

Exploration #4

Due: May 12, 11:59pm

Overview

For this exploration you will examine a couple of loop optimizations performed by `gcc`.

Loop 1

Generate an optimized version of the `loop1.c` file (linked from the course website) on one of the department's 64-bit servers (`unix[11-14]`) using `gcc -S -O3 loop1.c`.

In a file named `loop1`, clearly explain where the generated code computes $k + 7$ and why this transformation is safe. You do *not* need to submit an annotated file.

Loop 2

Generate an optimized version of the `loop2.c` file (linked from the course website) on one of the department's 64-bit servers (`unix[11-14]`) using `gcc -S -O3 loop2.c`.

In a file named `loop2`, clearly explain how the generated code computes $k * i + 2$ and why this transformation is safe. This transformation is a bit less obvious than the first, so pay careful attention to what is being printed. You do *not* need to submit an annotated file.

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Submit your `loop1` and `loop2` files to the `431exploration4` directory for the `akeen` account.