Software Engineering Theory And Practice 4th Edition 4th Edition By Pfleeger Shari Lawrence Atlee Joanne M 2009 Hardcover

A software architecture manifests the major early design decisions, which determine the system’s development, deployment and evolution. Thus, making better architectural decisions is one of the large challenges in software engineering. Software architecture knowledge management is about capturing practical experience and translating it into generalized architectural knowledge, and using this knowledge in the communication with stakeholders during all phases of the software lifecycle. This book presents a concise description of knowledge management in the software architecture discipline. It explains the importance of sound knowledge management practices for improving software architecture processes and products, and makes clear the role of knowledge management in software architecture and software development processes. It presents many approaches that are in use in software companies today, approaches that have been used in other domains, and approaches under development in academia. After an initial introduction by the editors, the contributions are grouped in three parts on "Architecture Knowledge Management", "Strategies and Approaches for Managing Architectural Knowledge", and "Tools and Techniques for Managing Architectural Knowledge". The presentation aims at information technology and software engineering professionals, in particular software architects and software architecture researchers. For the industrial audience, the book gives a broad and concise understanding of the importance of knowledge management for improving software architecture process and building capabilities in designing and evaluating better architectures for their mission- and business-critical systems. For researchers, the book will help to understand the applications of various knowledge management approaches in an industrial setting and to identify research challenges and opportunities.

The best way to learn software engineering is by understanding its core and peripheral areas. Foundations of Software Engineering provides in-depth coverage of the areas of software engineering that are essential for becoming proficient in the field. The book devotes a complete chapter to each of the core areas. Several peripheral areas are also explained by assigning a separate chapter to each of them. Rather than using UML or other formal notations, the content in this book is explained in easy-to-understand language. Basic programming knowledge using an object-oriented language is helpful to understand the material in this book. The knowledge gained from this book can be readily used in other relevant courses or in real-world software development environments. This textbook educates students in software engineering principles. It covers almost all facets of software engineering, including requirement engineering, system specifications, system modeling, system architecture, system implementation, and system testing. Emphasizing practical issues, such as feasibility studies, this book explains how to add and develop software requirements to evolve software systems. This book was written after receiving feedback from several professors and software engineers. What resulted is a textbook on software engineering that not only covers the theory of software

engineering but also presents real-world insights to aid students in proper implementation. Students learn key concepts through carefully explained and illustrated theories, as well as concrete examples and a complete case study using Java. Source code is also available on the book's website. The examples and case studies increase in complexity as the book progresses to help students build a practical understanding of the required theories and applications.

Taking a learn-by-doing approach, Software Engineering Design: Theory and Practice uses examples, review questions, chapter exercises, and case study assignments to provide students and practitioners with the understanding required to design complex software systems. Explaining the concepts that are immediately relevant to software designers, it be

Evolution of software has long been recognized as one of the most problematic and challenging areas in the field of software engineering, as evidenced by the high, often up to 60-80%, life-cycle costs attributed to this activity over the life of a software system. Studies of software evolution are central to the understanding and practice of software development. Yet it has received relatively little attention in the field of software engineering. This book focuses on topics aimed at giving a scientific insight into the aspect of software evolution and feedback. In summary, the book covers conceptual, phenomenological, empirical, technological and theoretical aspects of the field of software evolution - with contributions from the leading experts. This book delivers an up-to-date scientific understanding of what software evolution is, to show why it is inevitable for real world applications, and it demonstrates the role of feedback in software development and maintenance. The book also addresses some of the phenomenological and technological underpinnings and includes rules and guidelines for increased software evolvability and, in general, sustainability of the evolution process. Software Evolution and Feedback provides a long overdue, scientific focus on software evolution and the role of feedback in the software process, making this the indispensable guide for all software practitioners, researchers and managers in the software industry.

Featuring an associated Web page, and consistently combining theory with real-world practical applications, this text includes thought-provoking questions about legal and ethical issues in software engineering.

