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<<flex 与 bison>>

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前言

Flex and bison are tools designed for writers of compilers and interpreters, althoughthey are also useful for many applications that will interest noncompiler writers. Anyapplication that looks for patterns in its input or has an input or command language isa good candidate for flex and bison. Furthermore, they allow for rapid applicationprototyping, easy modification, and simple maintenance of programs. To stimulateyour imagination, here are a few things people have used flex and bison, or their predecessors lex and yacc, to develop:The desktop calculator bcThe tools eqn and pic, typesetting preprocessors for mathematical equations and complex picturesMany other "domain-specific languages" targeted for a particular application PCC, the Portable C Compiler used with many Unix systemsFlex itselfA SQL database language translatorScope of This BookChapter 1, Introducing Flex and Bison, gives an overview of how and why flex and bisonare used to create compilers and interpreters and demonstrates some simple applica-tions including a calculator built in flex and bison. It also introduces basic terms weuse throughout the book.Chapter 2, Using Flex, describes how to use flex. It develops flex applications that countwords in files, handle multiple and nested input files, and compute statistics on Cprograms.Chapter 3, Using Bison, gives a full example using flex and bison to develop a fullyfunctional desktop calculator with variables, procedures, loops, and conditional expressions. It shows the use of abstract syntax trees fASTs）, powerful and easy-to-usedata structures for representing parsed input.Chapter 4, Parsing SQL, develops a parser for the MySQL dialect of the SQL relationaldatabase language.

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内容概要

《flex 与 bison(影印版)》内容简介：如果你需要分析或处理Linux或Unix中的文本数据，这本有用的书籍就向你讲解了如何使用flex和bison迅速解决问题。
《flex与bison》被期待已久，是经典O ’ Reilly系列书籍《lex & yacc》的续篇。
在原书出版以来的近20年中，flex和bison已被证明比原来的Unix工具更可靠、更强大。
《flex与bison》一书涵盖了Linux和Unix程序开发中相同的重要核心功能，以及一些重要的新主题。
你会找到适用于新手的修订教程和适用于高级用户的参考资料，以及对每个程序的基本用法的解释，并且运用它们创建简单、独立的应用程序。
有了《flex与bison》，你会发现这些灵活的工具提供的广泛用途。
包括的主题有：· 正则表达式工具无法处理的地址语法挤压(address syrltax crunching) · 生成编译器和解释器，并运用大范围的文本处理功能 · 解释代码、配置文件或任何其他结构化的格式 · 学习关键编程技术，包括抽象语法树和符号表 · 用完整的示例代码实现一个完善的SQI一语法 · 使用新的功能，如纯(可重入)词法分析器(Iexer)和语法分析器(parser)、功能强大的JGLR分析器和C++的接口

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作者简介

John Levine, Taughannock Networks的创始人，著有20余本技术书籍，其中包括《lex & yacc》和《qmail》，均为O’Reilly出版。

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章节摘录

插图：A bison specification has the same three-part structure as a flex specification. （Flexcopied its structure from the earlier lex, which copied its structure from yacc, the predecessor of bison.） The first section, the definition section, handles control informationfor the parser and generally sets up the execution environment in which the parser willoperate. The second section contains the rules for the parser, and the third section isC code copied verbatim into the generated C program.Bison creates the C program by plugging pieces into a standard skeleton file. The rulesare compiled into arrays that represent the state machine that matches the input tokens.The actions have the SN and @N values translated into C and then are put into a switchstatement within yyparse0 that runs the appropriate action each time there's a reduction. Some bits of the skeleton have multiple versions from which bison chooses depending on what options are in use; for example, if the parser uses the locations feature,it includes code to handle location data.In this chapter we take the simple calculator example from Chapter 1 and extend itsignificantly. First, we rewrite it to take advantage of some handy bison shortcuts andchange it to produce a reusable data structure rather than computing the values on thefly. Later, we'll add more complex syntax for loops and functions and show how toimplement them in a simple interpreter.One of the most powerful data structures used in compilers is an abstract syntax tree（AST）. In Chapter 1 we saw a parse tree, a tree that has a node for every rule used toparse the input string. In most real grammars, there are rules that exist to managegrouping but that add no meaning to the program. In the calculator example, the rulesexp: term and term: factor exist only to tell the parser the relative precedence of theoperators. An AST is basically a parse tree that omits the nodes for the uninterestingrules.

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“ 我很高兴看到John彻底详尽地重写这本经典书。
他更新的示例和说明，能够帮助老用户和新手摆脱模仿那些已经根深蒂固的旧lex和yacc。
”　　——Joel E. Denny bison维护人员

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