyptian and continuing fractions. After a deep dive into modern logic, including an introduction to linear logic and the logic-savvy Prolog language, the trip concludes with a tour of modern set theory and the advances and paradoxes of modern mechanical computing. If your high school or college math courses left you grasping for the inner meaning behind the numbers, Mark's book will both entertain and enlighten you.

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. Summary 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

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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

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.

The software profession has a problem, widely recognized but which nobody seems willing to do anything about; a variant of the well known "telephone game," where some trivial rumor is repeated from one person to the next until it has become distorted beyond recognition and blown up out of all proportion. Unfortunately, the objects of this telephone game are generally considered

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cornerstone truths of the discipline, to the point that their acceptance now seems to hinder further progress. This book takes a look at some of those "ground truths" the claimed 10x variation in productivity between developers; the "software crisis"; the cost-of-change curve; the "cone of uncertainty"; and more. It assesses the real weight of the evidence behind these ideas - and confronts the scary prospect of moving the state of the art forward in a discipline that has had the ground kicked from under it.

“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, 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

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your career. You'll become a Pragmatic Programmer. Register your book for convenient access to downloads, updates, and/or corrections as they become available. See inside book for details.

What others in the trenches say about The Pragmatic Programmer... “The cool thing about this book is that it’s great for keeping the programming process fresh. The book helps you to continue to grow and clearly comes from people who have been there.” —Kent Beck, author of *Extreme Programming Explained: Embrace Change* “I found this book to be a great mix of solid advice and wonderful analogies!” —Martin Fowler, author of *Refactoring* and *UML Distilled* “I would buy a copy, read it twice, then tell all my colleagues to run out and grab a copy. This is a book I would never loan because I would worry about it being lost.” —Kevin Ruland, Management Science, MSG-Logistics “The wisdom and practical experience of the authors is obvious. The topics presented are relevant and useful.... By far its greatest strength for me has been the outstanding analogies—tracer bullets, broken windows, and the fabulous helicopter-based explanation of the need for orthogonality, especially in a crisis situation. I have little doubt that this book will eventually become an excellent source of useful information for journeymen programmers and expert mentors alike.” —John Lakos, author of *Large-Scale C++ Software Design* “This is the sort of book I will buy a dozen copies of when it comes out so I can give it to my clients.” —Eric Vought, Software Engineer “Most modern books on software development fail to cover the basics of what makes a great software developer, instead spending their time on syntax or technology where in reality the greatest leverage possible for any software team is in having talented developers who really know their craft well. An excellent book.” —Pete McBreen, Independent Consultant “Since reading this book, I have implemented many of the practical suggestions and tips it contains. Across the board, they have saved my company time and money while helping me get my job done quicker! This should be a desktop reference for everyone who works with code for a living.” —Jared Richardson, Senior Software Developer, iRenaissance, Inc. “I would like to see this issued to every new employee at my company....” —Chris Cleeland, Senior Software Engineer, Object Computing, Inc. “If I’m putting together a project, it’s the authors of this book that I want. . . . And failing that I’d settle for people who’ve read their book.” —Ward Cunningham

Straight from the programming trenches, *The Pragmatic Programmer* cuts through the increasing specialization and technicalities of modern software development to examine the core process--taking a requirement and producing working, maintainable code that delights its users. It covers topics ranging 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; Avoid the trap of duplicating knowledge; Write flexible, dynamic, and adaptable code; Avoid programming by coincidence; Bullet-proof your code with contracts, assertions, and exceptions; Capture real requirements; Test ruthlessly and effectively;

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Delight your users; Build teams of pragmatic programmers; and Make your developments more precise with automation. Written as a series of self-contained sections and filled with entertaining anecdotes, thoughtful examples, and interesting analogies, *The Pragmatic Programmer* illustrates the best practices 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 Programmer.