Industrial Strength Formal Methods in Practice provides hands-on experience and guidance for anyone who needs to apply formal methods successfully in an industrial context. Each chapter is written by an expert in software engineering or formal methods, and contains background information, introductions to the techniques being used, actual fragments of formalised components, details of results and an analysis of the overall approach. It provides specific details on how to produce high-quality software that comes in on-time and within budget. Aimed mainly at practitioners in software engineering and formal methods, this book will also be of interest to the following groups; academic researchers working in formal methods who are interested in evidence of their success and in how they can be applied on an industrial scale, and students on advanced software engineering courses who need real-life specifications and examples on which to base their work.

A superior primer on software testing and quality assurance, from integration to execution and automation This important new work fills the pressing need for a user-friendly text that aims to provide software engineers, software quality professionals, software

developers, and students with the fundamental developments in testing theory and common testing practices. Software Testing and Quality Assurance: Theory and Practice equips readers with a solid understanding of: Practices that support the production of quality software Software testing techniques Life-cycle models for requirements, defects, test cases, and test results Process models for units, integration, system, and acceptance testing How to build test teams, including recruiting and retaining test engineers Quality Models, Capability Maturity Model, Testing Maturity Model, and Test Process Improvement Model Expertly balancing theory with practice, and complemented with an abundance of pedagogical tools, including test questions, examples, teaching suggestions, and chapter summaries, this book is a valuable, self-contained tool for professionals and an ideal introductory text for courses in software testing, quality assurance, and software engineering.

SEMAT (Software Engineering Methods and Theory) is an international initiative designed to identify a common ground, or universal standard, for software engineering. It is supported by some of the most distinguished contributors to the field. Creating a simple language to describe methods and practices, the SEMAT team expresses this common ground as a kernel–or framework–of elements essential to all software development. The Essence of Software Engineering introduces this kernel and shows how to apply it when developing software and improving a team's way of working. It is a book for software professionals, not methodologists. Its usefulness to development team members, who need to evaluate and choose the best practices for their work, goes well beyond the description or application of any single method. "Software is both a craft and a science, both a work of passion and a work of principle. Writing good software requires both wild flights of imagination and creativity, as well as the hard reality of engineering tradeoffs. This book is an attempt at describing that balance." —Robert Martin (unclebob) "The work of Ivar Jacobson and his colleagues, started as part of the SEMAT initiative, has taken a systematic approach to identifying a 'kernel' of software engineering principles and practices that have stood the test of time and recognition." —Bertrand Meyer "The software development industry needs and demands a core kernel and language for defining software development practices—practices that can be mixed and matched, brought on board from other organizations; practices that can be measured; practices that can be integrated; and practices that can be compared and contrasted for speed, quality, and price. This thoughtful book gives a good grounding in ways to think about the problem, and a language to address the need, and every software engineer should read it." —Richard Soley

In our world of seemingly unlimited computing, numerous analytical approaches to the estimation of stress, strain, and displacement-including analytical, numerical, physical, and analog techniques-have greatly advanced the practice of engineering. Combining theory and experimentation, computer simulation has emerged as a third path for engineering

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A breakthrough approach to managing agile software development, Agile methods might just be the alternative to outsourcing.

However, agile development must scale in scope and discipline to be acceptable in the boardrooms of the Fortune 1000. In Agile Management for Software Engineering, David J. Anderson shows managers how to apply management science to gain the full business benefits of agility through application of the focused approach taught by Eli Goldratt in his Theory of Constraints. Whether you're using XP, Scrum, FDD, or another agile approach, you'll learn how to develop management discipline for all phases of the engineering process, implement realistic financial and production metrics, and focus on building software that delivers maximum customer value and outstanding business results.Coverage includes: Making the business case for agile methods: practical tools and disciplines How to choose an agile method for your next project Breakthrough application of Critical Chain Project Management and constraint-driven control of the flow of value Defines the four new roles for the agile manager in software projects—and competitive IT organizations Whether you're a development manager, project manager, team leader, or senior IT executive, this book will help you achieve all four of your most urgent challenges: lower cost, faster delivery, improved quality, and focused alignment with the business.

