EECS 213: Homework 2

Decompiling Intel Assembly Language

Spring 2007

Important Dates

Out: April 23, 2007.

Due: May 2, 2007 (11:59PM).

Submitting your homework: Please use the course submission site. There is a link to it from the class site. **Submit only ASCII text files.**

To be done individually. In this homework, you will examine assembler output from gcc in order to determine what the original C code was.

Log into a TLAB machine and copy the hw2.tar handout from the webpage to a working directory. Untar the file (tar xvf hw2.tar). You will find the following files:

1. code-unopt.s (produced by gcc -Wall -S code.c -o code-unopt.s)

2. code-unopt.o (produced by gcc -Wall -c code.c -o code-unopt.o)

3. code-opt.s (produced by gcc -Wall -O -S code.c -o code-opt.s)

4. code-opt.o (produced by gcc -Wall -O -c code.c -o code-opt.o)

5. code.h

6. test.c

7. code-handin.c

8. Makefile

Your goal is to figure out what C code is in code.c and to replicate it in code-handin.c. The function definitions in code-handin.c are currently empty. Your will write them. It will probably easiest to do so by studying the contents of code-unopt.s and code.h and playing with the compiled code using test.c. The purpose of giving you code-opt.s and code-opt.o is to give you an idea of what a compiler will do differently when optimizing. These files are not needed to complete the homework.

When you run make, you will generate code-handin.s, code-handin.o, test-with-handin, and test-with-handout. code-handin.s and code-handin.o are the assembly and object code for code-handin.c

- ie, the code that you've written. `test-with-handin` is an executable of `test.c` that's linked with your `code-handin.o`. `test-with-handout` is an executable of `test.c` that's linked with my `code.o`. You might also find it useful to compare your `code-handin.s` with my `code-unopt.s`.

Upload your `code-handin.c` in the course website. Please include your Northwestern netid in your source code.