Course Description

In this course you will learn about the internal logical structure of modern computers. This knowledge is essential to a thorough understanding of many more advanced computer science topics, like computer organization, operating systems, and high-level languages. You will also learn to program in an assembly language, which can be a useful skill in its own right in connection with systems programming, program optimization, and programming for embedded systems.

“Assembly Language” is not a single, general-purpose language, but a machine-specific notation for programming a specific kind of machine. Each different model of computer has its own assembly language whose details vary, often significantly, from other machines. Thus, unlike the ability to use high level languages like C, C++ or Java, detailed skill using a specific assembly language has limited universal or long-lived utility. On the other hand, the general structure of most assembly languages is similar, so skill in one makes it much easier to quickly learn others.

“Architecture,” the operational details describing how the machine runs, consists of low-level machine components like memory and arithmentic units and the instruction set the machine uses to manipulate data and operate them. The main reason for studying an assembly language in this course is to learn about the underlying machine’s architecture, which is reflected in the structure of the assembly language.

Grading

Final grades will use an ABCDF scale, without pluses or minuses, computed as follows:

HOMEWORK: The regular programming and written assignments will, in the aggregate, account for 40% of your final grade. They must be turned in promptly when due. When late papers are accepted they will earn less credit than on-time ones. No credit at all will be awarded for papers submitted after the assignment has been explained in class, normally the class period after the assignment was due.

EXAMS: There will be one midterm exam, occurring in approximately the seventh week of classes (exact day to be announced), and one final exam, held during the designated final exam period. Each will be weighted as 30% of your final grade.

Equipment

We will use the Macintosh computers in DBH 288 for programming exercises. These are Power PC machines which include runtime systems compatible with the Motorola 68000 architecture and our text.

You will need to use our lab computers, or another Macintosh with the MAE Assembly Environment (see Julie or me for more information), to assemble and test the programming exercises for this class. If you do not have access to a Mac outside our lab, you may still design your programs and type source listings on other computers, but you will need to come to lab to actually test your work. Towards the end of the term we will also use the Code Warrior assembler on the laboratory Macs.

Plagiarism

All of the work you turn in for this class must be entirely your own. It is permissible to discuss programs and course issues with Departmental faculty and lab assistants, and you may discuss general concepts and issues relating to class work with fellow students in the class, but you should take care not to discuss or share design or implementation of your individual assignments with fellow students. Violations of this policy will be regarded very seriously, and may result in failure for the assignment or the entire course, or even suspention or expulsion from the University.