Algorithms are essential building blocks of computer applications. However, advancements in computer hardware, which render traditional computer models more and more unrealistic, and an ever increasing demand for efficient solution to actual real world problems have led to a rising gap between classical algorithm theory and algorithmics in practice. The emerging discipline of Algorithm Engineering aims at bridging this gap. Driven by concrete applications, Algorithm Engineering complements theory by the benefits of experimentation and puts equal emphasis on all aspects arising during a cyclic solution process ranging from realistic modeling, design, analysis, robust and efficient implementations to careful experiments. This tutorial - outcome of a GI-Dagstuhl Seminar held in Dagstuhl Castle in September 2006 - covers the essential aspects of this process in ten chapters on basic ideas, modeling and design issues, analysis of algorithms, realistic computer models, implementation aspects and algorithmic software libraries, selected case studies, as well as challenges in Algorithm Engineering. Both researchers and practitioners in the field will find it useful as a state-of-the-art survey.

This book is a broad discussion covering the entire software development lifecycle. It uses a comprehensive case study to address each topic and features the following: A description of the development, by the fictional company Homeowner, of the DigitalHome (DH) System, a system with "smart" devices for controlling home lighting, temperature, humidity, small appliance power, and security A set of scenarios that provide a realistic framework for use of the DH System material Just-in-time training: each chapter includes mini tutorials introducing various software engineering topics that are discussed in that chapter and used in the case study A set of case study exercises that provide an opportunity to engage students in software development practice, either individually or in a team environment. Offering a new approach to learning about software engineering theory and practice, the text is specifically designed to: Support teaching software engineering, using a comprehensive case study covering the complete software development lifecycle Offer opportunities for students to actively learn about and engage in software engineering practice Provide a realistic environment to study a wide array of software engineering topics including agile development Software

Engineering Practice: A Case Study Approach supports a student-centered, "active" learning style of teaching. The DH case study exercises provide a variety of opportunities for students to engage in realistic activities related to the theory and practice of software engineering. The text uses a fictitious team of software engineers to portray the nature of software engineering and to depict what actual engineers do when practicing software engineering. All the DH case study exercises can be used as team or group exercises in collaborative learning. Many of the exercises have specific goals related to team building and teaming skills. The text also can be used to support the professional development or certification of practicing software engineers. The case study exercises can be integrated with presentations in a workshop or short course for professionals.

Software EngineeringTheory and PracticePrentice Hall

For introductory courses in Software Engineering. This introduction to software engineering and practice addresses both procedural and object-oriented development. The book applies concepts consistently to two common examples -- a typical information system and a real-time system. It combines theory with real, practical applications by providing an abundance of case studies and examples from the current literature. This revision has been thoroughly updated to reflect significant changes in software engineering, including modeling and agile methods.

This book constitutes the refereed proceedings of the 46th International Conference on Current Trends in Theory and Practice of Informatics, SOFSEM 2020, held in Limassol, Cyprus, in January 2020. The 40 full papers presented together with 17 short papers and 3 invited papers were carefully reviewed and selected from 125 submissions. They presented new research results in the theory and practice of computer science in the each sub-area of SOFSEM 2020: foundations of computer science, foundations of data science and engineering, foundations of software engineering, and foundations of algorithmic computational biology.

Pfleeger divides her study into three major sections: a motivational treatise on why knowledge of software engineering is important, the major steps of development and maintenance including requirements analysis and architecture, and evaluation and improvement needs after delivery for future redesign and redevelopment.

