

# SOFTWARE ENGINEERING ESSENTIALS Volume II The Supporting Processes A Detailed Guide To The IEEE SWEBOK And The IEEE CSDP CSDA Exam

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Guide to the Software Engineering Body of Knowledge (Swebok(r)) BPB Publications

In the Guide to the Software Engineering Body of Knowledge (SWEBOK(R) Guide), the IEEE Computer Society establishes a baseline for the body of knowledge for the field of software engineering, and the work supports the Society's responsibility to promote the advancement of both theory and practice in this field. It should be noted that the Guide does not purport to define the body of knowledge but rather to serve as a compendium and guide to the knowledge that has been developing and evolving over the past four decades. Now in Version 3.0, the Guide's 15 knowledge areas summarize generally accepted topics and list references for detailed information. The editors for Version 3.0 of the SWEBOK(R) Guide are Pierre Bourque (Ecole de technologie superieure (ETS), Universite du Quebec) and Richard E. (Dick) Fairley (Software and Systems Engineering Associates (S2EA)).

Fundamentals of Software Engineering Springer

Computer Architecture/Software Engineering

Project-based Software Engineering CRC Press

Specifically designed as an introduction to the exciting world of engineering, **ENGINEERING FUNDAMENTALS: AN INTRODUCTION TO ENGINEERING** encourages students to become engineers and prepares them with a solid foundation in the fundamental principles and physical laws. The book begins with a discovery of what engineers do as well as an inside look into the various areas of specialization. An explanation on good study habits and what it takes to succeed is included as well as an introduction to design and problem solving, communication, and ethics. Once this foundation is established, the book moves on to the basic physical concepts and laws that students will encounter regularly. The framework of this text teaches students that

engineers apply physical and chemical laws and principles as well as mathematics to design, test, and supervise the production of millions of parts, products, and services that people use every day. By gaining problem solving skills and an understanding of fundamental principles, students are on their way to becoming analytical, detail-oriented, and creative engineers. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Essentials of Software Engineering, 2/e Addison-Wesley

This book focuses on software architecture and the value of architecture in the development of long-lived, mission-critical, trustworthy software-systems. The author introduces and demonstrates the powerful strategy of “ Managed Evolution, ” along with the engineering best practice known as “ Principle-based Architecting. ” The book examines in detail architecture principles for e.g., Business Value, Changeability, Resilience, and Dependability. The author argues that the software development community has a strong responsibility to produce and operate useful, dependable, and trustworthy software. Software should at the same time provide business value and guarantee many quality-of-service properties, including security, safety, performance, and integrity. As Dr. Furrer states, “ Producing dependable software is a balancing act between investing in the implementation of business functionality and investing in the quality-of-service properties of the software-systems. ” The book presents extensive coverage of such concepts as: Principle-Based Architecting Managed Evolution Strategy The Future Principles for Business Value Legacy Software Modernization/Migration Architecture Principles for Changeability Architecture Principles for Resilience Architecture Principles for Dependability The text is supplemented with numerous figures, tables, examples and illustrative quotations. Future-Proof Software-Systems provides a set of good engineering practices, devised for integration into most software development processes dedicated to the creation of software-systems that incorporate Managed Evolution.

Fundamentals of Computer Programming with C# Faber Publishing

Written for the undergraduate, one-term course, Essentials of Software Engineering, Fourth Edition provides students with a systematic engineering approach to software engineering principles and methodologies. Comprehensive, yet concise, the Fourth Edition includes new information on areas of high interest to computer scientists, including Big Data and developing in the cloud.

Software engineering essentials volume II: the supporting processes Software Management Training

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.

### **Fundamentals of Software Engineering** Springer Science & Business Media

Salary surveys worldwide regularly place software architect in the top 10 best jobs, yet no real guide exists to help developers become architects. Until now. This book provides the first comprehensive overview of software architecture's many aspects. Aspiring and existing architects alike will examine architectural characteristics, architectural patterns, component determination, diagramming and presenting architecture, evolutionary architecture, and many other topics. Mark Richards and Neal Ford—hands-on practitioners who have taught software architecture classes professionally for years—focus on architecture principles that apply across all technology stacks. You'll explore software architecture in a modern light, taking into account all the innovations of the past decade. This book examines: Architecture patterns: The technical basis for many architectural decisions Components: Identification, coupling, cohesion, partitioning, and granularity Soft skills: Effective team management, meetings, negotiation, presentations, and more Modernity: Engineering practices and operational approaches that have changed radically in the past few years Architecture as an engineering discipline: Repeatable results, metrics, and concrete valuations that add rigor to software architecture

