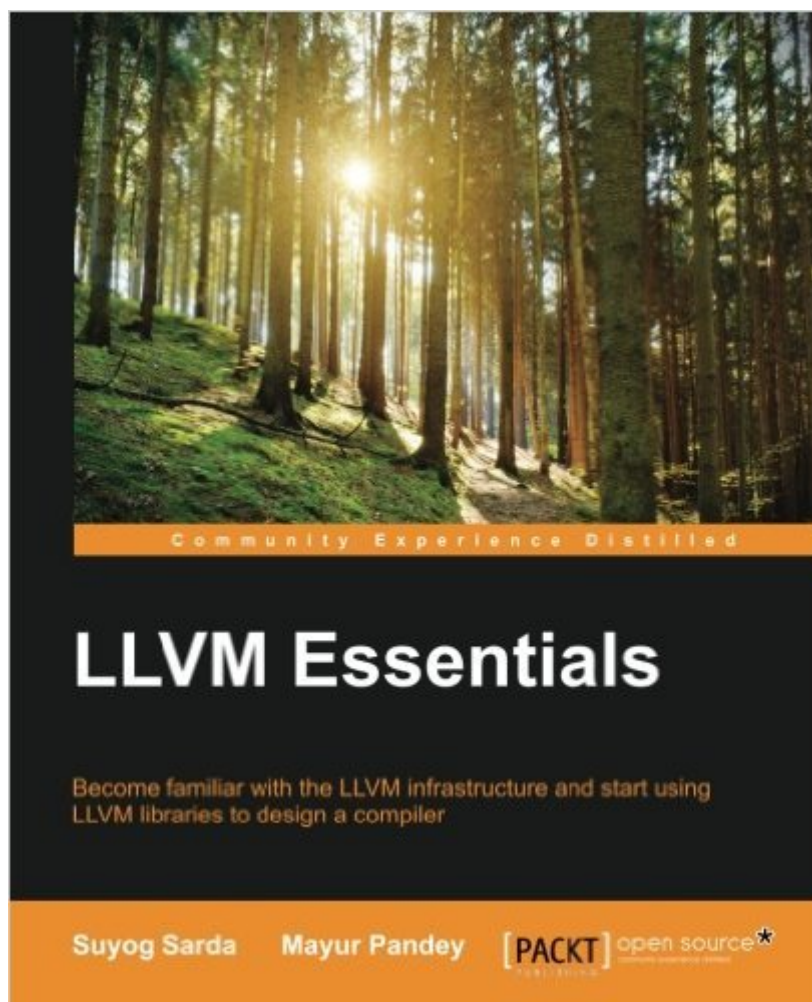


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# LLVM Essentials



## Synopsis

Become familiar with the LLVM infrastructure and start using LLVM libraries to design a compiler  
About This Book  
Learn to use the LLVM libraries to emit intermediate representation (IR) from high-level language  
Build your own optimization pass for better code generation  
Understand AST generation and use it in a meaningful way  
Who This Book Is For  
This book is intended for those who already know some of the concepts of compilers and want to quickly get familiar with the LLVM infrastructure and the rich set of libraries that it provides.  
What You Will Learn  
Get an introduction to LLVM modular design and LLVM tools  
Convert frontend code to LLVM IR  
Implement advanced LLVM IR paradigms  
Understand the LLVM IR Optimization Pass Manager infrastructure and write an optimization pass  
Absorb LLVM IR transformations  
Understand the steps involved in converting LLVM IR to Selection DAG  
Implement a custom target using the LLVM infrastructure  
Get a grasp of C's frontend clang, an AST dump, and static analysis  
In Detail  
LLVM is currently the point of interest for many firms, and has a very active open source community. It provides us with a compiler infrastructure that can be used to write a compiler for a language. It provides us with a set of reusable libraries that can be used to optimize code, and a target-independent code generator to generate code for different backends. It also provides us with a lot of other utility tools that can be easily integrated into compiler projects. This book details how you can use the LLVM compiler infrastructure libraries effectively, and will enable you to design your own custom compiler with LLVM in a snap.  
We start with the basics, where you'll get to know all about LLVM. We then cover how you can use LLVM library calls to emit intermediate representation (IR) of simple and complex high-level language paradigms. Moving on, we show you how to implement optimizations at different levels, write an optimization pass, generate code that is independent of a target, and then map the code generated to a backend. The book also walks you through CLANG, IR to IR transformations, advanced IR block transformations, and target machines.  
By the end of this book, you'll be able to easily utilize the LLVM libraries in your own projects.  
Style and approach  
This book deals with topics sequentially, increasing the difficulty level in a step-by-step approach. Each topic is explained with a detailed example, and screenshots are included to help you understand the examples.

## Book Information

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## Customer Reviews

I knew nothing about LLVM and was going to start playing with it. The web has too much information for a rookie and the book just saved me some time in learning.

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