This book addresses action research (AR), one of the main research methodologies used for academia-industry research collaborations. It elaborates on how to find the right research activities and how to distinguish them from non-significant ones. Further, it details how to glean lessons from the research results, no matter whether they are positive or negative. Lastly, it shows how companies can evolve and build talents while expanding their product portfolio. The book’s structure is based on that of AR projects; it sequentially covers and discusses each phase of the project. Each chapter shares new insights into AR and provides the reader with a better understanding of how to apply it. In addition, each chapter includes a number of practical use cases or examples. Taken together, the chapters cover the entire software lifecycle: from problem diagnosis to project (or action) planning and execution, to documenting and disseminating results, including validity assessments for AR studies. The goal of this book is to help everyone interested in industry-academia collaborations to conduct joint research. It is for students of software engineering who need to learn about how to set up an evaluation, how to run a project, and how to document the results. It is for all academics

who aren't afraid to step out of their comfort zone and enter industry. It is for industrial researchers who know that they want to do more than just develop software blindly. And finally, it is for stakeholders who want to learn how to manage industrial research projects and how to set up guidelines for their own role and expectations.

This book is Open Access under a CC BY licence. This book constitutes the proceedings of the 22nd International Conference on Fundamental Approaches to Software Engineering, FASE 2019, which took place in Prague, Czech Republic in April 2019, held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2019.The 24 papers presented in this volume were carefully reviewed and selected from 94 submissions. The papers are organized in topical sections named: software verification; model-driven development and model transformation; software evolution and requirements engineering; specification, design, and implementation of particular classes of systems; and software testing.

Software Engineering for Science provides an in-depth collection of peer-reviewed chapters that describe experiences with applying software engineering practices to the development of scientific software. It provides a better understanding of how software engineering is and should be practiced, and which software engineering practices are effective for scientific software. The book starts with a detailed overview of the Scientific Software Lifecycle, and a general overview of the scientific software development process. It highlights key issues commonly arising during scientific software development, as well as solutions to these problems. The second part of the book provides examples of the use of testing in scientific software development, including key issues and challenges. The chapters then describe solutions and case studies aimed at applying testing to scientific software development efforts. The final part of the book provides examples of applying software engineering techniques to scientific software, including not only computational modeling, but also software for data management and analysis. The authors describe their experiences and lessons learned from developing complex scientific software in different domains. About the Editors Jeffrey Carver is an Associate Professor in the Department of Computer Science at the University of Alabama. He is one of the primary organizers of the workshop series on Software Engineering for Science (http://www.SE4Science.org/workshops). Neil P. Chue Hong is Director of the Software Sustainability Institute at the University of Edinburgh. His research interests include barriers and incentives in research software ecosystems and the role of software as a research object. George K. Thiruvathukal is Professor of Computer Science at Loyola University Chicago and Visiting Faculty at Argonne National Laboratory. His current research is focused on software metrics in open source mathematical and scientific software.

Taking a learn-by-doing approach, Software Engineering Design: Theory and Practice uses examples, review questions, chapter exercises, and case study assignments to provide students and practitioners with the understanding required to design complex software systems. Explaining the concepts that are immediately relevant to software designers, it begins with a review of software design fundamentals. The text presents a formal top-down design process that consists of several design activities with varied levels of detail, including the macro-, micro-, and construction-design levels. As part of the top-down approach, it provides in-depth coverage of applied architectural, creational, structural, and behavioral design patterns. For each design issue covered, it includes

a step-by-step breakdown of the execution of the design solution, along with an evaluation, discussion, and justification for using that particular solution. The book outlines industry-proven software design practices for leading large-scale software design efforts, developing reusable and high-quality software systems, and producing technical and customer-driven design documentation. It also: Offers one-stop guidance for mastering the Software Design & Construction sections of the official Software Engineering Body of Knowledge (SWEBOK®) Details a collection of standards and guidelines for structuring high-quality code Describes techniques for analyzing and evaluating the quality of software designs Collectively, the text supplies comprehensive coverage of the software design concepts students will need to succeed as professional design leaders. The section on engineering leadership for software designers covers the necessary ethical and leadership skills required of software developers in the public domain. The section on creating software design documents (SDD) familiarizes students with the software design notations, structural descriptions, and behavioral models required for SDDs. Course notes, exercises with answers, online resources, and an instructor’s manual are available upon qualified course adoption. Instructors can contact the author about these resources via the author's website: http://softwareengineeringdesign.com/

