



# Modern Compiler Implementation in ML

By Andrew W. Appel

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This new, expanded textbook describes all phases of a modern compiler: lexical analysis, parsing, abstract syntax, semantic actions, intermediate representations, instruction selection via tree matching, dataflow analysis, graph-coloring register allocation, and runtime systems. It includes good coverage of current techniques in code generation and register allocation, as well as functional and object-oriented languages, that are missing from most books. In addition, more advanced chapters are now included so that it can be used as the basis for two-semester or graduate course. The most accepted and successful techniques are described in a concise way, rather than as an exhaustive catalog of every possible variant. Detailed descriptions of the interfaces between modules of a compiler are illustrated with actual C header files. The first part of the book, Fundamentals of Compilation, is suitable for a one-semester first course in compiler design. The second part, Advanced Topics, which includes the advanced chapters, covers the compilation of object-oriented and functional languages, garbage collection, loop optimizations, SSA form, loop scheduling, and optimization for cache-memory hierarchies.

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## Modern Compiler Implementation in ML By Andrew W. Appel Bibliography

- Sales Rank: #484251 in Books
- Brand: Brand: Cambridge University Press
- Published on: 2004-07-08
- Original language: English
- Number of items: 1
- Dimensions: 9.69" h x 1.10" w x 7.44" l, 2.12 pounds
- Binding: Paperback
- 552 pages

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"Contains most up-to-date compiler techniques. Contains good programming assignment." Professor Zhong Shao, Yale University

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