Exploration #1

Due: April 11, 11:59pm

Overview

The exploration assignments are meant to gradually (and incompletely) introduce the target assembly language used for the project and to illustrate the sorts of optimizations done by real compilers.

For this exploration you will use `gcc` to generate assembly code for the following program.

```
long func(long x)
{
   long a = 2;
   long b = 3;

   return b * x + a;
}
```

Unoptimized

Generate an unoptimized version of the above program on one of the department `unix?` servers using `gcc -S unopt.c`.

Annotate each of the assembly instructions in the generated `unopt.s` file to explain what the instruction contributes to the computation. You do not need to annotate the directives (those pseudo-intructions that begin with a .). Your annotations should improve clarity by linking register names to the original variable names in the source program. The annotations are not meant to be English rewordings of the instructions.

Optimized

Generate an optimized version of the above program on one of the department `unix?` servers using `gcc -O3 -S opt.c`.

Annotate each of the assembly instructions in the generated `opt.s` file to explain what the instruction contributes to the computation. You do not need to annotate the directives (those pseudo-intructions that begin with a .). Your annotations should improve clarity by linking register names to the original variable names in the source program. The annotations are not meant to be English rewordings of the instructions.

handin

Submit your annotated unopt.s and opt.s files to the `431exploration1` directory for the `akeen` account.