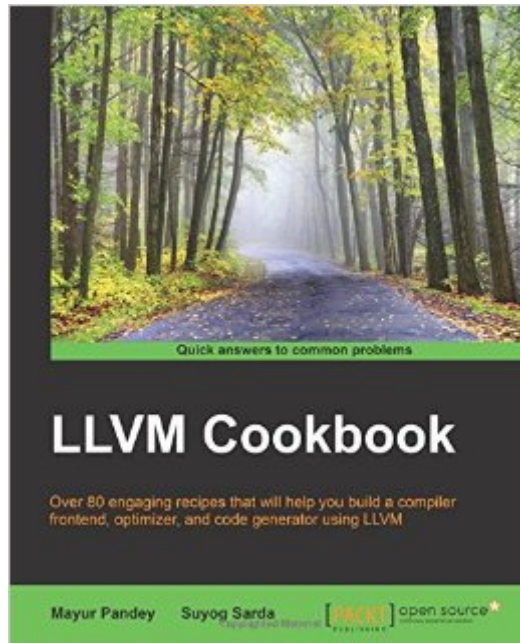


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# LLVM Cookbook



## Synopsis

Over 80 engaging recipes that will help you build a compiler frontend, optimizer, and code generator using LLVM About This Book Write a frontend for any language to generate LLVM IR Create optimization passes to optimize the IR code using LLVM Pass Infrastructure and Pass Manager Design and implement structures for highly-optimized compilers using LLVM, through detailed step-by-step recipes Who This Book Is For The book is for compiler programmers who are familiar with concepts of compilers and want to indulge in understanding, exploring, and using LLVM infrastructure in a meaningful way in their work. This book is also for programmers who are not directly involved in compiler projects but are often involved in development phases where they write thousands of lines of code. With knowledge of how compilers work, they will be able to code in an optimal way and improve performance with clean code. What You Will Learn Introduction to LLVM modular design and LLVM tools Write a frontend for a language Add JIT support and use frontends for different languages Learn about the LLVM Pass infrastructure and the LLVM Pass Manager Create analyses and transform optimization passes Build a LLVM TOY backend from scratch Optimize the code at Selection DAG level and allocate registers to variables In Detail LLVM is a compiler framework with libraries that provides a modern source- and target-independent optimizer, along with a code generator. This book not only explains the effective use of the compiler infrastructure that LLVM provides, but also helps you implement it in one of your projects. You start with a simple task to get you up-and-running with LLVM, followed by learning the process of writing a frontend for a language, which includes writing a lexer, a parser, and generating IR code. You will then see how to implement optimizations at different levels, generate target-independent code, and then map this generated code to a backend. Finally, you will look into the functionalities that the LLVM infrastructure provides, such as exception handling, LLVM Utility Passes, using sanitizers, the garbage collector, and how we can use these in our projects.

## Book Information

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## Customer Reviews

The worst tech/programming book I've ever read. It is a disorganized attempt to copy and paste text from llvm.org. I've also bought "LLVM Essentials" by the same two authors, I've not had a chance to look at this book thoroughly but it looks like another similar compilation of llvm.org text snippets. I've focused mainly on the backend chapters and tried to create the example "toy" backend. It is thoroughly incomplete and all of the "recipes" that I've tried do not even compile. Additionally, I've downloaded the example code from the publishers website and nothing compiled using LLVM 3.8. They don't even mention how to integrate/register the target with Clang or do a complete job with LLVM. I contacted the publisher about this and their response was that the code was developed for an older version of LLVM. Fair enough, but I've found several syntactical errors in the downloaded code recipes that even show in the published book. This means that the authors didn't even bother to build/compile their own examples! Absolutely ridiculous!

Basically a repeat of information you can easily find on the online LLVM docs for free.

It is not a cookbook. It just describes the overview of each content. You'd better to try to read regular document in <http://llvm.org> site

Thorough and about an excellent topic. Unfortunately, I have not finished it yet.

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