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Prentice Hall international series in computer science Prentice Hall International Series in Computer Systems Science and Engineering Programming from Specifications Providing a thorough treatment of most elementary program development techniques, this revised edition covers topics such as procedures, parameters, recursion and data refinement, with the integration of specification, development and coding, based on ordinary (classical) logic. Principles of Concurrent and Distributed Programming *Pearson Education* **The latest edition of a classic text on concurrency and distributed programming - from a winner of the ACM/SIGCSE Award for Outstanding Contribution to Computer Science Education. Systematic Software Development Using VDM Software -- Software Engineering. Introduction to the Theory of Programming Languages Programming Language Processors Compilers and Interpreters The Craft of Programming** *Prentice Hall* **The modern computer is so powerful that a casual knowledge of programming suffices for most of its users. However, a variety of circumstances can abruptly require a much deeper understanding: the need to structure a program carefully to avoid being overwhelmed by its complexity, the need to insure reliability beyond what can be achieved by debugging, or the need to utilize computing resources efficiently. Beyond such practical considerations is an inherent intellectual satisfaction in mastering the fundamental concepts of programming. The aim of this book is to provide such mastery concept by concept. Reasoned Programming** *Prentice Hall Direct* **This text is for use by advanced undergraduate/graduate students of computer science. An Introduction to Logic Programming Through Prolog Logic programming has increasing significance in computer science beyond the current fashion for expert systems. This book takes a software engineering rather than an expert systems/AI approach and covers logical theory, practical programming and PROLOG im Partial Evaluation and Automatic Program Generation** *Peter Sestoft* **Explores the principles of automatic partial evaluation, provides simple and complete algorithms, and demonstrates via examples that specialization can increase efficiency. Covers partial evaluation of programming languages from C and Prolog to Scheme and the lambda calculus. For researchers, programmers, and students in advanvced programming languages. Mathematical Theory of Program Correctness** *Prentice Hall* **"The third novel in Terry Pratchett and Stephen Baxter's "Long Earth" series, which Io9 calls "a brilliant science fiction collaboration.""-- Programming Language Concepts and Paradigms Software -- Programming Techniques. Verifiable Programming Software -- Software Engineering. Mathematics in Computing An Accessible Guide to Historical, Foundational and Application Contexts** *Springer Nature* **This illuminating textbook provides a concise review of the core concepts in mathematics essential to computer scientists. Emphasis is placed on the practical computing applications enabled by seemingly abstract mathematical ideas, presented within their historical context. The text spans a broad selection of key topics, ranging from the use of finite field theory to correct code and the role of number theory in cryptography, to the value of graph theory when modelling networks and the importance of formal methods for safety critical systems. This fully updated new edition has been expanded with a more comprehensive treatment of algorithms, logic, automata theory, model checking, software reliability and dependability, algebra, sequences and series, and mathematical induction. Topics and features: includes numerous pedagogical features, such as chapter-opening key topics, chapter introductions and summaries, review questions, and a glossary; describes the historical contributions of such prominent figures as Leibniz, Babbage, Boole, and von Neumann; introduces the fundamental mathematical concepts of sets, relations and functions, along with the basics of number theory, algebra, algorithms, and matrices; explores arithmetic and geometric sequences and series, mathematical induction and recursion, graph theory, computability and decidability, and automata theory; reviews the core issues of coding theory, language theory, software engineering, and software reliability, as well as formal methods and model checking; covers key topics on logic, from ancient Greek contributions to modern applications in AI, and discusses the nature of mathematical proof and theorem proving; presents a**

short introduction to probability and statistics, complex numbers and quaternions, and calculus. This engaging and easy-to-understand book will appeal to students of computer science wishing for an overview of the mathematics used in computing, and to mathematicians curious about how their subject is applied in the field of computer science. The book will also capture the interest of the motivated general reader. Computational Category Theory Programming Language Syntax and Semantics Contains a treatment of syntax and semantics, and coverage of several complementary semantic methods, with emphasis on using formal specification. There is brief coverage of underlying theory, and an introduction to action semantics - a new method of specifying semantics. Principles of Concurrent and Distributed Programming *Pearson* **Principles of Concurrent and Distributed Programming provides an introduction to concurrent programming focusing on general principles and not on specific systems. Software today is inherently concurrent or distributed - from event-based GUI designs to operating and real-time systems to Internet applications. This edition is an introduction to concurrency and examines the growing importance of concurrency constructs embedded in programming languages and of formal methods such as model checking. Programming The Derivation of Algorithms. Teacher's manual Programming Language