Practical tools for analyzing, calculating, and reportingavailability, reliability, and maintainability metrics Engineers in the telecommunications industry must be able toquantify system reliability and availability metrics for use inservice level agreements, system design decisions, and dailyoperations. Increasing system complexity and software dependencerequire new, more sophisticated tools for system modeling andmetric calculation than those available in the currentliterature. Telecommunications System Reliability Engineering, Theory,and Practice provides a background in reliability engineeringtheory as well as detailed sections discussing applications tofiber optic networks (earth station and space segment), microwavenetworks (long-haul, cellular backhaul and mobile wireless),satellite networks (teleport and VSAT), power systems (generators,commercial power and battery systems), facilities management, andsoftware/firmware. Programming techniques and examples forsimulation of the approaches presented are discussed throughout thebook. This powerful resource: Acts as a comprehensive reference and textbook for analysis anddesign of highly reliable and available telecommunicationssystems Bridges the fields of system reliability theory,telecommunications system engineering, and computerprogramming Translates abstract reliability theory concepts into practicaltools and techniques for technical managers, engineers andstudents Provides telecommunication engineers with a holisticunderstanding of system reliability theory, telecommunicationssystem engineering, and reliability/risk analysisTelecommunications System Reliability Engineering, Theory, andPractice is a must-have guide for telecommunications engineers orengineering students planning to work in the field oftelecommunications Telecommunications System Reliability Engineering, Theory,and Practice is a must-have guide for telecommunicationsengineers or engineering students planning to work in the field oftelecommunications.

Software architecture is foundational to the development of large, practical software-intensive applications. This brand-new text covers all facets of software architecture and how it serves as the intellectual centerpiece of software development and evolution.

Critically, this text focuses on supporting creation of real implemented systems. Hence the text details not only modeling techniques, but design, implementation, deployment, and system adaptation -- as well as a host of other topics -- putting the elements in context and comparing and contrasting them with one another. Rather than focusing on one method, notation, tool, or process, this new text/reference widely surveys software architecture techniques, enabling the instructor and practitioner to choose the right tool for the job at hand. Software Architecture is intended for upper-division undergraduate and graduate courses in software architecture, software design, component-based software engineering, and distributed systems; the text may also be used in introductory as well as advanced software engineering courses.

The volume includes a set of selected papers extended and revised from the I2009 Pacific-Asia Conference on Knowledge Engineering and Software Engineering (KESE 2009) was held on December 19~ 20, 2009, Shenzhen, China. Volume 1 is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of Computer and Software Engineering to disseminate their latest research results and exchange views on the future research directions of these fields. 140 high-quality papers are included in the volume. Each paper has been peer-reviewed by at least 2 program committee members and selected by the volume editor Prof. Yanwen Wu. On behalf of this volume, we would like to express our sincere appreciation to all of authors and referees for their efforts reviewing the papers. Hoping you can find lots of profound research ideas and results on the related fields of Computer and Software Engineering.

By using computer simulations in research and development, computational science and engineering (CSE) allows empirical inquiry where traditional experimentation and methods of inquiry are difficult, inefficient, or prohibitively expensive. The Handbook of Research on Computational Science and Engineering: Theory and Practice is a reference for interested researchers and decision-makers who want a timely introduction to the possibilities in CSE to advance their ongoing research and applications or to discover new resources and cutting edge developments. Rather than reporting results obtained using CSE models, this comprehensive survey captures the architecture of the cross-disciplinary field, explores the long term implications of technology choices, alerts readers to the hurdles facing CSE, and identifies trends in future development.