The Pragmatic Programmers classic is back! Freshly updated for modern software development, *Pragmatic Unit Testing in Java 8 With JUnit* teaches you how to write and run easily maintained unit tests in JUnit with confidence. You'll learn mnemonics to help you know what tests to write, how to remember all the boundary conditions, and what the qualities of a good test are. You'll see how unit tests can pay off by allowing you to keep your system code clean, and you'll learn how to handle the stuff that seems too tough to test. *Pragmatic Unit Testing in Java 8 With JUnit* steps you through all the important unit testing topics. If you've never written a unit test, you'll see screen shots from Eclipse, IntelliJ IDEA, and NetBeans that will help you get past the hard part--getting set up and started. Once past the basics, you'll learn why you want to write unit tests and how to effectively use JUnit. But the meaty part of the book is its collected unit testing wisdom from people who've been there, done that on production systems for at least 15 years: veteran author and developer Jeff Langr, building on the wisdom of *Pragmatic Programmers* Andy Hunt and Dave Thomas. You'll learn: How to craft your unit tests to minimize your effort in maintaining them. How to use unit tests to help keep your system clean. How to test the tough stuff. Memorable mnemonics to help you remember what's important when writing unit tests. How to help your team reap and sustain the benefits of unit testing. You won't just learn about unit testing in theory--you'll work through numerous code examples. When it comes to programming, hands-on is the only way to learn! This book is the introduction to *Elixir* for experienced programmers, completely updated for Elixir 1.6 and beyond. Explore functional programming without the academic overtones (tell me about monads just one more time). Create concurrent applications, but get them right without all the locking and consistency headaches. Meet Elixir, a modern, functional, concurrent language built on the rock-solid Erlang VM. Elixir's pragmatic syntax and built-in support for metaprogramming will make you productive and keep you interested for the long haul. Maybe the time is right for the Next Big Thing. Maybe it's Elixir. Functional programming techniques help you manage the complexities of today's real-world, concurrent systems; maximize uptime; and manage security. Enter Elixir, with its modern, Ruby-like, extendable syntax, compile and runtime evaluation, hygienic macro system, and more. But, just as importantly, Elixir brings a sense of

enjoyment to parallel, functional programming. Your applications become fun to work with, and the language encourages you to experiment. Part 1 covers the basics of writing sequential Elixir programs. We'll look at the language, the tools, and the conventions. Part 2 uses these skills to start writing concurrent code-applications that use all the cores on your machine, or all the machines on your network! And we do it both with and without OTP. Part 3 looks at the more advanced features of the language, from DSLs and code generation to extending the syntax. This edition is fully updated with all the new features of Elixir 1.6, with a new chapter on structuring OTP applications, and new sections on the debugger, code formatter, Distillery, and protocols. What You Need: You'll need a computer, a little experience with another high-level language, and a sense of adventure. No functional programming experience is needed.

Printed in full color. Faced with a software project of epic proportions? Tired of over-committing and under-delivering? Enter the dojo of the agile samurai, where agile expert Jonathan Rasmusson shows you how to kick-start, execute, and deliver your agile projects. Combining cutting-edge tools with classic agile practices, *The Agile Samurai* gives you everything you need to deliver something of value every week and make rolling your software into production a non-event. Get ready to kick some software project butt. By learning the ways of the agile samurai you will discover: how to create plans and schedules your customer and your team can believe in what characteristics make a good agile team and how to form your own how to gather requirements in a fraction of the time using agile user stories what to do when you discover your schedule is wrong, and how to look like a pro correcting it how to execute fiercely by leveraging the power of agile software engineering practices By the end of this book you will know everything you need to set up, execute, and successfully deliver agile projects, and have fun along the way. If you're a project lead, this book gives you the tools to set up and lead your agile project from start to finish. If you are an analyst, programmer, tester, usability designer, or project manager, this book gives you the insight and foundation necessary to become a valuable agile team member. *The Agile Samurai* slices away the fluff and theory that make other books less-than-agile. It's packed with best practices, war stories, plenty of humor and hands-on tutorial exercises that will get you doing the right things, the right way. This book will make a difference.

"*Seven Languages in Seven Weeks*" presents a meaningful exploration of seven languages within a single book. Rather than serve as a complete reference or installation guide, the book hits what's essential and unique about each language.

