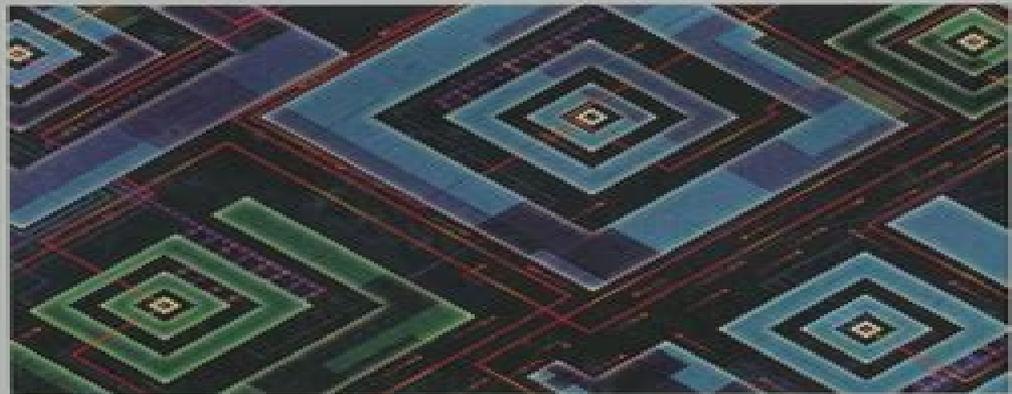


Verification of Sequential and Concurrent Programs



Krzysztof R. Apt
Ernst-Rüdiger Olderog

SECOND EDITION



Springer

Verification Of Sequential And Concurrent Programs

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Verification Of Sequential And Concurrent Programs:

Verification of Sequential and Concurrent Programs Krzysztof Apt, Frank S. de Boer, Ernst-Rüdiger Olderog, 2010-10-14
THIS BOOK CONTAINS a most comprehensive text that presents syntax directed and compositional methods for the formal verification of programs The approach is not language bounded in the sense that it covers a large variety of programming models and features that appear in most modern programming languages It covers the classes of sequential and parallel deterministic and non deterministic distributed and object oriented programs For each of the classes it presents the various criteria of correctness that are relevant for these classes such as interference freedom deadlock freedom and appropriate notions of liveness for parallel programs Also special proof rules appropriate for each class of programs are presented In spite of this diversity due to the rich program classes considered there exist a uniform underlying theory of verification which is synt oriented and promotes compositional approaches to verification leading to scalability of the methods The text strikes the proper balance between mathematical rigor and dactylic introduction of increasingly complex rules in an incremental manner adequately supported by state of the art examples As a result it can serve as a textbook for a variety of courses on different levels and varying durations It can also serve as a reference book for researchers in the theory of verification in particular since it contains much material that never before appeared in book form This is specially true for the treatment of object oriented programs which is entirely novel and is strikingly elegant

Verification of Sequential and Concurrent Programs Krzysztof R. Apt, E.-R. Olderog, 1991 This book provides a structured introduction to the verification of sequential and concurrent programs It thus belongs to the area of programming languages but at the same time it is firmly based on mathematical logic In logic one usually studies fixed syntactic or semantic objects This is not necessarily the case in the area of program verification The objects studied here namely programs do not have a standard syntax their semantics can be defined in many different ways and several approaches to their verification can be contemplated These differences lead to various difficult design decisions Even though we restrict our attention here to one programming style imperative programming we are still confronted with a veritable cornucopia of programming constructs from which an appropriate selection has to be made Having studied some of these constructs separately does not yet imply that we understand their combined effect

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Tools and Algorithms for the Construction and Analysis of Systems Parosh Aziz Abdulla, K. Rustan M. Leino, 2011-03-14 This book constitutes the refereed proceedings of the 17th International Conference on Tools and Algorithms for the Construction and Analysis of Systems TACAS 2011 held in Saarbrücken Germany March 26 April 3 2011 as part of ETAPS 2011 the European Joint Conferences on Theory and Practice of Software The 32 revised full papers presented were carefully reviewed and selected from 112 submissions The papers are organized in topical sections on memory models and consistency invariants and termination timed and probabilistic systems interpolations and SAT solvers learning model checking games and automata verification and probabilistic systems

Concurrent Verification for Sequential Programs John Peter Wickerson, 2013

Distributed Concurrent Programs as Strategies in Games Anil Nerode, Alexander Yakhnis, Vladimir Yakhnis, 1993

Formal Testing of Concurrent Programs Raghvendra Savoor, 1987

Verification of Recursive Programs Simon M. Kaplan, 1985

Proceedings of the 33rd Annual ACM Symposium on Theory of Computing, 2001

Proceedings of the Sixteenth Annual ACM Symposium on Theory of Computing, Washington, D.C., April 30-May 2, 1984, 1984

Formal Techniques in Real-time and Fault-tolerant Systems, 1988

Proceedings of the Eighth Symposium on Operating Systems Principles, 14-16 December 1981, Asilomar Conference Grounds, Pacific Grove, California, 1981

18th Annual Symposium on Foundations of Computer Science, Oct. 31-Nov. 2, 1977, Providence, Rhode Island, 1977

International IEEE Conference on Ada Applications and Environments, 1987

Proceedings of the 1986 IEEE Symposium on Security and Privacy, April 7-9, 1986, Oakland, California, 1986

Models, Algebras and Logic of Engineering Software Manfred Broy, Markus Pizka, 2003 This volume focuses on the education of researchers teachers students and practitioners As usual in engineering a study and application of the relevant branches of mathematics is crucial both in education and practice

TAPSOFT, 1991

Formal Methods of Program Verification and Specification Helmut K. Berg, 1982

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