SPECIFICATION AND TRANSFORMATION OF PROGRAMS

A FORMAL APPROACH TO SOFTWARE DEVELOPMENT

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Specification And Transformation Of Programs

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Specification And Transformation Of Programs:

  Specification and Transformation of Programs Helmut A. Partsch,2012-12-06 Specification and transformation of programs is short for a methodology of software development where from a formal specification of a problem to be solved programs correctly solving that problem are constructed by stepwise application of formal semantics preserving transformation rules The approach considers programming as a formal activity Consequently it requires some mathematical maturity and above all the will to try something new A somewhat experienced programmer or a third or fourth year student in computer science should be able to master most of this material at least this is the level I have aimed at This book is primarily intended as a general introductory textbook on transformational methodology As with any methodology reading and understanding is necessary but not sufficient Therefore most of the chapters contain a set of exercises for practising as homework Solutions to these exercises exist and can in principle be obtained at nominal cost from the author upon request on appropriate letterhead In addition the book also can be seen as a comprehensive account of the particular transformational methodology developed within the Munich CIP project   **Specification and Transformation of Programs** Helmut A. Partsch,1990   *Specification and Transformation of Programs* Helmut A Partsch,1990-07-05

  Program Development by Specification and Transformation Berthold Hoffmann,1993 This volume gives a coherent presentation of the outcome of the project PROSPECTRA PROgram development by SPECification and TRAnsformation that aims to provide a rigorous methodology for developing correct software and a comprehensive support system The results are substantial a theoretically well founded methodology covering the whole development cycle a very high level specification and transformation language family allowing meta program development and formalization of the development process itself and a prototype development system supporting structure editing incremental static semantic checking interactive context sensitivetransformation and verification development of transformation meta programs version management and so on with an initial libraryof specifications and a sizeable collection of implemented transformations The intended audience for this documentation is the academic community working in this and related areas and those members of the industrial community interested in the use of formal methods   **Algebraic System Specification and Development** Michel Bidoit,1991-06-26 Methods for the algebraic specification of abstract data types were proposed in the early 1970s in the USA and Canada and became a major research issue in Europe shortly afterwards Since then the algebraic approach has come to play a central role in research on formal specification and development as its range of applications was extended to the specification of complete software systems to the formal description of the program development process and to the uniform definition of syntax and semantics of programming languages Today this approach extends beyond just software to the development of integrated hardware and software systems These flourishing activities in the area of algebraic specifications have led to an abundance of approaches theories and concepts which have universal algebra category theory and logic as a common

mathematical basis This volume is an annotated bibliography which provides an up to date overview of past and present work on algebraic specification No attempt is made to provide a coherent introduction to the topic for beginners the intention is rather to provide a guide to the current literature for researchers in algebraic specification and neighboring fields Some indications of how the different approaches are related are included together with some ideas concerning possible future directions **Program Specification and Transformation** Lambert Meertens,IFIP Technical Committee 2--Programming,IFIP Working Group 2.1 on Algol,1987 The economic construction of correct and efficient programs is the central issue in the field of program specification and transformation Research in this field is crucial with the advent of cheap computing power in a society increasingly dependent on the availability of error free programs In recognizing this need this book presents examination of a variety of aspects from practical experience in applying transformational methodology to actual production of software via examples of transformational derivations of algorithms By thus illustrating the state of the art and providing results of recent research the book should not only aid scientists but also show professionals just how their work will be influenced by these developments **Modern Software Tools for Scientific Computing** E. Arge,A. Bruaset,Hans Petter Langtangen,1997-04 The purpose of this book is to survey some recent advances in the development of software tools for scientific computing This book presents 17 carefully selected and refereed chapters originally presented at the SciTools 96 Workshop in Oslo Norway The chapters emphasize the design of large software codes computational efficiency object oriented programming in scientific computing reliability of numerical software and parallel computing **Advances in Systems, Computing Sciences and Software Engineering** Tarek Sobh,Khaled Elleithy,2006-08-15 The conference proceedings of the International Conference on Systems Computing Sciences and Software Engineering include a set of rigorously reviewed world class manuscripts addressing and detailing state of the art research projects in the areas of Computer Science Software Engineering Computer Engineering and Systems Engineering and Sciences The International Conference on Systems Computing Sciences and Software Engineering SCSS 2005 was part of the International Joint Conferences on Computer Information and Systems Sciences and Engineering CISSE 2005 CISSE 2005 the World s first Engineering Computing and Systems Research E Conference was the first high caliber Research Conference in the world to be completely conducted online in real time via the internet CISSE received 255 research paper submissions and the final program included 140 accepted papers from more than 45 countries The whole concept and format of CISSE 2005 was very exciting and ground breaking The powerpoint presentations final paper manuscripts and time schedule for live presentations over the web had been available for 3 weeks prior to the start of the conference for all registrants so they could pick and choose the presentations they want to attend and think about questions that they might want to ask The live audio presentations were also recorded and are part of the permanent CISSE archive which includes all power point presentations papers and recorded presentations All aspects of the conference were managed on line not only the reviewing submissions