### *Essentials of Software Engineering* Apress

Research and Evidence in Software Engineering: From Empirical Studies to Open Source Artifacts introduces advanced software engineering to software engineers, scientists, postdoctoral researchers, academicians, software consultants, management executives, doctoral students, and advanced level postgraduate computer science students. This book contains research articles addressing numerous software engineering research challenges associated with various software development-related activities, including programming, testing, measurements, human factors (social software engineering), specification, quality, program analysis, software project management, and more. It provides relevant theoretical frameworks, empirical research findings, and evaluated solutions addressing the research challenges associated with the above-mentioned software engineering activities. To foster collaboration among the software engineering research community, this book also reports datasets acquired systematically through scientific methods and related to various software engineering aspects that are valuable to the research community. These datasets will allow other researchers to use them in their research, thus improving the quality of overall research. The knowledge disseminated by the research studies contained in the book will hopefully motivate other researchers to further innovation in the way software development happens in real practice.

### Software Configuration Management Handbook, Third Edition Jones & Bartlett Learning

Regarding the controversial and thought-provoking assessments in this handbook, many software professionals might disagree with the authors, but all will embrace the debate. Glass identifies many of the key problems hampering success in this field. Each fact is supported by insightful discussion and detailed references.

### *Fundamentals of Software Architecture* Jones & Bartlett Learning

This title gives students an integrated and rigorous picture of applied computer science, as it

comes to play in the construction of a simple yet powerful computer system.

### **The Elements of Computing Systems** Cambridge University Press

Software development has been a troubling since it first started. There are seven chronic problems that have plagued it from the beginning: Incomplete and ambiguous user requirements that grow by >2% per month. Major cost and schedule overruns for large applications > 35% higher than planned. Low defect removal efficiency (DRE) Cancelled projects that are not completed: > 30% above 10,000 function points. Poor quality and low reliability after the software is delivered: > 5 bugs per FP. Breach of contract litigation against software outsource vendors. Expensive maintenance and enhancement costs after delivery. These are endemic problems for software executives, software engineers and software customers but they are not insurmountable. In *Software Development Patterns and Antipatterns*, software engineering and metrics pioneer Capers Jones presents technical solutions for all seven. The solutions involve moving from harmful patterns of software development to effective patterns of software development. The first section of the book examines common software development problems that have been observed in many companies and government agencies. The data on the problems comes from consulting studies, breach of contract lawsuits, and the literature on major software failures. This section considers the factors involved with cost overruns, schedule delays, canceled projects, poor quality, and expensive maintenance after deployment. The second section shows patterns that lead to software success. The data comes from actual companies. The section's first chapter on Corporate Software Risk Reduction in a Fortune 500 company was based on a major telecom company whose CEO was troubled by repeated software failures. The other chapters in this section deal with methods of achieving excellence, as well as measures that can prove excellence to C-level executives, and with continuing excellence through the maintenance cycle as well as for software development.

### **Computers, Software Engineering, and Digital Devices** BPB Publications

Widely considered one of the best practical guides to programming, Steve McConnell's original *CODE COMPLETE* has been helping developers write better software for more than a decade. Now this classic book has been fully updated and revised with leading-edge practices—and hundreds of new code samples—illustrating the art and science of software construction. Capturing the body of knowledge available from research, academia, and everyday commercial practice, McConnell synthesizes the most effective techniques and must-know principles into clear, pragmatic guidance. No matter what your experience level, development environment, or project size, this book will inform and stimulate your thinking—and help you build the highest quality code. Discover the timeless techniques and strategies that help you: Design for minimum complexity and maximum creativity Reap the benefits of collaborative development Apply defensive programming techniques to reduce and flush out errors Exploit opportunities to refactor—or evolve—code, and do it safely Use construction practices that are right-weight for your project Debug problems quickly and effectively Resolve critical construction issues early and correctly Build quality into the beginning, middle, and end of your project