Theory and Its Implementation Applicative and Imperative Paradigms** *Prentice Hall* **Programming from First Principles** *Prentice Hall* **Formal Methods and Software Engineering 5th International Conference on Formal Engineering Methods, ICFEM 2003, Singapore, November 5-7, 2003, Proceedings** *Springer Science & Business Media* **This book constitutes the refereed proceedings of the 5th International Conference on Formal Engineering Methods, ICFEM 2003, held in Singapore in November 2003. The 34 revised full papers presented together with 3 invited contributions were carefully reviewed and selected from 91 submissions. The papers are organized in topical sections on testing and validation, state diagrams, PVS/HOL, refinement, hybrid systems, Z/Object-Z, Petri nets, timed automata, system modelling and checking, and semantics and synthesis. Concise Guide to Software Engineering From Fundamentals to Application Methods** *Springer Nature* **This textbook presents a concise introduction to the fundamental principles of software engineering, together with practical guidance on how to apply the theory in a real-world, industrial environment. The wide-ranging coverage encompasses all areas of software design, management, and quality. Topics and features: presents a broad overview of software engineering, including software lifecycles and phases in software development, and project management for software engineering; examines the areas of requirements engineering, software configuration management, software inspections, software testing, software quality assurance, and process quality; covers topics on software metrics and problem solving, software reliability and dependability, and software design and development, including Agile approaches; explains formal methods, a set of mathematical techniques to specify and derive a program from its specification, introducing the Z specification language; discusses software process improvement, describing the CMMI model, and introduces UML, a visual modelling language for software systems; reviews a range of tools to support various activities in software engineering, and offers advice on the selection and management of a software supplier; describes such innovations in the field of software as distributed systems, service-oriented architecture, software as a service, cloud computing, and embedded systems; includes key learning topics, summaries and review questions in each chapter, together with a useful glossary. This practical and easy-to-follow textbook/reference is ideal for computer science students seeking to learn how to build high quality and reliable software on time and on budget. The text also serves as a self-study primer for software engineers, quality professionals, and software managers. Mathematical Logic and Programming Languages** *Prentice Hall* **Communicating Sequential Processes** *Prentice Hall* **Formal Techniques for Networked and Distributed Systems - FORTE 2005 25th IFIP WG 6.1 International Conference, Taipei, Taiwan, October 2-5, 2005, Proceedings** *Springer* **This book constitutes the refereed proceedings of the 25th IFIP WG 6.1 International Conference on Formal Techniques for Networked and Distributed Systems, FORTE 2005, held in Taipei, Taiwan, in October 2005. The 33 revised full papers and 6 short papers presented together with 3 keynote speeches were carefully reviewed and selected from 88 submissions. The papers cover all current aspects of formal methods for distributed systems and communication protocols such as formal description techniques (MSC, UML, Use cases, . . .), semantic foundations, model-checking, SAT-based techniques, process algebrae, abstractions, protocol testing, protocol verification, network synthesis, security system analysis, network robustness, embedded systems, communication protocols, and several promising new techniques. Z User Workshop, London 1992 Proceedings of the Seventh Annual Z User Meeting, London 14–15 December 1992** *Springer Science & Business Media* **The Z notation has been developed at the Programming Research Group at the Oxford University Computing Laboratory and elsewhere for over a decade. It is now used by industry as part of the software (and hardware) development process in both Europe and the USA. It is currently undergoing BSI standardisation in the UK, and has been proposed for ISO standardisation internationally. In recent years researchers have begun to focus increasingly on the development of techniques and tools to encourage the wider application of Z and other formal methods and notations. This volume contains papers from the Seventh Annual Z User Meeting, held in London in December 1992. In contrast to previous years the meeting concentrated specifically on industrial applications of Z, and a high proportion of the participants came from an industrial background. The theme is well represented by the four invited papers. Three of these discuss ways in which formal methods are being introduced, and the fourth presents an international survey of industrial applications. It also provides a reminder of the improvements which are needed to make these methods an accepted part of software development. In addition the volume contains several submitted papers on the industrial use of Z, two of which discuss the key area of safety-critical applications. There are also a number of papers related to the recently-completed ZIP project. The papers cover all the main areas of the project including methods, tools, and the development of a Z Standard, the first publicly-available version of which was made available at the meeting. Finally the volume contains a select Z bibliography, and section on how to access information on Z through comp.specification.z, the international, computer-based**

