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KEY=DESIGN - TREVINO GALVAN

REFACTORING FOR SOFTWARE DESIGN SMELLS

MANAGING TECHNICAL DEBT

Morgan Kaufmann **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 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**

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REFACTORING

IMPROVING THE DESIGN OF EXISTING CODE

Addison-Wesley Professional **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.

SOFTWARE DESIGN X-RAYS

FIX TECHNICAL DEBT WITH BEHAVIORAL CODE ANALYSIS

Pragmatic Bookshelf **Are you working on a codebase where cost overruns, death marches, and heroic fights with legacy code monsters are the norm? Battle these adversaries with novel ways to identify and prioritize technical debt, based on behavioral data from how developers work with code. And that's just for starters. Because good code involves social design, as well as technical design, you can find surprising dependencies between people and code to resolve coordination bottlenecks among teams. Best of all, the techniques build on behavioral data that you already have: your version-control system. Join the fight for better code! Use statistics and data science to uncover both problematic code and the behavioral patterns of the developers who build your software. This combination gives you insights you can't get from the code alone. Use these insights to prioritize refactoring needs, measure their effect, find implicit dependencies between different modules, and automatically create knowledge maps of your system based on actual code contributions. In a radical, much-needed change from common practice, guide organizational decisions with objective data by measuring how well your development teams align with the software architecture. Discover a comprehensive set of practical analysis techniques based on version-control data, where each point is illustrated with a case study from a real-world codebase. Because the techniques are language neutral, you can apply them to your own code no matter what programming language you use. Guide organizational decisions with objective data by measuring how well your development teams align with the software architecture. Apply research findings from social psychology to software development, ensuring you get the tools you need to coach your organization towards better code. If you're an experienced programmer, software architect, or technical manager, you'll get a new perspective that will change how you work with code. What You Need: You don't have to install anything to follow along in the book. TThe case studies in the book use well-known open source projects hosted on GitHub. You'll use CodeScene, a free software analysis tool for open source projects, for the case studies. We also discuss alternative tooling options where they exist.**

MANAGING TECHNICAL DEBT

REDUCING FRICTION IN SOFTWARE DEVELOPMENT

Addison-Wesley Professional **“This is an incredibly wise and useful book. The authors have considerable real-world experience in delivering quality systems that matter, and their expertise shines through in these pages. Here you will learn what technical debt is, what is it not, how to manage it, and how to pay it down in responsible ways. This is a book I wish I had when I was just beginning my career. The authors present a myriad of case studies, born from years of experience, and offer a multitude of actionable insights for how to apply it to your project.” –Grady Booch, IBM Fellow Master Best Practices for Managing Technical Debt to Promote Software Quality and Productivity As software systems mature, earlier design or code decisions made in the context of budget or schedule constraints increasingly impede evolution and innovation. This phenomenon is called technical debt, and practical solutions exist. In Managing Technical Debt, three leading experts introduce integrated, empirically developed principles and practices that any software professional can use to gain control of technical debt in any software system. Using real-life examples, the authors explain the forms of technical debt that afflict software-intensive systems, their root causes, and their impacts. They introduce proven approaches for identifying and assessing specific sources of technical debt, limiting new debt, and “paying off” debt over time. They describe how to establish managing technical debt as a core software engineering practice in your organization. Discover how technical debt damages manageability, quality, productivity, and morale–and what you can do about it Clarify root causes of debt, including the linked roles of business goals, source code, architecture, testing, and infrastructure Identify technical debt items, and analyze their costs so you can prioritize action Choose the right solution for each technical debt item: eliminate, reduce, or mitigate Integrate software engineering practices that minimize new debt Managing Technical Debt will be a valuable resource for every software professional who wants to accelerate innovation in existing systems, or build new systems that will be easier to maintain and evolve.**

