

Compilers Project Proposal

A Basic Compiler For C

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1. Introduction

In this project, we would like to build a basic compiler for the language C. Aim of the project is to successfully build a compiler that can compile C programs with basic functionalities such as loops, conditional statements, function calls etc. for the ARM ISA(2).

2. C Programming Language and its Advantages

C is an imperative programming language. It was developed by Dennis Ritchie in 1972(1). C is still widely used by programmers through out the world. Its object oriented programming features inspired and lead to the development of languages such as C++ and Python. C programs have an elegant grammar. Hence, building a compiler for C will be useful in learning basic techniques and functionalities of compilers. Another advantage with choosing C is that it is closer to the architecture of the system, which we believe would provide us lot of opportunities to optimise the compiler that we build.

3. Our Work

We plan to code our compiler using C. This means that our compiler could be compiled by itself. Also, we plan to use Flex for generating lexical analyzers and Bison for generating parsers. We would use the qemu(3) emulator to test our compiler.

References

- [1] C (programming language),
[https://en.wikipedia.org/wiki/C_\(programming_language\)](https://en.wikipedia.org/wiki/C_(programming_language))
- [2] ARM Instruction Set,
<https://developer.arm.com/architectures/instruction-sets>
- [3] QEMU, the Fast Processor Emulator, <https://www.qemu.org/>

