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Categories for Software Engineering Pearson Higher Ed

This is the first book that presents a comprehensive overview of sustainability aspects in software engineering. Its format follows the structure of the SWEBOK and covers the key areas involved in the incorporation of green aspects in software engineering, encompassing topics from requirement elicitation to quality assurance and maintenance, while also considering professional practices and economic aspects. The book consists of thirteen chapters, which are structured in five parts. First the "Introduction" gives an overview of the primary general concepts related to Green IT, discussing what Green in Software Engineering is and how it differs from Green by Software Engineering. Next "Environments, Processes and Construction" presents green software development environments, green software engineering processes and green software construction in general. The third part, "Economic and Other Qualities," details models for measuring how well software supports green software engineering techniques and for performing trade-off analyses between alternative green practices from an economic perspective. "Software Development Process" then details techniques for incorporating green aspects at various stages of software development, including requirements engineering, design, testing, and maintenance. In closing, "Practical Issues" addresses the repercussions of green software engineering on decision-making, stakeholder participation and innovation management. The audience for this book includes software engineering researchers in academia and industry seeking to understand the challenges and impact of green aspects in software engineering, as well as practitioners interested in learning about the state of the art in

Green in Software Engineering.

C A Software Engineering Approach Springer

This book provides essential insights on the adoption of modern software engineering practices at large companies producing software-intensive systems, where hundreds or even thousands of engineers collaborate to deliver on new systems and new versions of already deployed ones. It is based on the findings collected and lessons learned at the Software Center (SC), a unique collaboration between research and industry, with Chalmers University of Technology, Gothenburg University and Malm ö University as academic partners and Ericsson, AB Volvo, Volvo Car Corporation, Saab Electronic Defense Systems, Grundfos, Axis Communications, Jeppesen (Boeing) and Sony Mobile as industrial partners. The 17 chapters present the " Stairway to Heaven " model, which represents the typical evolution path companies move through as they develop and mature their software engineering capabilities. The chapters describe theoretical frameworks, conceptual models and, most importantly, the industrial experiences gained by the partner companies in applying novel software engineering techniques. The book ' s structure consists of six parts. Part I describes the model in detail and presents an overview of lessons learned in the collaboration between industry and academia. Part II deals with the first step of the Stairway to Heaven, in which R&D adopts agile work practices. Part III of the book combines the next two phases, i.e., continuous integration (CI) and continuous delivery (CD), as they are closely intertwined. Part IV is concerned with the highest level, referred to as " R&D as an innovation system, " while Part V addresses a topic that is separate from the Stairway to Heaven and yet critically important in large organizations: organizational performance metrics that capture data, and visualizations of the status of software assets, defects and teams. Lastly, Part VI presents the perspectives of two of the SC partner companies. The book is intended for practitioners and professionals in the software-intensive systems industry, providing concrete models, frameworks and case studies that show the specific challenges that the partner companies encountered, their approaches to overcoming them, and the results. Researchers will gain valuable insights on the problems faced by large software companies, and on how to effectively tackle them in the context of successful cooperation projects.

Software Engineering and Testing Addison-Wesley Professional

Practical Guidance on the Efficient Development of High-Quality Software Introduction to Software Engineering, Second Edition equips students with the fundamentals to prepare them for satisfying careers as software engineers regardless of future changes in the field, even if the changes are unpredictable or disruptive in nature. Retaining the same organization as its predecessor, this second edition adds considerable material on open source and agile development models. The text helps students understand software development techniques and processes at a reasonably sophisticated level. Students acquire practical experience through team software projects. Throughout much of the book, a relatively large project is used to teach about the requirements, design, and coding of software. In addition, a continuing case study of an agile software development project offers a complete picture of how a successful agile project can work. The book covers each major phase of the software development

life cycle, from developing software requirements to software maintenance. It also discusses project management and explains how to read software engineering literature. Three appendices describe software patents, command-line arguments, and flowcharts.