PRINCIPLE-BASED REFACTORING

LEARNING SOFTWARE DESIGN PRINCIPLES BY APPLYING REFACTORING RULES

You know good software when you see it, but how do you explain what good software is? Experienced software developers have pet practices and techniques that make their software easier to test, maintain and understand. But when you ask them how to make your software like theirs, they give you a seemingly endless list of rules. How can they remember all those rules? The secret is that they don't! Instead, experienced software developers understand a handful of basic principles. The rules are merely manifestations of these basic principles. But, principles are hard to explain; so experienced developers resort to explaining rules instead.In Principle-Based Refactoring, Halladay explains a set of software refactoring rules and links the refactoring rules back to the basic principles that drive robust software design. The book identifies eight fundamental design principles and also includes a set of approximately fifty refactoring rules that illustrate the principles. Each rule has a summary description, a discussion, including references back to the driving principles, and examples of the rules' applications. In addition, this book discusses refactoring

mechanics including test strategies that guide software developers in verifying the quality of refactored code.

REFACTORING TO PATTERNS

Pearson Education **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.**

CODE QUALITY

THE OPEN SOURCE PERSPECTIVE

Adobe Press **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/**

REFACTORING IN LARGE SOFTWARE PROJECTS

PERFORMING COMPLEX RESTRUCTURINGS SUCCESSFULLY

John Wiley & Sons **Large Refactorings looks at methods of establish design improvements as an important and independent activity during development of software, and will help to ensure that software continues to adapt, improve and remain easy to read and modify without altering its observable behaviour. It provides real-world experience from real refactored projects and shows how to refactor software to ensure that it is efficient, fresh and adaptable.**

TECHNICAL DEBT IN PRACTICE

HOW TO FIND IT AND FIX IT

MIT Press **The practical implications of technical debt for the entire software lifecycle; with examples and case studies. Technical debt in software is incurred when developers take shortcuts and make ill-advised technical decisions in the initial phases of a project, only to be confronted with the need for costly and labor-intensive workarounds later. This book offers advice on how to avoid technical debt, how to locate its sources, and how to remove it. It focuses on the practical implications of technical debt for the entire software life cycle, with examples and case studies from companies that range from Boeing to Twitter. Technical debt is normal; it is part of most iterative development processes. But if debt is ignored, over time it may become unmanageably complex, requiring developers to spend all of their effort fixing bugs, with no time to add new features--and after all, new features are what customers really value. The authors explain how to monitor technical debt, how to measure it, and how and when to pay it down. Broadening the conventional definition of technical debt, they cover requirements debt, implementation debt, testing debt, architecture debt, documentation debt, deployment debt, and social debt. They intersperse technical discussions with "Voice of the Practitioner" sidebars that detail real-world experiences with a variety of technical debt issues.**

XUNIT TEST PATTERNS

REFACTORING TEST CODE

Pearson Education **Automated testing is a cornerstone of agile development. An effective testing strategy will deliver**

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

AGILE TECHNICAL PRACTICES DISTILLED

A LEARNING JOURNEY IN TECHNICAL PRACTICES AND PRINCIPLES OF SOFTWARE DESIGN

Packt Publishing Ltd **Delve deep into the various technical practices, principles, and values of Agile. Key FeaturesDiscover the essence of Agile software development and the key principles of software designExplore the fundamental practices of Agile working, including test-driven development (TDD), refactoring, pair programming, and continuous integrationLearn and apply the four elements of simple designBook Description The number of popular technical practices has grown exponentially in the last few years. Learning the common fundamental software development practices can help you become a better programmer. This book uses the term Agile as a wide umbrella and covers Agile principles and practices, as well as most methodologies associated with it. You'll begin by discovering how driver-navigator, chess clock, and other techniques used in the pair programming approach introduce discipline while writing code. You'll then learn to safely change the design of your code using refactoring. While learning these techniques, you'll also explore various best practices to write efficient tests. The concluding chapters of the book delve deep into the SOLID principles - the five design principles that you can use to make your software more understandable, flexible and maintainable. By the end of the book, you will have discovered new ideas for improving your software design skills, the relationship within your team, and the way your business works. What you will learnLearn the red, green, refactor cycle of classic TDD and practice the best habits such as the rule of 3, triangulation, object calisthenics, and moreRefactor using parallel change and improve legacy code with characterization tests, approval tests, and Golden MasterUse code smells as feedback to improve your designLearn the double cycle of ATDD and the outside-in mindset using mocks and stubs correctly in your testsUnderstand how Coupling, Cohesion, Connascence, SOLID principles, and code smells are all relatedImprove the understanding of your business domain using BDD and other principles for "doing the right thing, not only the thing right"Who this book is for This book is designed for software developers looking to improve their technical practices. Software coaches may also find it helpful as a teaching reference manual. This is not a beginner's book on how to program. You must be comfortable with at least one programming language and must be able to write unit tests using any unit testing framework.**