In the course of their 20+-year engineering careers, authors Brian Fitzpatrick and Ben Collins-Sussman have picked up a treasure trove of wisdom and anecdotes about how successful teams work together. Their conclusion? Even among people who have spent decades learning the technical side of their jobs, most haven't really focused on the human component. Learning to collaborate is just

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as important to success. If you invest in the "soft skills" of your job, you can have a much greater impact for the same amount of effort. The authors share their insights on how to lead a team effectively, navigate an organization, and build a healthy relationship with the users of your software. This is valuable information from two respected software engineers whose popular series of talks—including "Working with Poisonous People"—has attracted hundreds of thousands of followers.

Printed in full color. Software development happens in your head. Not in an editor, IDE, or designtool. You're well educated on how to work with software and hardware, but what about wetware--our own brains? Learning new skills and new technology is critical to your career, and it's all in your head. In this book by Andy Hunt, you'll learn how our brains are wired, and how to take advantage of your brain's architecture. You'll learn new tricks and tipsto learn more, faster, and retain more of what you learn. You need a pragmatic approach to thinking and learning. You need to Refactor Your Wetware. Programmers have to learn constantly; not just the stereotypical new technologies, but also the problem domain of the application, the whims of the user community, the quirks of your teammates, the shifting sands of the industry, and the evolving characteristics of the project itself as it is built. We'll journey together through bits of cognitive and neuroscience, learning and behavioral theory. You'll see some surprising aspects of how our brains work, and how you can take advantage of the system to improve your own learning and thinking skills. In this book you'll learn how to:

- Use the Dreyfus Model of Skill Acquisition to become more expert
- Leverage the architecture of the brain to strengthen different thinking modes
- Avoid common "known bugs" in your mind
- Learn more deliberately and more effectively
- Manage knowledge more efficiently

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.

A book that brings out the strengths of Clojure programming that have to facilitate machine learning. Each topic is described in substantial detail, and examples and libraries in Clojure are also demonstrated. This book is intended for Clojure developers who want to explore the area of machine learning. Basic understanding of the Clojure programming language is required, but thorough acquaintance with the standard Clojure library or any libraries are not required. Familiarity with theoretical concepts and notation of mathematics and statistics would be an added advantage.

It's easier to learn how to program a computer than it has ever been before. Now everyone can learn to write programs for themselves - no previous experience is necessary. Chris Pine takes a thorough, but lighthearted approach that teaches you the fundamentals of computer programming, with a minimum of fuss or bother. Whether you are interested in a new hobby or a new career, this book is your doorway into the world of programming. Computers are everywhere, and being able to program them is more important than it has ever been. But since most books on programming are written for other programmers, it can be hard to break in. At least it used to be. Chris Pine will teach you how to program. You'll learn to use your computer better, to get it to do what you want it to do. Starting with small, simple one-line programs to calculate your age in seconds, you'll see how to write interactive programs, to use APIs to fetch live data from the internet, to rename your photos from your digital camera, and more. You'll learn the same technology used to drive modern dynamic websites and large, professional applications. Whether you are looking for a fun new hobby or are interested in entering the tech world as a professional, this book gives you a solid foundation in programming. Chris teaches the basics, but also shows you how to think like a programmer. You'll learn through tons of examples, and through programming challenges throughout the book. When you finish, you'll know how and where to learn more - you'll be on your way. What You Need: All you need to learn how to program is a computer (Windows, macOS, or Linux) and an internet connection. Chris Pine will lead you through setting set up with the software you will need to start writing programs of your own.

Concurrent programming has become a required discipline for all programmers. Multi-core processors and the increasing demand for maximum performance and scalability in mission-critical applications have renewed interest in functional languages like Erlang that are designed to handle concurrent programming. Erlang, and the OTP platform, make it possible to deliver more robust applications that satisfy rigorous uptime and performance requirements. Erlang and OTP in Action teaches you to apply Erlang's message passing model for concurrent programming--a completely different way of tackling the problem of parallel programming from the more common multi-threaded approach. This book walks you through the practical considerations and steps of building systems in Erlang and integrating them with real-world C/C++, Java, and .NET applications. Unlike other books on the market, Erlang and OTP in Action offers a comprehensive view of how concurrency relates to SOA and web technologies. This hands-on guide is perfect for readers just learning Erlang or for those who want to apply

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their theoretical knowledge of this powerful language. You'll delve into the Erlang language and OTP runtime by building several progressively more interesting real-world distributed applications. Once you are competent in the fundamentals of Erlang, the book takes you on a deep dive into the process of designing complex software systems in Erlang. 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.