[The Essentials of Modern Software Engineering](#) Jones & Bartlett Learning

Computer Architecture/Software Engineering

[Engineering Software Products: An Introduction to Modern Software Engineering, eBook, Global Edition](#) Elsevier

This book focuses on defining the achievements of software engineering in the past decades and showcasing visions for the future. It features a collection of articles by some of the most prominent researchers and technologists who have shaped the field: Barry Boehm, Manfred Broy, Patrick Cousot, Erich Gamma, Yuri Gurevich, Tony Hoare, Michael A. Jackson, Rustan Leino, David L. Parnas, Dieter Rombach, Joseph Sifakis, Niklaus Wirth, Pamela Zave, and Andreas Zeller. The contributed articles reflect the authors' individual views on what constitutes the most important issues facing software development. Both research- and technology-oriented contributions are included. The book provides at the same time a record of a symposium held at ETH Zurich on the occasion of Bertrand Meyer's 60th birthday.

[Software Engineering for Internet Applications](#) Springer Science & Business Media

Demonstrates how category theory can be used for formal software development. The mathematical toolbox for the Software Engineering in the new age of complex interactive systems.

Financial Software Engineering Mit Press

Writing for students at all levels of experience, Farley illuminates durable principles at the heart of effective software development. He distills the discipline into two core exercises: first, learning and exploration, and second, managing complexity. For each, he defines principles that can help students improve everything from their mindset to the quality of their code, and describes approaches proven to promote success. Farley's ideas and techniques cohere into a unified, scientific, and foundational approach to solving practical software development problems within realistic economic constraints. This general, durable, and pervasive approach to software engineering can help students solve problems they haven't encountered yet, using today's technologies and tomorrow's. It offers students deeper insight into what they do every day, helping them create better software, faster, with more pleasure and personal fulfillment.

[Hands-On Software Engineering with Python](#) Apress

Understand the big picture of the software development process. We use software every day – operating systems, applications, document editing programs, home banking – but have you ever wondered who creates software and how it's created? This book guides you through the entire process, from conception to the finished product with the aid of user-centric design theory and tools. *Software Development: From A to Z* provides an overview of backend development - from databases to communication protocols including practical programming skills in Java and of frontend development - from HTML and CSS to npm registry and Vue.js framework. You'll review quality assurance engineering, including the theory about different kind of tests and practicing end-to-end testing using Selenium. Dive into the devops world where authors discuss continuous integration and continuous delivery processes along with each topic's associated technologies. You'll then explore insightful product and project management coverage where authors talk about agile, scrum and other processes from their own experience. The topics that are covered do not require a deep knowledge of technology in general; anyone possessing basic computer and programming knowledge will be able to complete all the tasks and fully understand the concepts this book aims at delivering. You'll wear the hat of a project manager, product owner, designer, backend, frontend, QA and devops engineer, and find your

favorite role. What You'll Learn Understand the processes and roles involved in the creation of software Organize your ideas when building the concept of a new product Experience the work performed by stakeholders and other departments of expertise, their individual challenges, and how to overcome possible threats Improve the ways stakeholders and departments can work with each other Gain ideas on how to improve communication and processes Who This Book Is For Anyone who is on a team that creates software and is curious to learn more about other stakeholders or departments involved. Those interested in a career change and want to learn about how software gets created. Those who want to build technical startups and wonder what roles might be involved in the process.