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.

Using clear language, this book shows you how to build in, evaluate, and demonstrate reliability and availability of components, equipment, and systems. It presents the state of the art in theory and practice, and is based on the author's 30 years' experience, half in industry and half as professor of reliability engineering at the ETH, Zurich. In this extended edition, new models and considerations have been added for reliability data analysis and fault tolerant reconfigurable repairable systems including reward and frequency / duration aspects. New design rules for imperfect switching, incomplete coverage, items with more than 2 states, and phased-mission systems, as well as a Monte Carlo approach useful for rare events are given. Trends in quality management are outlined. Methods and tools are given in such a way that they can be tailored to cover different reliability requirement levels and be used to investigate safety as well. The book contains a large number of tables, figures, and examples to support the practical aspects.

Data flow analysis is used to discover information for a wide variety of useful applications, ranging from compiler optimizations to software engineering and verification. Modern compilers apply it to produce performance-maximizing code, and software engineers use it to re-engineer or reverse engineer programs and verify the integrity of their programs. Supplementary Online Materials to Strengthen Understanding Unlike most comparable books, many of which are limited to bit vector frameworks and classical constant propagation, Data Flow Analysis: Theory and Practice offers comprehensive coverage of both classical and contemporary data flow analysis. It prepares foundations useful for both researchers and students in the field by standardizing and unifying various existing research, concepts, and notations. It also presents mathematical foundations of data flow analysis and includes study of data flow analysis implantation through use of the GNU Compiler Collection (GCC). Divided into three parts, this unique text combines discussions of inter- and intraprocedural analysis and then describes implementation of a generic data flow analyzer (gdfa) for bit vector frameworks in GCC. Through the inclusion of case studies and examples to reinforce material, this text equips readers with a combination of mutually supportive theory and practice, and they will be able to access the author's accompanying Web page. Here they can experiment with the analyses described in the book, and can make use of updated features, including: Slides used in the authors' courses The source of the generic data flow analyzer (gdfa) An errata that features errors as they are discovered Additional updated relevant material discovered in the course of research

2012 International Conference on Software Engineering, Knowledge Engineering and Information Engineering (SEKEIE

2012) will be held in Macau, April 1-2, 2012 . This conference will bring researchers and experts from the three areas of Software Engineering, Knowledge Engineering and Information Engineering together to share their latest research results and ideas. This volume book covered significant recent developments in the Software Engineering, Knowledge Engineering and Information Engineering field, both theoretical and applied. We are glad this conference attracts your attentions, and thank your support to our conference. We will absorb remarkable suggestion, and make our conference more successful and perfect.

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780136061694 .

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

Software is the collection of data and instructions that drives the working of the computer. Software is usually written in high-level programming languages, which are then translated into machine language via a compiler or interpreter. Computer software can be classified into application software, system software and malicious software. The development of software through the application of scientific and technological methods is under the scope of software engineering. It is a vast subject that branches out into a number of significant sub-domains such as software requirements, software design, software testing, software construction, software development process, etc. This book explores all the important aspects of software engineering in the present day scenario. It is an upcoming field that has undergone rapid development over the past few decades. For all those who are interested in this domain, this textbook can prove to be an

essential guide.

This book introduces the fundamental ideas in testing theory, testing techniques, testing practices and quality assurance. Software Testing and Quality Assurance: Theory and Practice covers the practices that support the production of quality software, software testing techniques, life-cycle models for requirements, defects, test cases, test results, test questions, examples, teaching suggestions, and chapter summaries. Other topics covered are; software quality assurance (SQA), SQA processes and metrics; the role of testing; basics of program testing; theory of program testing; code review; unit testing; test generation from control flow graphs, data flow graphs, and program domains; system integration; system testing; test execution; test automation; acceptance testing; quality metrics and reliability models. For the 2nd edition, the authors have included two major topics: (i) Boolean expression testing; and (ii) testing without oracles.