BUILDING EVENT-DRIVEN MICROSERVICES

"*O'Reilly Media, Inc.*" **Organizations today often struggle to balance business requirements with ever-increasing volumes of data. Additionally, the demand for leveraging large-scale, real-time data is growing rapidly among the most competitive digital industries. Conventional system architectures may not be up to the task. With this practical guide, you'll learn how to leverage large-scale data usage across the business units in your organization using the principles of event-driven microservices. Author Adam Bellemare takes you through the process of building an event-driven microservice-powered organization. You'll reconsider how data is produced, accessed, and propagated across your organization. Learn powerful yet simple patterns for unlocking the value of this data. Incorporate event-driven design and architectural principles into your own systems. And completely rethink how your organization delivers value by unlocking near-real-time access to data at scale. You'll learn: How to leverage event-driven architectures to deliver exceptional business value The role of microservices in supporting event-driven designs Architectural patterns to ensure success both within and between teams in your organization Application patterns for developing powerful event-driven microservices Components and tooling required to get your microservice ecosystem off the ground**

THE ART OF AGILE DEVELOPMENT

"*O'Reilly Media, Inc.*" **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.**

ANTIPATTERNS

REFACTORING SOFTWARE, ARCHITECTURES, AND PROJECTS IN CRISIS

John Wiley & Sons Incorporated **"The AntiPatterns authors have clearly been there and done that when it comes to managing software development efforts. I resonated with one insight after another, having witnessed too many wayward projects myself. The experience in this book is palpable." -John Vlissides, IBM Research "This book allows managers, architects, and developers to learn from the painful mistakes of others. The high-level AntiPatterns on**

software architecture are a particularly valuable contribution to software engineering. Highly recommended!" -Kyle Brown Author of The Design Patterns Smalltalk Companion "AntiPatterns continues the trend started in Design Patterns. The authors have discovered and named common problem situations resulting from poor management or architecture control, mistakes which most experienced practitioners will recognize. Should you find yourself with one of the AntiPatterns, they even provide some clues on how to get yourself out of the situation." -Gerard Meszaros, Chief Architect, Object Systems Group Are you headed into the software development mine field? Follow someone if you can, but if you're on your own-better get the map! AntiPatterns is the map. This book helps you navigate through today's dangerous software development projects. Just look at the statistics: * Nearly one-third of all software projects are cancelled. * Two-thirds of all software projects encounter cost overruns in excess of 200%. * Over 80% of all software projects are deemed failures. While patterns help you to identify and implement procedures, designs, and codes that work, AntiPatterns do the exact opposite; they let you zero-in on the development detonators, architectural tripwires, and personality booby traps that can spell doom for your project. Written by an all-star team of object-oriented systems developers, AntiPatterns identifies 40 of the most common AntiPatterns in the areas of software development, architecture, and project management. The authors then show you how to detect and defuse AntiPatterns as well as supply refactored solutions for each AntiPattern presented.