[The New Software Engineering](#) Springer Science & Business Media

Like other sciences and engineering disciplines, software engineering requires a cycle of model building, experimentation, and learning. Experiments are valuable tools for all software engineers who are involved in evaluating and choosing between different methods, techniques, languages and tools. The purpose of Experimentation in Software Engineering is to introduce students, teachers, researchers, and practitioners to empirical studies in software engineering, using controlled experiments. The introduction to experimentation is provided through a process perspective, and the focus is on the steps that we have to go through to perform an experiment. The book is divided into three parts. The first part provides a background of theories and methods used in experimentation. Part II then devotes one chapter to each of the five experiment steps: scoping, planning, execution, analysis, and result presentation. Part III completes the presentation with two examples. Assignments and statistical material are provided in appendixes. Overall the book provides indispensable information regarding empirical studies in particular for experiments, but also for case studies, systematic literature reviews, and surveys. It is a revision of the authors' book, which was published in 2000. In addition, substantial new material, e.g. concerning systematic literature reviews and case study research, is introduced. The book is self-contained and it is suitable as a course book in undergraduate or graduate studies where the need for empirical studies in software engineering is stressed. Exercises and assignments are included to combine the more theoretical material with practical aspects. Researchers will also benefit from the book, learning more about how to conduct empirical studies, and likewise practitioners may use it as a "cookbook" when evaluating new methods or techniques before implementing them in their organization.

[Software Engineering at Google](#) Pearson Higher Ed

Discover the foundations of software engineering with this easy and intuitive guide In the newly updated second edition of *Beginning Software Engineering*, expert programmer and tech educator Rod Stephens delivers an instructive and intuitive introduction to the fundamentals of software engineering. In the book, you'll learn to create well-constructed software applications that meet the needs of users while developing the practical, hands-on skills needed to build robust, efficient, and reliable software. The author skips the unnecessary jargon and sticks to simple and straightforward English to help you understand the concepts and ideas discussed within. He also offers you real-world tested methods you can apply to any programming language. You'll also get: Practical tips for preparing for programming job interviews, which often include questions about software engineering practices A no-nonsense guide to requirements gathering, system modeling, design, implementation, testing, and debugging Brand-new coverage of user interface design, algorithms, and programming language choices *Beginning Software Engineering* doesn't assume any experience with programming, development, or management. It's plentiful figures and graphics help to explain the

foundational concepts and every chapter offers several case examples, Try It Out, and How It Works explanatory sections. For anyone interested in a new career in software development, or simply curious about the software engineering process, *Beginning Software Engineering, Second Edition* is the handbook you've been waiting for.

Modern Software Engineering Springer Science & Business Media

Non-Functional Requirements in Software Engineering presents a systematic and pragmatic approach to 'building quality into' software systems. Systems must exhibit software quality attributes, such as accuracy, performance, security and modifiability. However, such non-functional requirements (NFRs) are difficult to address in many projects, even though there are many techniques to meet functional requirements in order to provide desired functionality. This is particularly true since the NFRs for each system typically interact with each other, have a broad impact on the system and may be subjective. To enable developers to systematically deal with a system's diverse NFRs, this book presents the NFR Framework. Structured graphical facilities are offered for stating NFRs and managing them by refining and inter-relating NFRs, justifying decisions, and determining their impact. Since NFRs might not be absolutely achieved, they may simply be satisfied sufficiently ('satisficed'). To reflect this, NFRs are represented as 'softgoals', whose interdependencies, such as tradeoffs and synergy, are captured in graphs. The impact of decisions is qualitatively propagated through the graph to determine how well a chosen target system satisfies its NFRs. Throughout development, developers direct the process, using their expertise while being aided by catalogues of knowledge about NFRs, development techniques and tradeoffs, which can all be explored, reused and customized. *Non-Functional Requirements in Software Engineering* demonstrates the applicability of the NFR Framework to a variety of NFRs, domains, system characteristics and application areas. This will help readers apply the Framework to NFRs and domains of particular interest to them. Detailed treatments of particular NFRs - accuracy, security and performance requirements - along with treatments of NFRs for information systems are presented as specializations of the NFR Framework. Case studies of NFRs for a variety of information systems include credit card and administrative systems. The use of the Framework for particular application areas is illustrated for software architecture as well as enterprise modelling. Feedback from domain experts in industry and government provides an initial evaluation of the Framework and some case studies. Drawing on research results from several theses and refereed papers, this book's presentation, terminology and graphical notation have been integrated and illustrated with many figures. *Non-Functional Requirements in Software Engineering* is an excellent resource for software engineering practitioners, researchers and students.

