ECE 354 – Introduction Lab

In this lab you will familiarize yourself with the MPLAB Integrated Development Environment (IDE) and the MPLAB In-Circuit Debugger. You will learn how to setup projects, simulate code, and debug code while it is running on the actual chip. Please complete this lab by 2/4/04. This lab will not be graded.

Getting Started

- Turn on the computer on your lab bench.
- Create a folder for your project files. This is necessary because multiple teams use the same computer and most projects require numerous files. I recommend creating one on the root level with the name of your group (e.g., C:\A13). Within this folder, you should create sub-folders for each lab (e.g., C:\A13\Lab0, C:\A13\Lab1, etc.). You may do it any other way as long as you can find your files again and do not overwrite the ones from the other groups. Also, please note that the data on your computer is not being backed up. It is your responsibility to ensure you maintain backups of your projects (e.g., on diskette, uploaded to your ECS account, etc.).
- Download the following file into your Lab0 folder. You will need it for second tutorial:
  http://www.ecs.umass.edu/ece/wolf/courses/ECE354/labs/TUT877.ASM

Tutorial 1: MPLAB IDE

Go through the tutorial in Chapter 3 (pp.17-33) of "MPLAB IDE, Simulator, Editor User's Guide". It is encouraged that you not only blindly step through the tutorial, but discuss with your lab partner what you are doing and why.

The MPLAB IDE software is already installed on your lab computer. If you have problems finding/starting MPLAB IDE notify a TA.

Comments:
- p. 19: The tutorial uses a PIC16F84, which is not the chip we are using. That's ok – do as the tutorial says.
- p. 20: Save your project in your Lab0 folder that you just created.
- p.23: The tutorial claims that when clicking "Add Node" the browse dialog will be displaying the same folder as your project folder. This is not necessarily true. Manually change to your project folder and save your file there.

After completing the tutorial, modify your project to target the PIC that is included in the MPLAB Kit. Ensure that your project can be simulated for the new platform.

Tutorial 2: MPLAB ICD

Go through the tutorial in Chapter 2 (pp. 19-41) of "MPLAB ICD User's Guide". You will need the MPLAB hardware for this tutorial. Set it up as shown in Figure 1.4 of the ICS user's guide and connect to your workstation with the serial cable.

Comments:
- Close your previous MPLAB project before starting the ICD tutorial.
- p. 21: Instead of using the folder suggested in the tutorial, use your own Lab0 folder.
- p.30: When clicking on "Options", a warning message might appear regarding address range. Click "OK" and ignore.
- p. 38: Try to find the section in the PIC16F87X data sheet that the tutorial refers to (datasheet is available from the course web page).

After completing the tutorial take some time and step through the code instruction by instruction and correlate what you see with the flow chart in Figure 2.19.

Homework

- Familiarize yourself with Chapter 4 "Projects Tutorial" (pp. 35-58) and Chapter 2 in Part 2 "Debugging and MPLAB SIM Simulator" (pp. 65-100) in "MPLAB IDE, Simulator, Editor User's Guide".
- Read Peatman Chapters 1&2.