ARCHITECTURE PATTERNS WITH PYTHON

ENABLING TEST-DRIVEN DEVELOPMENT, DOMAIN-DRIVEN DESIGN, AND EVENT-DRIVEN MICROSERVICES

O'Reilly Media **As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn’t always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design’s distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices**

REFACTORING DATABASES

EVOLUTIONARY DATABASE DESIGN (PAPERBACK)

Pearson Education **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.**

ORACLE CERTIFIED PROFESSIONAL JAVA SE 7 PROGRAMMER EXAMS 1Z0-804 AND 1Z0-805

A COMPREHENSIVE OCPJP 7 CERTIFICATION GUIDE

Apress **Oracle Certified Professional Java SE 7 Programmer Exams 1Z0-804 and 1Z0-805 is a concise, comprehensive, step-by-step, and one-stop guide for the Oracle Certified Professional Java SE 7 Programmer Exam. The first two chapters set the stage for exam preparation and let the reader get started quickly. The first chapter answers frequently asked questions about the OCPJP exam. This book assumes that the reader is already familiar with Java fundamentals which is in line with the prerequisite of having a OCAJP certification. The book sports considerable supportive material to help the reader in effective exam preparation in the form of appendices: 2 mock tests to give the reader a sense of a real-exam. An instant refresher summarizing the most important concepts (with tips on answering questions) to revise just before the exam. This book will be a delectable read for any OCPJP aspirant because of its simple language, example driven approach, and easy-to-read style. Further, given its 100% focus on the exam and helpful supportive material, this book is clearly an attractive buy to OCPJP aspirants worldwide.**

CODE READING

THE OPEN SOURCE PERSPECTIVE

Addison-Wesley Professional **CD-ROM contains cross-referenced code.**

OBJECT-ORIENTED METRICS IN PRACTICE

USING SOFTWARE METRICS TO CHARACTERIZE, EVALUATE, AND IMPROVE THE DESIGN OF OBJECT-ORIENTED SYSTEMS

Springer Science & Business Media **Presents a novel metrics-based approach for detecting design problems in object-oriented software. Introduces an important suite of detection strategies for the identification of different well-known design flaws as well as some rarely mentioned ones.**

2020 14TH INTERNATIONAL CONFERENCE ON OPEN SOURCE SYSTEMS AND TECHNOLOGIES (ICOSST)

Open Source Software (OSS) is an established cross disciplinary paradigm for distributed enterprise computing and e Government It is helping organizations both public and private to keep control on the cost of development and deployment OSS has not only changed the way software applications are architected, deployed, and consumed but also, they are engineered to provide large distributed cross platforms and frameworks IEEE Computer & Communication Societies, Lahore Section, (R10) in Technical Co sponsorship & in Joint Collaboration with Al Khawarizmi Institute of Computer Science, UET, Lahore, Pakistan are organizing a two day event to invite researchers and practitioners from across the world to share their ideas and experiences related to the state of the art and the future of Open Source systems and technologies, software applications, networks, information security, OSS and social innovation, embedded computing, cloud computing, Big data and AI application for COVID 19 Detection

WORKING EFFECTIVELY WITH LEGACY CODE

WORK EFFECT LEG CODE _P1

Prentice Hall Professional **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.**

ARCHITECTURES FOR ADAPTIVE SOFTWARE SYSTEMS

5TH INTERNATIONAL CONFERENCE ON THE QUALITY OF SOFTWARE ARCHITECTURES, QOSA 2009, EAST STROUDSBURG, PA, USA, JUNE 24-26, 2009 PROCEEDINGS

Springer Science & Business Media **Much of a software architect’s life is spent designing software systems to meet a set of quality requirements. General software quality attributes include scalability, security, performance or reliability. Quality attribute requirements are part of an application’s non-functional requirements, which capture the many facets of how the functional - quirements of an application are achieved. Understanding, modeling and continually evaluating quality attributes throughout a project lifecycle are all complex engineering tasks whichcontinuetochallengethe softwareengineeringscienti ccommunity. While we search for improved approaches, methods, formalisms and tools that are usable in practice and can scale to large systems, the complexity of the applications that the so- ware industry is challenged to build is ever increasing. Thus, as a research community, there is little opportunity for us to rest on our laurels, as our innovations that address new aspects of system complexity must be deployed and validated. To this end the 5th International Conference on the Quality of Software Archit- tures (QoSA) 2009 focused on architectures for adaptive software systems. Modern software systems must often recon guretheir structure and behavior to respond to c- tinuous changes in requirements and in their execution environment. In these settings, quality models are helpful at an architectural level to guide systematic model-driven software development strategies by evaluating the impact of competing architectural choices.**