Don't engineer by coincidence-design it like you mean it! Filled with practical techniques, *Design It!* is the perfect introduction to software architecture for programmers who are ready to grow their design skills. Lead your team as a software architect, ask the right stakeholders the right questions, explore design options, and help your team implement a system that promotes the right -ilities. Share your design decisions, facilitate collaborative design workshops that are fast, effective, and fun-and develop more awesome software! With dozens of design methods, examples, and practical know-how, *Design It!* shows you how to become a software architect. Walk through the core concepts every architect must know, discover how to apply them, and learn a variety of skills that will make you a better programmer, leader, and designer. Uncover the big ideas behind software architecture and gain confidence working on projects big and small. Plan, design, implement, and evaluate software architectures and collaborate with your team, stakeholders, and other architects. Identify the right stakeholders and understand their needs, dig for architecturally significant requirements, write amazing quality attribute scenarios, and make confident decisions. Choose technologies based on their architectural impact, facilitate architecture-centric design workshops, and evaluate architectures using lightweight, effective methods. Write lean architecture descriptions people love to read. Run an architecture design studio, implement the architecture you've designed, and grow your team's architectural knowledge. Good design requires good communication. Talk about your software architecture with stakeholders using whiteboards, documents, and code, and apply architecture-focused design methods in your day-to-day practice. Hands-on exercises, real-world scenarios, and practical team-based decision-making tools will get everyone on board and give you the experience you need to become a confident software architect.

Based on the principles of cognitive science and instructional design, *Fluent C#*, the first in the new *Fluent Learning* series, is a true tutorial that will help you build effective working models for understanding a large and complex subject: developing .NET Framework applications in C#. Most introductory books just talk at you and give you "exercises" that have more to do with taking dictation than actually learning. *Fluent C#* is different. It guides you through learning the way your mind likes to learn: by solving puzzles, making connections, and building genuine understanding instead of just memorizing random facts. **DETAILED INFORMATION ON HOW TO...** · Write .NET applications in C# 2010 · Leverage the incredible power of the .NET Framework Class Library · Apply Object-Oriented principles, Design Patterns, and best practices to your code · Develop desktop applications using the powerful Windows Presentation Foundation user interface API

Drowning in unnecessary complexity, unmanaged state, and tangles of spaghetti code? In the best tradition of Lisp, Clojure gets out of your way so you can focus on expressing simple solutions to hard problems. Clojure cuts through complexity by

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providing a set of composable tools--immutable data, functions, macros, and the interactive REPL. Written by members of the Clojure core team, this book is the essential, definitive guide to Clojure. This new edition includes information on all the newest features of Clojure, such as transducers and specs. Clojure joins the flexibility and agility of Lisp with the reach, stability, and performance of Java. Combine Clojure's tools for maximum effectiveness as you work with immutable data, functional programming, and safe concurrency to write programs that solve real-world problems. Start by reading and understanding Clojure syntax and see how Clojure is evaluated. From there, find out about the sequence abstraction, which combines immutable collections with functional programming to create truly reusable data transformation code. Clojure is a functional language; learn how to write programs in a functional style, and when and how to use recursion to your advantage. Discover Clojure's unique approach to state and identity, techniques for polymorphism and open systems using multimethods and protocols, and how to leverage Clojure's metaprogramming capabilities via macros. Finally, put all the pieces together in a real program. New to this edition is coverage of Clojure's spec library, one of the most interesting new features of Clojure for describing both data and functions. You can use Clojure spec to validate data, destructure data, explain invalid data, and generate large numbers of tests to verify the correctness of your code. With this book, you'll learn how to think in Clojure, and how to take advantage of its combined strengths to build powerful programs quickly. What You Need: Java 6 or higher Clojure 1.9

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

A foolproof walkthrough of must-know computer science concepts. A fast guide for those who don't need the academic formality, it goes straight to what differentiates pros from amateurs. First introducing discrete mathematics, then exposing the most common algorithm and data structure design elements, and finally the working principles of computers and programming languages, the book is indicated to all programmers.

