Running Microchip MPLAB

1. Start MPLAB IDE: Start -> All Programs -> \_CSSE -> Microchip -> MPLAB IDE v8.80 -> MPLAB IDE
2. When starting a New Project, select **Project / Project Wizard,**

then when you have choices, select:

* 1. The device is PIC16F877A.
  2. The Active ToolSuite is:
     1. Microchip MPASM ToolSuite when we are doing Assembly
     2. HI-TECH Universal ToolSuite when we are doing C

You shouldn’t have to fill in the "Locations" for the different programs in the ASM ToolSuite. But in case you don't have locations, you will need to browse.

For Microchip MPASM ToolSuite, in the lab the three are under:

C:\Program Files (x86)\Microchip\MPASM Suite\MPASMWIN.exe

C:\Program Files (x86)\Microchip\MPASM Suite\mplink.exe

C:\Program Files (x86)\Microchip\MPASM Suite\mplib.exe

At least, make sure the filenames are correct. You may have to search for the folders they are in if you installed it somewhere else.

For HI-TECH Universal ToolSuite, it should point to:

C:\Program Files (x86)\HI-TECH Software\PICC\9.83\bin\picc.exe

* 1. Browse for the Project Directory. This should be on your share folder under our "courses" folder. Or you can put it on your J drive. Do a Create New Folder, such as Lab1 and browse to it. **DO NOT PUT IT ON THE C DRIVE!**

Type in a Project Name, such as Lab1 and click Save. Also, always save the workspace (MCW file).

* 1. If you already have source files in that directory, you can add them now. Otherwise, just click next.
  2. When asked, save the workspace (MCW file).

1. Making new files and adding them to the project should be obvious, as should opening an existing project.
2. Make sure options are set right. The following are the options for Assembly. The Lab assignments for C will specify the options I want for each C-based lab.
   1. Under Edit Properties, under the ‘ASM File Types” tab (or C File Types when using C), check Insert Spaces.
   2. Under Project / Build Options / Project
      1. Under MPASM Assembler tab, General Category, set Default Radix to Decimal. Check "Disable Case Sensitivity".
      2. Under MPASM Assembler tab, Output Category, the diagnostic level should be "Errors, Warnings, Messages" and the "Hex File Format" should be INHX32.
      3. Under MPASM Linker tab, the "Hex File Format" should be INHX32. Generate map file and Suppress COD-file generation should both be checked.
3. When you do a build, if it asks, always select “Absolute” (not relocatable). If the build is successful, the only messages and warnings you should get are:

Register in operand not in bank 0.

Radix superseded by command line.

**Otherwise, I expect no errors, no warnings, and no other messages when you come to demonstrate.**

1. **To Simulate**:
   1. Under Debugger / Select Tool, choose MPLAB SIM. For later labs, you will also be able to use a hardware debugger.
   2. When you use the MPLAB SIM for the debugger, be sure to set the following: Debugger->Settings->Osc/Trace, put at 4 MHz, except Lab 4 will be at 20 Mhz.
2. Using the simulator/debugger should be easy (it had better be by the time you get to this course!). Some things to note:
   1. There are many useful "views" under the View menu. **Look at them all, try them all,** and use them!
   2. To simulate inputs on the pins, choose Debugger / Stimulus / New Workbook, and then choose the Asynch tab. Choose the pins using the dropdown box in each row. You can choose from several Actions in a dropdown. Click Fire (it’s to the left of the pin) each time you want the Action to occur (while stepping through the program).

I assume you will learn this quite well. Some of your lab points will depend upon you being able to demonstrate to me your skill at simulating and debugging!

1. **To program the PIC**
   1. Plug in the ICD USB first, before starting MPLAB.
   2. Programmer -> Select Programmer, choose MPLAB ICD 2 or 3, depending on which one I have hooked up to the board.
   3. If the 5V, 3.3V Caution comes up, click OK
   4. Programmer->Connect
   5. Programmer->Program
   6. To run on the hardware, Programmer->Release from reset.
   7. If ICD2 doesn’t work, check in Settings ->Communication. It must be USB.

The PIC Software is in: S:\Academic\CSSE\Software\RealTime\PIC\_Soft