TRENDS IN SOFTWARE TESTING

Springer **This book is focused on the advancements in the field of software testing and the innovative practices that the industry is adopting. Considering the widely varied nature of software testing, the book addresses contemporary aspects that are important for both academia and industry. There are dedicated chapters on seamless high-efficiency**

frameworks, automation on regression testing, software by search, and system evolution management. There are a host of mathematical models that are promising for software quality improvement by model-based testing. There are three chapters addressing this concern. Students and researchers in particular will find these chapters useful for their mathematical strength and rigor. Other topics covered include uncertainty in testing, software security testing, testing as a service, test technical debt (or test debt), disruption caused by digital advancement (social media, cloud computing, mobile application and data analytics), and challenges and benefits of outsourcing. The book will be of interest to students, researchers as well as professionals in the software industry.

DESIGNING THRIVING SYSTEMS

MARRYING TECHNICAL RATIONALITY AND APPRECIATIVE SYSTEMS

Springer **This monograph illuminates a design mindset for systems, artefacts, that not only survive, but thrive. Of itself an artefact is devoid of design quality – until encountered in a specific social context by human attendants. Design quality is the affect of an intertwining of (a) an artefact's structural and behavior properties, (b) an attendant humanly conception of quality, an appreciative system, and (c) the enfolding social context of their encounter. To pursue quality in design is to interweave these three strands bound as a durable cord that evokes a visceral satisfaction – or "the delight of a ringing musical chord." The human consciousness of design quality is fundamentally metaphoric and dynamic – a perception of reality mediated by a personal value disposition. In the continuum of experience, living moment after moment, both the attendant's metaphorical appreciation and their sense of quality evolve. And thus, design quality issues from perpetual, concentric cycles of design-construct-experience-learn-assess-calibrate over the life span of relationship with an artefact. Design-as-a-verb's purpose is to service the life in that relationship, sustain its survival, and hopefully, raise that life to a state of thriving. Design quality manifests throughout the cycles of design-as-a-verb, rather than as a product of it. Such is the mindset in which the designer must indwell and that design education must nurture. While all artefacts are systems, the domain of artefact design of which I am most experienced is computing systems. Therefore, I will rest upon that domain to explore a theory and practice of design-as-a-verb – designing thriving systems.**

REFACTORING WORKBOOK

Addison-Wesley Professional **& 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**

ORACLE CERTIFIED PROFESSIONAL JAVA SE 8 PROGRAMMER EXAM 1Z0-809: A COMPREHENSIVE OCPJP 8 CERTIFICATION GUIDE

A COMPREHENSIVE OCPJP 8 CERTIFICATION GUIDE

Apress **This book is a comprehensive, step-by-step and one-stop guide for the Java SE 8 Programmer II exam (IZ0-809). Salient features of this book include: 100% coverage of the exam topics, a full-length mock exam, practice exam questions, exam notes and tips. Oracle Certified Professional Java SE 8 Programmer II Guide (Exam IZ0-809) is a comprehensive guide for the OCPJP 8 exam. The book starts by answering frequently asked questions about the OCPJP 8 exam (Chapter 1). The book maps each exam topic into a chapter and covers 100% of the exam topics (next 12 Chapters). Exam topics are discussed using numerous programming and real-world examples. Each chapter ends with practice exam questions and a quick summary that revises key concepts covered in the chapter from exam perspective. After reading the main chapters, you can take the full-length mock exam to ensure that you have enough practice before actually taking the exam (Chapter 14). If you are an OCPJP 8 exam aspirant, this book is certainly for you. This book assumes that you are already familiar with Java fundamentals (that is in line with the prerequisite of having a OCAJP 8 certification before you take up the OCPJP 8 exam). This book will be a delectable read to you because of its simple language, example driven approach, easy-to-read style, and complete focus towards the exam. Salient Features • In-depth and 100% coverage of all 12 exam topics for the certification • Numerous illustrative programming and real-world examples• Hundreds of practice exam questions (including a full-length mock exam) What you will learn: • Have the necessary knowledge to clear the exam since 100% of the exam topics are covered to the required depth • clearly understand the scope and objectives of the exam, the technical topics covered in the exam, and type and level-of-difficulty of the exam questions (in short, you will clearly know what's exactly required for passing the exam) • get into an "exam mindset" by trying out hundreds of practice exam questions.**

