

CPSC-402 Report

Compiler Construction

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1 Project

For our project, we will be examining the g++ compiler by using it to convert c++ code into Assembly code and then interpret that code to understand how the compiler operates.

1.1 C++ to Assembly using g++

Here we are using the most basic C++ file, and then compiling it using g++ with the *-S* option

```
#include <stdio.h>
int main() {
    return 0;
}
```

and then the Assembly code for this file returns as

```
.section __TEXT,__text,regular,pure_instructions
.build_version macos, 11, 1 sdk_version 11, 1
.globl _main                ## -- Begin function main
.p2align 4, 0x90
_main:                      ## @main
.cfi_startproc
## %bb.0:
    pushq %rbp
    .cfi_def_cfa_offset 16
    .cfi_offset %rbp, -16
    movq %rsp, %rbp
    .cfi_def_cfa_register %rbp
    xorl %eax, %eax
    movl $0, -4(%rbp)
    popq %rbp
    retq
    .cfi_endproc
                                ## -- End function

.subsections_via_symbols
```