What will you learn from this book? It's no secret the world around you is becoming more connected, more configurable, more programmable, more computational. You can remain a passive participant, or you can learn to code. With Head First Learn to Code you'll learn how to think computationally and how to write code to make your computer, mobile device, or anything with a CPU do things for you. Using the Python

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programming language, you'll learn step by step the core concepts of programming as well as many fundamental topics from computer science, such as data structures, storage, abstraction, recursion, and modularity. Why does this book look so different? Based on the latest research in cognitive science and learning theory, Head First Learn to Code uses a visually rich format to engage your mind, rather than a text-heavy approach that puts you to sleep. Why waste your time struggling with new concepts? This multi-sensory learning experience is designed for the way your brain really works. Despite promises of "fast and easy" results from slick marketers, real personal growth is neither fast nor easy. The truth is that hard work, courage, and self-discipline are required to achieve meaningful results - results that are not attained by those who cling to the fantasy of achievement without effort. Personal Development for Smart People reveals the unvarnished truth about what it takes to consciously grow as a human being. As you read, you'll learn the seven universal principles behind all successful growth efforts (truth, love, power, oneness, authority, courage, and intelligence); as well as practical, insightful methods for improving your health, relationships, career, finances, and more. You'll see how to become the conscious creator of your life instead of feeling hopelessly adrift, enjoy a fulfilling career that honors your unique self-expression, attract empowering relationships with loving, compatible partners, wake up early feeling motivated, energized, and enthusiastic, achieve inspiring goals with disciplined daily habits and much more! With its refreshingly honest yet highly motivating style, this fascinating book will help you courageously explore, creatively express, and consciously embrace your extraordinary human journey. "This is your field guide to getting yourself to want to do everything you always wanted to want to do"--Page [4] of cover.

"Two thumbs up" —Gregory V. Wilson, Dr. Dobbs Journal (October 2004) No one can disparage the ability to write good code. At its highest levels, it is an art. But no one can confuse writing good code with developing good software. The difference—in terms of challenges, skills, and compensation—is immense. Coder to Developer helps you excel at the many non-coding tasks entailed, from start to finish, in just about any successful development project. What's more, it equips you with the mindset and self-assurance required to pull it all together, so that you see every piece of your work as part of a coherent process. Inside, you'll find plenty of technical guidance on such topics as: Choosing and using a source code control system Code generation tools--when and why Preventing bugs with unit testing Tracking, fixing, and learning from bugs Application activity logging Streamlining and systematizing the build process Traditional installations and alternative approaches To pull all of this together, the author has provided the source code for Download Tracker, a tool for organizing your collection of downloaded code, that's used for examples throughout this book. The code is provided in various states of completion, reflecting every stage of development, so that you can dig deep into the actual process of building software. But you'll also develop "softer" skills, in areas such as team management, open

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sourcecollaboration, user and developer documentation, and intellectualproperty protection. If you want to become someone who can delivernot just good code but also a good product, this book is the placeto start. If you must build successful software projects, it'sessential reading.

Web 2.0 makes headlines, but how does it make money? This concise guide explains what's different about Web 2.0 and how those differences can improve your company's bottom line. Whether you're an executive plotting the next move, a small business owner looking to expand, or an entrepreneur planning a startup, Web 2.0: A Strategy Guide illustrates through real-life examples how businesses, large and small, are creating new opportunities on today's Web. This book is about strategy. Rather than focus on the technology, the examples concentrate on its effect. You will learn that creating a Web 2.0 business, or integrating Web 2.0 strategies with your existing business, means creating places online where people like to come together to share what they think, see, and do. When people come together over the Web, the result can be much more than the sum of the parts. The customers themselves help build the site, as old-fashioned "word of mouth" becomes hypergrowth. Web 2.0: A Strategy Guide demonstrates the power of this new paradigm by examining how: Flickr, a classic user-driven business, created value for itself by helping users create their own value Google made money with a model based on free search, and changed the rules for doing business on the Web-opening opportunities you can take advantage of Social network effects can support a business-ever wonder how FaceBook grew so quickly? Businesses like Amazon tap into the Web as a source of indirect revenue, using creative new approaches to monetize the investments they've made in the Web Written by Amy Shuen, an authority on Silicon Valley business models and innovation economics, Web 2.0: A Strategy Guide explains how to transform your business by looking at specific practices for integrating Web 2.0 with what you do. If you're executing business strategy and want to know how the Web is changing business, this book is for you.