### *Essentials of Software Engineering* CRC Press

Practical Handbook to understand the hidden language of computer hardware and softwareDESCRIPTION This book teaches the essentials of software engineering to anyone who wants to become an active and independent software engineer expert. It covers all the software engineering fundamentals without forgetting a few vital advanced topics such as software engineering with artificial intelligence, ontology, and data mining in software engineering. The primary goal of the book is to introduce a limited number of concepts and practices which will achieve the following two objectives: Teach students the skills needed to execute a smallish commercial project. Provide students with the necessary conceptual background for undertaking advanced studies in software engineering

through courses or on their own. **KEY FEATURES** This book contains real-time executed examples along with case studies. Covers advanced technologies that are intersectional with software engineering. Easy and simple language, crystal clear approach, and straight forward comprehensible presentation. Understand what architecture design involves, and where it fits in the full software development life cycle. Learning and optimizing the critical relationships between analysis and design. Utilizing proven and reusable design primitives and adapting them to specific problems and contexts. **WHAT WILL YOU LEARN** This book includes only those concepts that we believe are foundational. As executing a software project requires skills in two dimensions-engineering and project management-this book focuses on crucial tasks in these two dimensions and discuss the concepts and techniques that can be applied to execute these tasks effectively. **WHO THIS BOOK IS FOR** The book is primarily intended to work as a beginner's guide for Software Engineering in any undergraduate or postgraduate program. It is directed towards students who know the program but have not had formal exposure to software engineering. The book can also be used by teachers and trainers who are in a similar state-they know some programming but want to be introduced to the systematic approach of software engineering. **TABLE OF CONTENTS** 1. Introductory Concepts of Software Engineering 2. Modelling Software Development Life Cycle 3. Software Requirement Analysis and Specification 4. Software Project Management Framework 5. Software Project Analysis and Design 6. Object-Oriented Analysis and Design 7. Designing Interfaces & Dialogues and Database Design 8. Coding and Debugging 9. Software Testing 10. System Implementation and Maintenance 11. Reliability 12. Software Quality 13. CASE and Reuse 14. Recent Trends and Development in Software Engineering 15. Model Questions with Answers **ABOUT THE AUTHOR** Hitesh Mohapatra received a B.E. degree in Information Technology from Gandhi Institute of Engineering and Technology, Gunupur, Biju Patnaik University of Technology, Odisha in 2006, and an M.Tech. Degree in CSE from Govt. College of Engineering and Technology, Bhubaneswar, Biju Patnaik University of Technology, Odisha in 2009. He is currently a full-time PhD scholar at Veer Surendra Sai University of Technology, Burla, India since 2017 and expected to complete by August 2020. He has contributed 10+ research-level papers (SCI/Scopus), eight international/national conferences (Scopus), and a book on C Programming. He has 12+ years of teaching experience both in industry and academia. His current research interests include wireless sensor network, smart city, smart grid, smart transportation, and smart water. Amiya Kumar Rath received a B.E. degree in computer from Dr Babasaheb Ambedkar Marathwada University, Aurangabad, in 1990, and an M.B.A. degree in systems management from Shivaji University in 1993. He also received an M.Tech. Degree in computer science from Utkal University in 2001, and a PhD degree in computer science from Utkal University, in 2005, with a focus on embedded systems. He is currently a Professor with the Department of Computer Science and Engineering, Veer Surendra Sai University of Technology, Burla, India. He has contributed over 80 research-level papers to many national and international journals and conferences, authored seven books published by reputed publishers. His research interests include embedded systems, ad hoc networks, sensor network, power minimization, evolutionary computation, and data mining. Currently, deputed as an adviser to the National Assessment and Accreditation Council (NAAC), Bangalore, India.

**Advancements in Model-Driven Architecture in Software Engineering** Addison-Wesley Professional

Cyber-physical systems (CPSs) consist of software-controlled computing devices communicating with each other and interacting with the physical world through sensors and actuators. A CPS has, therefore, two parts: The cyber part implementing most of the functionality and the physical part, i.e., the real world. Typical examples of CPS's are a water treatment plant, an unmanned aerial vehicle, and a heart pacemaker. Because most of the functionality is implemented in

software, the software is of crucial importance. The software determines the functionality and many CPS properties, such as safety, security, performance, real-time behavior, etc. Therefore, avoiding safety accidents and security incidents in the CPS requires highly dependable software. Methodology Today, many methodologies for developing safe and secure software are in use. As software engineering slowly becomes disciplined and mature, generally accepted construction principles have emerged. This monograph advocates principle-based engineering for the development and operation of dependable software. No new development process is suggested, but integrating security and safety principles into existing development processes is demonstrated. Safety and Security Principles At the core of this monograph are the engineering principles. A total of 62 principles are introduced and cataloged into five categories: Business & organization, general principles, safety, security, and risk management principles. The principles are rigorous, teachable, and enforceable. The terminology used is precisely defined. The material is supported by numerous examples and enriched by illustrative quotes from celebrities in the field. Final Words «In a cyber-physical system's safety and security, any compromise is a planned disaster» Audience First, this monograph is for organizations that want to improve their methodologies to build safe and secure software for mission-critical cyber-physical systems. Second, the material is suitable for a two-semester, 4 hours/week, advanced computer science lecture at a Technical University. This textbook has been recommended and developed for university courses in Germany, Austria and Switzerland.