Software Engineering "O'Reilly Media, Inc."

Explore various verticals in software engineering through high-end systems using Python Key Features Master the tools and techniques used in software engineering Evaluates available database options and selects one for the final Central Office system-components Experience the iterations software go through and craft enterprise-grade systems Book Description *Software Engineering* is about more than just writing code--it includes a host of soft skills that

apply to almost any development effort, no matter what the language, development methodology, or scope of the project. Being a senior developer all but requires awareness of how those skills, along with their expected technical counterparts, mesh together through a project's life cycle. This book walks you through that discovery by going over the entire life cycle of a multi-tier system and its related software projects. You'll see what happens before any development takes place, and what impact the decisions and designs made at each step have on the development process. The development of the entire project, over the course of several iterations based on real-world Agile iterations, will be executed, sometimes starting from nothing, in one of the fastest growing languages in the world--Python. Application of practices in Python will be laid out, along with a number of Python-specific capabilities that are often overlooked. Finally, the book will implement a high-performance computing solution, from first principles through complete foundation. What you will learn Understand what happens over the course of a system's life (SDLC) Establish what to expect from the pre-development life cycle steps Find out how the development-specific phases of the SDLC affect development Uncover what a real-world development process might be like, in an Agile way Find out how to do more than just write the code Identify the existence of project-independent best practices and how to use them Find out how to design and implement a high-performance computing process Who this book is for *Hands-On Software Engineering with Python* is for you if you are a developer having basic understanding of programming and its paradigms and want to skill up as a senior programmer. It is assumed that you have basic Python knowledge.

Action Research in Software Engineering Springer Science & Business Media

Software Engineer's Reference Book provides the fundamental principles and general approaches, contemporary information, and applications for developing the software of computer systems. The book is comprised of three main parts, an epilogue, and a comprehensive index. The first part covers the theory of computer science and relevant mathematics. Topics under this section include logic, set theory, Turing machines, theory of computation, and computational complexity. Part II is a discussion of software development methods, techniques and technology primarily based around a conventional view of the software life cycle. Topics discussed include methods such as CORE, SSADM, and SREM, and formal methods including VDM and Z. Attention is also given to other technical activities in the life cycle including testing and prototyping. The final part describes the techniques and standards which are relevant in producing particular classes of application. The text will be of great use to software engineers, software project managers, and students of computer science.

Software Engineering for Absolute Beginners Morgan & Claypool

Today, software engineers need to know not only how to program effectively but also how to develop proper engineering practices to make their codebase sustainable and healthy. This book emphasizes this difference between programming and software engineering. How can software engineers manage a living codebase that evolves and responds to changing requirements and demands over the length of its life? Based on their experience at Google, software engineers Titus Winters and Hyrum Wright, along with technical writer Tom Manshreck, present a candid and insightful look at how some of the world's leading practitioners construct and maintain software. This book covers Google's unique engineering culture, processes, and tools and how these aspects contribute to the effectiveness of an engineering organization. You'll explore three fundamental principles that software organizations should keep in mind when designing, architecting, writing, and maintaining code: How time affects the sustainability of software and how to make your code resilient over time How scale affects the viability of software practices within an engineering organization What trade-offs a typical engineer needs to make when evaluating design and development decisions

Guide to the Software Engineering Body of Knowledge (Swebok(r)) Springer Science &

Business Media

This book is a comprehensive, step-by-step guide to software engineering. This book provides an introduction to software engineering for students in undergraduate and post graduate programs in computers.

Foundations of Software Engineering New Age International

For one-semester courses in software engineering. Introduces software engineering techniques for developing software products and apps With *Engineering Software Products*, author Ian Sommerville takes a unique approach to teaching software engineering and focuses on the type of software products and apps that are familiar to students, rather than focusing on project-based techniques. Written in an informal style, this book focuses on software engineering techniques that are relevant for software product engineering. Topics covered include personas and scenarios, cloud-based software, microservices, security and privacy and DevOps. The text is designed for students taking their first course in software engineering with experience in programming using a modern programming language such as Java, Python or Ruby. The full text downloaded to your computer With eBooks you can: search for key concepts, words and phrases make highlights and notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf (available as a free download), available online and also via the iPad and Android apps. Upon purchase, you'll gain instant access to this eBook. Time limit The eBooks products do not have an expiry date. You will continue to access your digital ebook products whilst you have your Bookshelf installed.

