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modern compiler implementation in Java

new edition coming October 2002

andrew w. appel

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modern compiler implementation in Java

andrew w. appel
princeton university

with jens palsberg, purdue university

Covering all phases of a compiler, this popular textbook represents excellent coverage of current techniques in code generation and register allocation. It even covers the compilation of functional and object-oriented languages missing from most books. Using actual Java Classes for illustration, the book's efficient description of accepted and successful techniques means it avoids becoming a dull catalogue of every possible variant.

The first part of the book, Fundamentals of Compilation, is suitable for a one-semester first course in compiler design while part two, Advanced Topics, includes material suitable for a second-semester or graduate course. This new edition, developed with contributions from Jens Palsberg and Vids Samanta, has been rewritten to include more discussion of Java and object-oriented programming concepts, such as visitor patterns. A unique feature is the newly redesigned compiler project in Java, for a subset of Java itself. The project includes both front-end and back-end phases, so that students can build a complete working compiler in one semester.

From reviews of the first edition >

'... a textbook example of an excellent textbook.'

Infoworld

'...written in a simple style that makes a technical book so much easier to read.'

CVu

'Serves its intended purpose as a classroom textbook, fitting comfortably and usefully between cookbooks and encyclopedias on compilation.'

Computing Reviews

'...the book is a pleasure to read or study ... warmly recommended'

Science of Computer Programming

Have you adopted *Modern Compiler Implementation in Java* (1st edition)? Please note that the first edition will be going out of print in September 2002. For more information, please contact Graham Robertson at gsr100@cambridge.org

second edition



October 2002 246 x 156mm

560pp 135 exercises

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contents >

Part I. Fundamentals of Compilation:
1. Introduction; 2. Lexical analysis;
3. Parsing; 4. Abstract syntax;
5. Semantic analysis; 6. Activation records; 7. Translation to intermediate code; 8. Basic blocks and traces; 9. Instruction selection; 10. Liveness analysis; 11. Register allocation; 12. Putting it all together; Part II. Advanced Topics: 13. Garbage collection; 14. Object-oriented languages; 15. Functional programming languages; 16. Polymorphic types; 17. Dataflow analysis; 18. Loop optimisations; 19. Static single-assignment form; 20. Pipelining and scheduling; 21. The memory hierarchy; Appendix: Mini-Java reference manual.

You can preview the new compiler project and find out how to obtain the solution sets at:
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