and registration processes but also the actual conference Conference participants authors presenters and attendees only needed an internet connection and sound available on their computers in order to be able to contribute and participate in this international ground breaking conference The on line structure of this high quality event allowed academic professionals and industry participants to contribute work and attend world class technical presentations based on rigorously refereed submissions live without the need for investing significant travel funds or time out of the office Suffice to say that CISSE received submissions from more than 50 countries for whose researchers this opportunity presented a much more affordable dynamic and well planned event to attend and submit their work to versus a classic on the ground conference The CISSE conference audio room provided superb audio even over low speed internet connections the ability to display PowerPoint presentations and cross platform compatibility the conferencing software runs on Windows Mac and any other operating system that supports Java In addition the conferencing system allowed for an unlimited number of participants which in turn granted CISSE the opportunity to allow all participants to attend all presentations as opposed to limiting the number of available seats for each session The implemented conferencing technology starting with the submission review system and ending with the online conferencing capability allowed CISSE to conduct a very high quality fulfilling event for all participants   *TAPSOFT '89. Proceedings of the International Joint Conference on Theory and Practice of Software Development Barcelona, Spain, March 13-17, 1989* Josep Diaz,Fernando Orejas,1989-02-27 TAPSOFT 89 is the Third International Joint Conference on Theory and Practice of Software Development held in Barcelona Spain March 13 17 1989 The conference consissted of three parts Advanced Seminar on Foundations of Innovative Software Development Colloquium on Trees in Algebra and Programming CAAP 89 Colloquium on Current Issues in Programming Languages CCIPL The TAPSOFT 89 Conference Proceedings are published in two volumes The first volume includes the papers from CAAP plus the more theoretical ones of the invited papers The second volume comprises the papers from CCIPL and the invited papers more relevant to current issues in programming languages   **Methods of Programming** M. Broy,1991 The systematic development of software systems is a central task of computing science A software system is the result of putting together knowledge about the application the requirements and the structures of computing science Under the heading CIP Computer aided Intuition guided Programming a group of researchers led by Prof F L Bauer and Prof K Samelson started work in 1975 in the direction of formal program specification transformational programming and tool supportfor program development The collection of papers in this volume presents examples of a formal approach to programming language concepts and program development based on algebraic specifications and program transformations Examples are also presented of evolutions and modificationsof the original ideas of the CIP project The topics range from descriptionsof the program development process to derivations of algorithms from specifications The volume is dedicated to Prof F L Bauer PUBLISHER S WEBSITE   *VDM '91. Formal Software Development Methods. 4th International Symposium of VDM Europe,*

Noordwijkerhout, The Netherlands, October 21-25, 1991. Proceedings Søren Prehn,W. J. Toetenel,1991 The proceedings of the fourth Vienna Development Method Symposium VDM 91 are published here in two volumes Previous VDM symposia were held in 1987 LNCS 252 1988 LNCS 328 and 1990 LNCS 428 The VDM symposia have been organized by VDM Europe formed in 1985 as an advisory board sponsored by the Commission of the European Communities The VDM Europe working group consisted of researchers software engineers and programmers allinterested in promoting the industrial usage of formal methods for software development The fourth VDM symposium presented not only VDM but also a large number of other methods for formal software development Volume 1 contains conference contributions It has four parts contributions of invited speakers papers project reports and tools demonstration abstracts The emphasis is on methods and calculi for development verification and verification tools support experiences from doing developments and the associated theoretical problems Volume 2 contains four introductory tutorials on LARCH Refinement Calculus VDM and RAISE and four advanced tutorials on ABEL PROSPECTRA The B Method and The Stack They present a comprehensive account of the state of theart