ADVANCES IN SOFTWARE ENGINEERING, EDUCATION, AND E-LEARNING

PROCEEDINGS FROM FECS'20, FCS'20, SERP'20, AND EEE'20

Springer Nature **This book presents the proceedings of four conferences: The 16th International Conference on Frontiers in Education: Computer Science and Computer Engineering + STEM (FECS'20), The 16th International Conference on Foundations of Computer Science (FCS'20), The 18th International Conference on Software Engineering Research and Practice (SERP'20), and The 19th International Conference on e-Learning, e-Business, Enterprise Information Systems, & e-Government (EEE'20). The conferences took place in Las Vegas, NV, USA, July 27-30, 2020 as part of the larger 2020 World Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE'20), which features 20 major tracks. Authors include academics, researchers, professionals, and students. This book contains an open access**

chapter entitled, "Advances in Software Engineering, Education, and e-Learning". Presents the proceedings of four conferences as part of the 2020 World Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE'20); Includes the tracks Computer Engineering + STEM, Foundations of Computer Science, Software Engineering Research, and e-Learning, e-Business, Enterprise Information Systems, & e-Government; Features papers from FECS'20, FCS'20, SERP'20, EEE'20, including one open access chapter.

SOFTWARE EVOLUTION

Springer Science & Business Media **This book focuses on novel trends in software evolution research and its relations with other emerging disciplines. Mens and Demeyer, both authorities in the field of software evolution, do not restrict themselves to the evolution of source code but also address the evolution of other, equally important software artifacts. This book is the indispensable source for researchers and professionals looking for an introduction and comprehensive overview of the state-of-the-art.**

COMPUTER SUPPORTED EDUCATION

11TH INTERNATIONAL CONFERENCE, CSEDU 2019, HERAKLION, CRETE, GREECE, MAY 2-4, 2019, REVISED SELECTED PAPERS

Springer Nature **This book constitutes the thoroughly refereed proceedings of the 11th International Conference on Computer Supported Education, CSEDU 2019, held in Heraklion, Crete, Greece, in May 2019. The 30 revised full papers were carefully reviewed and selected from 202 submissions. The papers cover wide research fields including authoring tools and content development, AV-communication and multimedia, classroom management, e-Learning hardware and software, blended learning, critical success factors in distance learning.**

CONTINUOUS ARCHITECTURE IN PRACTICE

SOFTWARE ARCHITECTURE IN THE AGE OF AGILITY AND DEVOPS

Addison-Wesley Signature Series (Vernon) **In Continuous Architecture in Practice, three leading software architecture experts update the discipline's classic practices for today's environments, software development contexts, and applications. Coverage includes: Discover what's changed, and how the architect's role must change Reflect today's quality attributes in evolvable architectures Understand team-based software architecture, and architecture as a "flow of decisions" Architect for security, including continuous threat modeling and mitigation Explore architectural opportunities to improve performance in continuous delivery environments Architect for scalability, avoid common scalability pitfalls, and scale microservices and serverless environments Improve resilience and reliability in the face of inevitable failures Architect data for NoSQL, big data, and analytics Use architecture to promote innovation: case studies in AI/ML, chatbots, and blockchain**