Human-Centered Software Engineering John Wiley & Sons

In DSP Architecture Design Essentials, authors Dejan Markovi? and Robert W. Brodersen cover a key subject for the successful realization of DSP algorithms for communications, multimedia, and healthcare applications. The book addresses the need for DSP architecture design that maps advanced DSP algorithms to hardware in the most power- and area-efficient way. The key feature of this text is a design methodology based on a high-level design model that leads to hardware implementation with minimum power and area. The methodology includes algorithm-level considerations such as automated word-length reduction and intrinsic data properties that can be leveraged to reduce hardware complexity. From a high-level data-flow graph model, an architecture exploration methodology based on linear programming is used to create an array of architectural solutions tailored to the underlying hardware technology. The book is supplemented with online material: bibliography, design examples, CAD tutorials and custom software.

A Software Engineering Approach to LabVIEW Software Engineering Essentials

Managing Humans is a selection of the best essays from Michael Lopp's popular website Rands in Repose(www.randsinrepose.com). Lopp is one of the most sought-after IT managers in Silicon Valley, and draws on his experiences at Apple, Netscape, Symantec, and Borland. This book reveals a variety of different approaches for creating innovative, happy development teams. It covers handling conflict, managing wildly differing personality types, infusing innovation into insane product schedules, and figuring out how to build lasting and useful engineering culture. The essays are biting, hilarious, and always informative.

DSP Architecture Design Essentials Jones & Bartlett Learning

Project-Based Software Engineering is the first book to provide hands-on process and practice in software engineering essentials for the beginner. The book presents steps through the software development life cycle and two running case studies that develop as the steps are presented. Running parallel to the process presentation and case studies, the book supports a semester-long software development project. This book focuses on object-oriented software development, and supports the conceptualization, analysis, design and implementation of an object-oriented project. It is mostly

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language-independent, with necessary code examples in Java. A subset of UML is used, with the notation explained as needed to support the readers' work. Two running case studies a video game and a library check out system show the development of a software project. Both have sample deliverables and thus provide the reader with examples of the type of work readers are to create. This book is appropriate for readers looking to gain experience in project analysis, design implementation, and testing.

*Software Engineering and Computer Systems, Part II* MIT Press

This book gathers chapters from some of the top international empirical software engineering researchers focusing on the practical knowledge necessary for conducting, reporting and using empirical methods in software engineering. Topics and features include guidance on how to design, conduct and report empirical studies. The volume also provides information across a range of techniques, methods and qualitative and quantitative issues to help build a toolkit applicable to the diverse software development contexts

**Guide to Advanced Empirical Software Engineering** Springer Nature

Key problems for the IEEE Computer Society Certified Software Development Professional (CSDP)

Certification Program IEEE Computer Society Real-World Software Engineering Problems helps prepare software engineering professionals for the IEEE Computer Society Certified Software Development Professional (CSDP) Certification Program. The book offers workable, real-world sample problems with solutions to help readers solve common problems. In addition to its role as the definitive preparation guide for the IEEE Computer Society Certified Software Development Professional (CSDP) Certification Program, this resource also serves as an appropriate guide for graduate-level courses in software engineering or for professionals interested in sharpening or refreshing their skills. The book includes a comprehensive collection of sample problems, each of which includes the problem's statement, the solution, an explanation, and references. Topics covered include: \* Engineering economics \* Test \* Ethics \* Maintenance \* Professional practice \* Software configuration \* Standards \* Quality assurance \* Requirements \* Metrics \* Software design \* Tools and methods \* Coding \* SQA and V & V IEEE Computer Society Real-World Software Engineering Problems offers an invaluable guide to preparing for the IEEE Computer Society Certified Software Development Professional (CSDP) Certification Program for software professionals, as well as providing students with a practical resource for coursework or general study.

Essentials of Software Engineering Springer Science & Business Media

This Three-Volume-Set constitutes the refereed proceedings of the Second International Conference on Software Engineering and Computer Systems, ICSECS 2011, held in Kuantan, Malaysia, in June 2011. The 190 revised full papers presented together with invited papers in the three volumes were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on software engineering; network; bioinformatics and e-health; biometrics technologies; Web engineering; neural network; parallel and distributed e-learning; ontology; image processing; information and data management; engineering; software security; graphics and multimedia; databases; algorithms; signal processing; software design/testing; e- technology; ad hoc networks; social networks; software process modeling; miscellaneous topics in software engineering and computer systems.