USENET newsgroup. Z User Workshop, London 1992 provides an important overview of current research into industrial applications of Z, and will provide invaluable reading for researchers, postgraduate students and also potential industrial users of Z. Australian National Bibliography: 1992 *National Library Australia* **The Future of Software Engineering** *Springer Science & Business Media* **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. Essays in Computing Science Communicating Process Architectures 2002 WoTUG-25 : Proceedings of the 25th WoTUG Technical Meeting, 15-18 September 2002, University of Reading, United Kingdom** *IOS Press* **The WoTUG series of conferences are a major forum for the presentation of state-of-the-art ideas on concurrency and communication. This book continues this trend, with these proceedings containing a number of papers that discuss a wide range of issues fundamental to the future of concurrency. Formal Methods: Foundations and Applications 13th Brazilian Symposium on Formal Methods, SBMF 2010, Natal, Brazil, November 8-11, 2010, Revised Selected Papers** *Springer* **This book constitutes the thoroughly refereed post-conference proceedings of the 13th Brazilian Symposium on Formal Methods, SBMF 2010, held in Natal, Brazil, in November 2010. The 18 revised full papers were carefully reviewed and selected from 55 submissions. The papers presented cover a broad range of foundational and methodological issues in formal methods for the design and analysis of software and hardware systems as well as applications in various domains. Field-Programmable Logic and Applications: The Roadmap to Reconfigurable Computing 10th International Conference, FPL 2000 Villach, Austria, August 27-30, 2000 Proceedings** *Springer* **This book is the proceedings volume of the 10th International Conference on Field Programmable Logic and its Applications (FPL), held August 27 30, 2000 in Villach, Austria, which covered areas like reconfigurable logic (RL), reconfigurable computing (RC), and its applications, and all other aspects. Its subtitle "The Roadmap to Reconfigurable Computing" reminds us, that we are currently witnessing the runaway of a breakthrough. The annual FPL series is the eldest international conference in the world covering configware and all its aspects. It was founded 1991 at Oxford University (UK) and is 2 years older than its two most important competitors usually taking place at Monterey and Napa. FPL has been held at Oxford, Vienna, Prague, Darmstadt, London, Tallinn, and Glasgow (also see: http://www. fpl. uni kl. de/FPL/). The New Case for Reconfigurable Platforms: Converging Media. Indicated by palmtops, smart mobile phones, many other portables, and consumer electronics, media such as voice, sound, video, TV, wireless, cable, telephone, and Internet continue to converge. This creates new opportunities and even necessities for reconfigurable platform usage. The new converged media require high volume, flexible, multi purpose, multi standard, low power products adaptable to support evolving standards, emerging new standards, field upgrades, bug fixes, and, to meet the needs of a growing number of different kinds of services offered to zillions of individual subscribers preferring different media mixes. FME 2002: Formal Methods - Getting IT Right International Symposium of Formal Methods Europe, Copenhagen, Denmark, July 22-24, 2002 Proceedings** *Springer Science & Business Media* **This book constitutes the refereed proceedings of the international symposium Formal Methods Europe, FME 2002, held in Copenhagen, Denmark, in July 2002. The 31 revised full papers presented together with three invited contributions were carefully reviewed and selected from 95 submissions. All current aspects of formal methods are addressed, from foundational and methodological issues to advanced application in various fields. CONCUR 2008 - Concurrency Theory 19th International Conference, CONCUR 2008, Toronto, Canada, August 19-22, 2008, Proceedings** *Springer* **This volume contains the proceedings of the 19th International Conference on Concurrency Theory (CONCUR 2008) which took place at the University of TorontoinToronto,Canada,August19–22,2008. CONCUR2008wasco-located with the 27th Annual ACM SIGACT-SIGOPS Symposium on the Principles of Distributed Computing (PODC 2008), and the two conferences shared two invited speakers, some social events, and a symposium celebrating the lifelong research contributions of Nancy Lynch. The purpose of the CONCUR conferences is to bring together researchers, developers, and students in order to advance the theory of concurrency and promote its applications. Interest in this topic is continuously growing, as a consequence of the importance and ubiquity of concurrent systems and their applications, and of the scienti?c relevance of their foundations. Topics include basic models of concurrency (such as abstract machines, domain theoretic m- els, game theoretic models, process algebras, and Petri nets), logics for c- currency (such as modal logics, temporal logics and resource logics), models of specialized systems (such as biology-inspired systems, circuits, hybrid systems, mobile systems, multi-core processors, probabilistic systems, real-time systems, synchronoussystems, and Web services),veri?cationand analysis techniques for concurrent systems (such as abstract interpretation, atomicity checking, mod- checking, race detection, run-time veri?cation, state-space exploration, static analysis,synthesis,testing, theorem provingand type systems), andrelated p- gramming models (such as distributed or object-oriented). Of the 120 regular and 5 tool papers submitted this year, 33 regular and 2 tool papers were accepted for presentation and areincluded in the present v- ume. Conquering Complexity** *Springer Science & Business Media* **Software has long been perceived as complex, at least within Software Engineering circles. We have been living in a recognised state of crisis since the first NATO Software Engineering conference in 1968. Time and again we have been proven unable to engineer reliable software as easily/cheaply as we imagined. Cost overruns and expensive failures are the norm. The problem is fundamentally one of complexity: software is fundamentally complex because it must be precise. Problems that appear to be specified quite easily in plain language become far more complex when**