SOFTWARE ENGINEERING, ARTIFICIAL INTELLIGENCE, NETWORKING AND PARALLEL/DISTRIBUTED COMPUTING

Springer Nature **This book presents the outcomes of the 20th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD 2019), which was held on July 8–10, 2019, in Toyama, Japan. The aim of the conference was to bring together researchers and scientists, businesspeople and entrepreneurs, teachers, engineers, computer users, and students to discuss the various fields of computer science and to share their experiences and exchange new ideas and information in a meaningful way. Further, they presented research results on all aspects (theory, applications and tools) of computer and information science, and discussed the practical challenges encountered in their work and the solutions they adopted to overcome them. The book highlights the best papers from those accepted for presentation at the conference. They were chosen based on review scores submitted by members of the program committee and underwent further rigorous rounds of review. From this second round, 15 of the conference’s most promising papers were selected for this Springer (SCI) book and not the conference proceedings. We eagerly await the important contributions that we know these authors will make to the field of computer and information science.**

COMPUTER SUPPORTED EDUCATION

10TH INTERNATIONAL CONFERENCE, CSEDU 2018, FUNCHAL, MADEIRA, PORTUGAL, MARCH 15–17, 2018, REVISED SELECTED PAPERS

Springer **This book constitutes the thoroughly refereed proceedings of the 9th International Conference on Computer Supported Education, CSEDU 2018, held in Funchal, Madeira, Portugal, in March 2018. The 27 revised full papers were carefully reviewed and selected from 193 submissions. The papers deal with the following topics: new educational environments, best practices and case studies of innovative technology-based learning strategies, institutional policies on computer-supported education including open and distance education.**

OBJECT-ORIENTED REENGINEERING PATTERNS

Lulu.com **Object-Oriented Reengineering Patterns collects and distills successful techniques in planning a reengineering project, reverse-engineering, problem detection, migration strategies and software redesign. This book is made available under the Creative Commons Attribution-ShareAlike 3.0 license. You can either download the PDF for free, or**

you can buy a softcover copy from lulu.com. Additional material is available from the book's web page at http://scg.unibe.ch/oorp

EXPLORATORY SOFTWARE TESTING

TIPS, TRICKS, TOURS, AND TECHNIQUES TO GUIDE TEST DESIGN

Pearson Education **How to Find and Fix the Killer Software Bugs that Evade Conventional Testing In Exploratory Software Testing, renowned software testing expert James Whittaker reveals the real causes of today’s most serious, well-hidden software bugs--and introduces powerful new “exploratory” techniques for finding and correcting them. Drawing on nearly two decades of experience working at the cutting edge of testing with Google, Microsoft, and other top software organizations, Whittaker introduces innovative new processes for manual testing that are repeatable, prescriptive, teachable, and extremely effective. Whittaker defines both in-the-small techniques for individual testers and in-the-large techniques to supercharge test teams. He also introduces a hybrid strategy for injecting exploratory concepts into traditional scripted testing. You’ll learn when to use each, and how to use them all successfully. Concise, entertaining, and actionable, this book introduces robust techniques that have been used extensively by real testers on shipping software, illuminating their actual experiences with these techniques, and the results they’ve achieved. Writing for testers, QA specialists, developers, program managers, and architects alike, Whittaker answers crucial questions such as: • Why do some bugs remain invisible to automated testing--and how can I uncover them? • What techniques will help me consistently discover and eliminate “show stopper” bugs? • How do I make manual testing more effective--and less boring and unpleasant? • What’s the most effective high-level test strategy for each project? • Which inputs should I test when I can’t test them all? • Which test cases will provide the best feature coverage? • How can I get better results by combining exploratory testing with traditional script or scenario-based testing? • How do I reflect feedback from the development process, such as code changes?**

INTELLIGENCE OF THINGS: TECHNOLOGIES AND APPLICATIONS

THE FIRST INTERNATIONAL CONFERENCE ON INTELLIGENCE OF THINGS (ICIOT 2022), HANOI, VIETNAM, AUGUST 17–19, 2022, PROCEEDINGS