Software Engineering: A Hands-On Approach Springer

Overview and Goals The agile approach for software development has been applied more and more extensively since the mid nineties of the 20th century. Though there are only about ten years of accumulated experience using the agile approach, it is currently conceived as one of the mainstream approaches for software development. This book presents a complete software engineering course from the agile angle. Our intention is to present the agile approach in a holistic and comprehensive learning environment that fits both industry and academia and inspires the spirit of agile software development. Agile software engineering is reviewed in this book through the following three perspectives: I The Human perspective, which includes cognitive and social aspects, and refers to learning and interpersonal processes between teammates, customers, and management. I The Organizational perspective, which includes managerial and cultural aspects, and refers to software project management and control. I The Technological perspective, which includes practical and technical aspects, and refers to design, testing, and coding, as well as to integration, delivery, and maintenance of software products. Specifically, we explain and analyze how the explicit attention that agile software development gives these perspectives and their interconnections, helps viii Preface it cope with the challenges of software projects. This multifaceted perspective on software development processes is reflected in this book, among other ways, by the chapter titles, which specify dimensions of software development projects such as quality, time, abstraction, and management, rather than specific project stages, phases, or practices.

Non-Functional Requirements in Software Engineering Apress

Start programming from scratch, no experience required. This beginners' guide to software engineering starts with a discussion of the different editors used to create software and covers setting up a Docker environment. Next, you will learn about repositories and version control along with its uses. Now that you are ready to program, you'll go through the basics of Python, the ideal language to learn as a novice software engineer. Many modern applications need to talk to a database of some kind, so you will explore how to create and connect to a database and how to design one for your app. Additionally you will discover how to use Python's Flask microframework and how to efficiently test your code. Finally, the book explains best practices in coding, design, deployment, and security. *Software Engineering for Absolute Beginners* answers the question of what topics you should know when you start out to learn software engineering. This book covers a lot of topics, and aims to clarify the hidden, but very important, portions of the software development toolkit. After reading this book, you, a complete beginner, will be able to identify best practices and efficient approaches to software development. You will be able to go into a work environment and recognize the technology and approaches used, and set up a professional environment to create your own software applications. What You Will Learn Explore the concepts that you will encounter in the majority of companies doing software development Create readable code that is neat as well as well-designed Build code that is source controlled, containerized, and deployable Secure your codebase Optimize your workspace Who This Book Is For A reader with a keen interest in creating software. It is also helpful for students.

Beginning Software Engineering CRC Press

In this textbook the authors introduce the important concepts of the financial software domain, and motivate the use of an agile software engineering approach for the development of financial software. They describe the role of software in defining financial models and in computing results from these models. Practical examples from bond pricing, yield curve estimation, share price analysis and valuation of derivative securities are given to illustrate the process of financial software engineering. *Financial Software Engineering* also includes a number of case studies based on typical financial engineering problems: *Internal rate of return calculation for bonds * Macaulay duration calculation for bonds * Bootstrapping of interest rates * Estimation of share price volatility * Technical analysis of share prices * Re-engineering Matlab to C# * Yield curve estimation * Derivative security pricing * Risk analysis of CDOs The book is suitable for undergraduate and postgraduate study, and for practitioners who wish to extend their knowledge of software engineering techniques for financial applications

Software Engineering Wadsworth Publishing Company

The author starts with the premise that C is an excellent language for software engineering projects. The book concentrates on programming style, particularly readability, maintainability, and portability. Documents the proposed ANSI Standard, which is expected to be ratified in 1987. This book is designed as a text for both beginner and intermediate-level programmers.