written in a more formal notation, such as computer code. Comparisons with other engineering disciplines are deceptive. One cannot easily increase the factor of safety of software in the same way that one could in building a steel structure, for example. Software is typically built assuming perfection, often without adequate safety nets in case the unthinkable happens. In such circumstances it should not be surprising to find out that (seemingly) minor errors have the potential to cause entire software systems to collapse. The goal of this book is to uncover techniques that will aid in overcoming complexity and enable us to produce reliable, dependable computer systems that will operate as intended, and yet are produced on-time, in budget, and are evolvable, both over time and at run time. We hope that the contributions in this book will aid in understanding the nature of software complexity and provide guidance for the control or avoidance of complexity in the engineering of complex software systems. Formal Modeling: Actors; Open Systems, Biological Systems Essays Dedicated to Carolyn Talcott on the Occasion of Her 70th Birthday *Springer* **This Festschrift volume, published in honor of Carolyn Talcott on the occasion of her 70th birthday, contains a collection of papers presented at a symposium held in Menlo Park, California, USA, in November 2011. Carolyn Talcott is a leading researcher and mentor of international renown among computer scientists. She has made key contributions to a number of areas of computer science including: semantics and verification of progamming languages; foundations of actor-based systems; middleware, meta-architectures, and systems; Maude and rewriting logic; and computational biology. The 21 papers presented are organized in topical sections named: Essays on Carolyn Talcott; actors and programming languages; cyberphysical systems; middleware and meta-architectures; formal methods and reasoning tools; and computational biology. Communicating Process Architectures 2004** *IOS Press* **Communicating Process Architecture (CPA) describes an approach to system development that is process-oriented. It makes no great distinction between hardware and software. It has a major root in the theory of Communicating Sequential Processes (CSP). However, the underlying theory is not limited to CSP. The importance of mobility of both channel and process within a network sees integration with ideas from the ð-calculus. Other formalisms are also exploited, such as BSP and MPI. The focus is on sound methods for the engineering of significant concurrent systems, including those that are distributed (across the Internet or within a single chip) and/or software-scheduled on a single execution unit. Traditionally, at CPA, the emphasis has been on theory and practice - developing and applying tools based upon CSP and related theories to build high-integrity systems of significant size. In particular, interest focuses on achieving scalability and security against error. The development of Java, C, and C++, libraries to facilitate secure concurrent programming using 'mainstream' languages has allowed CPA to continue and proliferate. This work continues in support of the engineering of distributed applications. Recently, there has been greater reference to theory and its more direct application to programming systems and languages. In this volume the formal CSP is very well presented. The papers provide a healthy mixture of the academic and commercial, software and hardware, application and infrastructure, which reflects the nature of the discipline. Current Trends in Hardware Verification and Automated Theorem Proving** *Springer Science & Business Media*

This report describes the partially completed correctness proof of the Viper 'block model'. Viper [7,8,9,11,23] is a microprocessor designed by W. J. Cullyer, C. Pygott and J. Kershaw at the Royal Signals and Radar Establishment in Malvern, England, (henceforth 'RSRE') for use in safety-critical applications such as civil aviation and nuclear power plant control. It is currently finding uses in areas such as the de ployment of weapons from tactical aircraft. To support safety-critical applications, Viper has a particulary simple design about which it is relatively easy to reason using current techniques and models. The designers, who deserve much credit for the promotion of formal methods, intended from the start that Viper be formally verified. Their idea was to model Viper in a sequence of decreasingly abstract levels, each of which concentrated on some aspect ofthe design, such as the flow ofcontrol, the processingofinstructions, and so on. That is, each model would be a specification of the next (less abstract) model, and an implementation of the previous model (if any). The verification effort would then be simplified by being structured according to the sequence of abstraction levels. These models (or levels) of description were characterized by the design team. The first two levels, and part of the third, were written by them in a logical language amenable to reasoning and proof. Mechanizing Mathematical Reasoning Essays in Honor of Jörg H. Siekmann on the Occasion of His 60th Birthday *Springer* **By presenting state-of-the-art results in logical reasoning and formal methods in the context of artificial intelligence and AI applications, this book commemorates the 60th birthday of Jörg H. Siekmann. The 30 revised reviewed papers are written by former and current students and colleagues of Jörg Siekmann; also included is an appraisal of the scientific career of Jörg Siekmann entitled "A Portrait of a Scientist: Logics, AI, and Politics." The papers are organized in four parts on logic and deduction, applications of logic, formal methods and security, and agents and planning.**