Springer Nature **This book constitutes the refereed proceedings of the First Conference on Intelligence of Things (ICIoT 2022), held in Hanoi, Vietnam, in August 2022. A total of 40 full papers in this book have been rigorously peer-reviewed and selected from over 100 submissions. The papers focused on the intelligence of things (AIoT) studies are organized in the following parts: theoretical intelligence analyses, intelligence services and applications, and intelligence service experiments. This book provides interested students and engineers with comprehensive and cutting-edge studies in the fields.**

TRENDS AND APPLICATIONS IN SOFTWARE ENGINEERING

PROCEEDINGS OF THE 6TH INTERNATIONAL CONFERENCE ON SOFTWARE PROCESS IMPROVEMENT (CIMPS 2017)

Springer **This book includes a selection of papers from the 2017 International Conference on Software Process Improvement (CIMPS’17), presenting trends and applications in software engineering. Held from 18th to 20th October 2017 in Zacatecas, Mexico, the conference provided a global forum for researchers and practitioners to present and discuss the latest innovations, trends, results, experiences and concerns in various areas of software engineering, including but not limited to software processes, security in information and communication technology, and big data. The main topics covered are organizational models, standards and methodologies, software process improvement, knowledge management, software systems, applications and tools, information and communication technologies and processes in non-software domains (mining, automotive, aerospace, business, health care, manufacturing, etc.) with a demonstrated relationship to software engineering challenges.**

TEST DRIVEN DEVELOPMENT FOR EMBEDDED C

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

FIVE LINES OF CODE

HOW AND WHEN TO REFACTOR

Simon and Schuster **Five Lines of Code teaches refactoring that's focused on concrete rules and getting any method down to five lines or less! There’s no jargon or tricky automated-testing skills required, just easy guidelines and patterns illustrated by detailed code samples. In Five Lines of Code you will learn: The signs of bad code Improving code safely, even when you don’t understand it Balancing optimization and code generality Proper compiler practices The Extract method, Introducing Strategy pattern, and many other refactoring patterns Writing stable code that enables change-by-addition Writing code that needs no comments Real-world practices for great refactoring Improving existing code—refactoring—is one of the most common tasks you’ll face as a programmer. Five Lines of Code teaches you clear and actionable refactoring rules that you can apply without relying on intuitive judgements such as “code smells.” Following the author’s expert perspective—that refactoring and code smells can be learned by following a concrete set of principles—you’ll learn when to refactor your code, what patterns to apply to what problem, and the code characteristics that indicate it’s time for a rework. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Every codebase includes mistakes and inefficiencies that you need to find and fix. Refactor the right way, and your code becomes elegant, easy to read, and easy to maintain. In this book, you’ll learn a unique approach to refactoring that implements any method in five lines or fewer. You’ll also discover a secret most senior devs know: sometimes it’s quicker to hammer out code and fix it later! About the book Five Lines of Code is a fresh look at refactoring for developers of all skill levels. In it, you’ll master author Christian Clausen’s innovative approach, learning concrete rules to get any method down to five lines—or less! You’ll learn when to refactor, specific refactoring patterns that apply to most common problems, and characteristics of code that should be deleted altogether. What's inside The signs of bad code Improving code safely, even when you don’t understand it Balancing optimization and code generality Proper compiler practices About the reader For developers of all skill levels. Examples use easy-to-read Typescript, in the same style as Java and C#. About the author Christian Clausen works as a Technical Agile Coach, teaching teams how to refactor code. Table of Contents 1 Refactoring refactoring 2 Looking under the hood of refactoring PART 1 LEARN BY REFACTORING A COMPUTER GAME 3 Shatter long function 4 Make type codes work 5 Fuse similar code together 6 Defend the data PART 2 TAKING WHAT YOU HAVE LEARNED INTO THE REAL WORLD 7 Collaborate with the compiler 8 Stay away from comments 9 Love deleting code 10 Never be afraid to add code 11 Follow the structure in the code 12 Avoid optimizations and generality 13 Make bad code look bad 14 Wrapping up**

DESIGN IT!

FROM PROGRAMMER TO SOFTWARE ARCHITECT

Pragmatic Bookshelf **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.**