Automatic Program Development Olivier Danvy,Fritz Henglein,Harry Mairson,Alberto Pettorossi,2008-01-12 This work a tribute to renowned researcher Robert Paige is a collection of revised papers published in his honor in the Higher Order and Symbolic Computation Journal in 2003 and 2005 Among them there are two key papers a retrospective view of his research lines and a proposal for future studies in the area of the automatic program derivation The book also includes some papers by members of the IFIP Working Group 2 1 of which Bob was an active member *Formal Development of Programs and Proofs* Edsger W. Dijkstra,1990 In 1987 The University of Texas at Austin sponsored the Year of Programming which consisted of six institutes on selected topics in computer programming Leading scientists and practitioners were invited from around the world for lectures and tutorials for discussion and collaboration The general objectives of these institutes were to advance the art and science of programming and to disseminate the best of what is known about programming theory and practice Frontiers in Algorithmics Franco P. Preparata,Xiaodong Wu,Jianping Yin,2008-06-07 The Annual International Frontiers in Algorithmics Workshop is a focused rum on current trends in research on algorithms discrete structures and their applications It intends to bring together international experts at the research frontiers in those areas to exchange ideas and to present signi cant new results The mission of the workshop is to stimulate the various elds for which al rithmics can become a crucial enabler and to strengthen the ties between the Eastern and Western algorithmics research communities The Second Inter tional Frontiers in Algorithmics Workshop FAW 2008 took place in Changsha China June 19 21 2008 In response to the Call for Papers 80 papers were submitted from 15 co tries and regions Canada China France Germany Greece Hong Kong India Iran Japan Mexico Norway Singapore South Korea Taiwan and the USA After a six week period of careful reviewing and discussion the Program C mittee accepted 32 submissions for presentation at the conference These papers were selected for nine special focus tracks in the areas of biomedical inform ics discrete structures geometric

information processing and communication games and incentive analysis graph algorithms internet algorithms and pro cols parameterized algorithms design and analysis of heuristics approximate and online algorithms and machine learning The program of FAW 2008 also included three keynote talks by Xiaotie Deng John E Hopcroft and Milan Sonka   *Software Specification Techniques* Narain Gehani,Andrew D. McGettrick,1986   **Proceedings of the Seventh International Workshop on Software Specification and Design** ,1993 Proceedings of the 7th International Workshop on Software Specification and Design held in Redondo Beach California in December 1993 Among the topics discussed real time systems concurrency and distribution formal reasoning and design methods and software architecture No index Annotation co   <u>A Framework for Specification and Implementation of Programanalysis Algorithms</u> G. A. Venkatesh,1989   <u>Protocol Specification, Testing, and Verification, VII</u> IFIP Working Group 6.1,1987   <u>Annual Symposium on Theoretical Aspects of Computer Science</u> ,1991   <u>Constructing Programs from Specifications</u> Bernhard Möller,1991 This book contains papers and discussion transcripts giving a good survey of the state of the art in deriving programs from their specifications by algebraic means As opposed to the various refinement calculi for procedural programs the setting here is mostly that of functional or to cope with nondeterminacy relational languages First approaches to the classification of specifications allow the systematic solution of very general classes of problems Also the analysis of the structure of developments is shown in several examples Impressive work is presented in the area of automating standard derivation tasks both concerning semi automatic construction of efficient data type implementations and automatic transformation of functional specifications into efficient code Further papers address automatic program synthesis rapid prototyping and transformational derivation of parallel algorithms

The Enigmatic Realm of **Specification And Transformation Of Programs**: Unleashing the Language is Inner Magic

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Specification And Transformation Of Programs Introduction

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