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Introduction to Micro I Lab

A. About the Lab

This manual is your guide to the lab that accompanies ECE 3724/CS 3124 Microprocessors I. This marks your introduction into the Intel processor x86 architecture and assembly language programming. This lab is intended to supplement and complement the material presented in your lectures. Thus, you will be using the things you learn in the lectures to do some of your lab work. Obviously, our intent is that the lab exercises will help you to gain a deeper understanding of the lecture material.

You should read and carry out the pre-labs ***before*** coming to lab. The pre-labs will ask you to read material and answer questions designed to help you carry out the lab assignment. You will probably not perform well if you skip the pre-lab -- you have been warned!

We have designed the lab exercises such that if you have your own PC, you may complete the lab assignments at home and bring them to lab for display and grading. This will reduce the amount of time that you are required to spend in lab. However, we will still require that a portion of the assignment be completed in-lab in an attempt to ensure that students have an understanding of the basic concepts of the assignment. The lab exercises can be completed with any PC running Win 95/98/ME/NT/2000 and a Pentium-compatible processor[1]. Compatibility issues for the labs and lab software with Windows XP Professional and Windows XP Home are still being investigated.

Your lab TA and lecture instructor are your best sources of help. He or she has the experience to answer most of your questions. When in doubt, ask! The TA/Course Instructor cannot read your mind and cannot help you unless you speak up.

When using the PCs in the Micro I lab, store all of your programs to your local directory that will mounted under the "H:\" drive letter. Anything stored on the local "C:\" drive can be removed between lab sessions by the TA.

B. About the Manual

Each lab experiment has a pre-lab, lab, and lab report. You must do the pre-lab before you come to class but it does not have to be typed. You MUST get the TA to sign off on your pre-lab work at the beginning of class (the TA will keep a separate sheet that indicates which students had their pre-Labs signed off, he/she will not necessarily sign your pre-lab sheets).

Some labs have a programming assignment that must be completed. You must demo the completed programming assignment for the previous lab to the TA at the beginning of the lab time. You cannot use the current lab time to complete the previous lab assignment.

You must complete a lab report after you have done each lab. It is due at beginning of the lab period the next time that your lab section meets. Electronic submission of lab reports is required for this lab and the lab report must be submitted before the lab period begins (see the lab WWW sheet for more details on electronic submission). Your lab report should have both your pre-lab and lab information for the current lab.

Be sure to run a spell-checker, and preferably a grammar-checker, on your work before you submit it.

[1] Regrets to the Apple diehards and Linux fanatics. Yes, we know that Microsoft is evil. But it is also ubiquitous.

C. Do I have to attend Lab?

Even though much of the work of this lab can be done out of class, you must attend each lab session for two reasons:

1. You will need to get the current pre-lab work and the previous lab programming assignment checked off at the beginning of the lab period.
2. Starting with the Spring 2002 semester, all assignments will have a portion that must be completed in-lab. On some of the easier assignments, the entire assignment must be completed in lab. By 'completed' we mean that you must get a TA signoff that signifies you have performed the work. You can bring your laptop to lab and do the assignment on it instead of using the PC's in the lab.

The lab session will be divided into the following time segments:

1. Discussion by the TA of the current lab assignment.
2. Check off of pre-lab for the current lab assignment, and programming assignment for the previous lab.
3. Free time to work on current lab assignment. You may leave the lab when you have completed the portion of the assignment that must be completed in-lab and the TA has signed off on your work.

If you do not complete the in-lab portion of the assignment during the lab period, you will not be penalized as long as you were present and working during the entire lab period. However, you can get a '0' grade for the in-lab portion of the assignment if you do not complete it and also do one of the following:

- If you leave the lab period early without getting a TA signoff
- Do not attend the lab period at all and do not have an excused absence
- Leave the lab period for an extended period of time

When the TA checks off your work, the TA will quiz you about aspects of your program and this 'oral' examination will count for 30% of your lab grade. If you are familiar with your program, this oral exam should be no problem. If you copied the program from another student, expect to fail this part of the TA checkoff.

C. Academic Dishonesty

In industry, engineers are encouraged to seek as much help as is reasonable from fellow engineers when working on problems in order to reach solutions in a timely manner. However, this is an academic environment and we must have some way of measuring your **individual** performance. In this lab, you are expected to do your own work. It is very easy to define academic dishonesty in this lab.

> *If you SHOW your code to a fellow student, that is academic dishonesty both on the part of yourself and the student that looks at your code.*
>
> *If you use a programming solution to a lab that was done by a student from a previous semester, that is academic dishonesty on your part.*

If you DISCUSS possible solutions with other students, that is NOT academic dishonest - you can talk all that you want, but do not SHOW another student any code.

There is a very practical reason for doing your own work - if you don't do your own work you will not be able to do the in-lab quizzes or do the programming assignments on tests in the lecture. The object of this lab is for you to learn something about x86 assembly language programming - you can't learn if somebody else does your work for you.

The first instance of academic dishonesty will result in a 0 grade for that lab. The 2nd instance will result in an F in the lab, which means an 'F' for the entire course since you have to get 60% on the lab in order to pass the course (no matter how well you do in the lecture).

D. When things go wrong

Each semester, students will have questions about how a particular lab report was graded. You are expected to first contact the TA about any grading questions, and then contact the Lab Coordinator (a faculty member) if you have further questions. Make sure that you get the TA's email address during the first lab period. Look at the lab WWW page for the current email address of the Micro I Lab Coordinator.

E. Lecture versus Lab

Because the course covers both hardware and software topics the lab generally lags behind the lecture in topics. The lecture will be finished with coverage of the x86 instruction set by mid-semester, but the lab covers programming topics throughout the semester. The lab simply gives you a chance to 'practice' what is covered in the lecture. Occasionally, the lab will cover a programming topic before the lecture reaches it, so it is important that you do all of the suggested readings that are in the 'Pre-Lab' section of the lab assignment. The lab will also occasionally present material that IS NOT explicitly mentioned in the lecture. In all cases, the lab handout will direct you to external material for reference that can help you understand the material covered in a particular lab.

We hope that you enjoy the lab. Let us know if you have any suggestions.

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