

## <<编译器构造>>

### 图书基本信息

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## 前言

Much has changed since *Crafting a Compiler*, by Fischer and LeBlanc, was published in 1988. While instructors may remember the 5.25-inch floppy disk of software that accompanied that text, most students today have neither seen nor held such a disk. Many changes have occurred in the programming languages that students experience in class and in the marketplace. In 1991 the book was available in two forms, with algorithms presented in either C or Ada. While C remains a popular language, Ada has become relatively obscure and did not achieve its predicted popularity. The C++ language evolved from C with the addition of object-oriented features. Java™ was developed as a simpler object-oriented language, gaining popularity because of its security and ability to be run within a Web browser. The College Board Advanced Placement curriculum moved from Pascal to C++ to Java.

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### 内容概要

本书是一本面向计算机系本科生的编译器教材。

作者在三所美国大学拥有长达25年的编译器教学经验，在本书中对编译器构造的基本知识与关键技术进行了全新的讲解。

本书的主要内容包括：编译器历史和概述、词法分析（扫描）、语法分析（包括自顶向下和自底向上的分析）、语法制导翻译、符号表和声明处理、语义分析、中间表示形式、虚拟机上的代码生成、运行时支持、目标代码生成和程序优化等。

本书提供了详尽清晰的算法，主推在实践中学习编译器构造的相关技术，同时提供了配合教材使用的教学网站、参考资料以及源码下载。

不仅可以作为计算机专业本科生或研究生的参考教材，同时也适合相关领域的软件工程师、系统分析师等作为参考资料。

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## 章节摘录

An optimizing compiler is specially designed to produce efficient target code at the cost of increased compiler complexity and possibly increased compilation times. In practice, all production-quality compilers (those whose output will be used in everyday work) make some effort to generate reasonable target code. For example, no add instruction would normally be generated for the expression  $i+0$ . The term optimizing compiler is actually a misnomer. This is because no compiler of any sophistication can produce optimal code for all programs. The reason for this is twofold. First, theoretical computer science has shown that even so simple a question as whether two programs are equivalent is undecidable: such questions cannot generally be answered by any computer program. Thus finding the simplest (and most efficient) translation of a program cannot always be done. Second, many program optimizations require time proportional to an exponential function of the size of the program being compiled. Thus, optimal code, even when theoretically possible, is often infeasible in practice.

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