Become an expert at writing fast and high performant code in Clojure 1.7.0 About This Book Enhance code performance by using appropriate Clojure features Improve the efficiency of applications and plan their deployment A hands-on guide to designing Clojure programs to get the best performance Who This Book Is For This book is intended for intermediate Clojure developers who are looking to get a good grip on achieving optimum performance. Having a basic knowledge of Java would be helpful. What You Will Learn Identify performance issues in Clojure programs using different profiling tools Master techniques to achieve numerical performance in Clojure Use Criterium library to measure latency of Clojure expressions Exploit Java features in Clojure code to enhance performance Avoid reflection and boxing with type hints Understand Clojure's concurrency and state-management primitives in depth Measure and monitor performance, and understand optimization techniques In Detail Clojure treats code as data and has a macro system. It focuses on programming with

immutable values and explicit progression-of-time constructs, which are intended to facilitate the development of more robust programs, particularly multithreaded ones. It is built with performance, pragmatism, and simplicity in mind. Like most general purpose languages, various Clojure features have different performance characteristics that one should know in order to write high performance code. This book shows you how to evaluate the performance implications of various Clojure abstractions, discover their underpinnings, and apply the right approach for optimum performance in real-world programs. It starts by helping you classify various use cases and the need for them with respect to performance and analysis of various performance aspects. You will also learn the performance vocabulary that experts use throughout the world and discover various Clojure data structures, abstractions, and their performance characteristics. Further, the book will guide you through enhancing performance by using Java interoperability and JVM-specific features from Clojure. It also highlights the importance of using the right concurrent data structure and Java concurrency abstractions. This book also sheds light on performance metrics for measuring, how to measure, and how to visualize and monitor the collected data. At the end of the book, you will learn to run a performance profiler, identify bottlenecks, tune performance, and refactor code to get a better performance. Style and approach An easy-to-follow guide full of real-world examples and self-sufficient code snippets that will help you get your hands dirty with high performance programming with Clojure.

* Treats LISP as a language for commercial applications, not a language for academic AI concerns. This could be considered to be a secondary text for the Lisp course that most schools teach . This would appeal to students who sat through a LISP course in college without quite getting it – so a "nostalgia" approach, as in "wow-lisp can be practical..." * Discusses the Lisp programming model and environment. Contains an introduction to the language and gives a thorough overview of all of Common Lisp's main features. * Designed for experienced programmers no matter what languages they may be coming from and written for a modern audience—programmers who are familiar with languages like Java, Python, and Perl. * Includes several examples of working code that actually does something useful like Web programming and database access. 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.

Anyone who develops software for a living needs a proven way to produce it better, faster, and cheaper. The Productive Programmer offers critical timesaving and productivity tools that you can adopt right away, no matter what platform you use. Master developer Neal Ford not only offers advice on the mechanics of productivity-how to work smarter, spurn interruptions, get the most out your computer, and avoid repetition-he also details valuable practices that will help

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you elude common traps, improve your code, and become more valuable to your team. You'll learn to: Write the test before you write the code Manage the lifecycle of your objects fastidiously Build only what you need now, not what you might need later Apply ancient philosophies to software development Question authority, rather than blindly adhere to standards Make hard things easier and impossible things possible through meta-programming Be sure all code within a method is at the same level of abstraction Pick the right editor and assemble the best tools for the job This isn't theory, but the fruits of Ford's real-world experience as an Application Architect at the global IT consultancy ThoughtWorks. Whether you're a beginner or a pro with years of experience, you'll improve your work and your career with the simple and straightforward principles in The Productive Programmer.

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