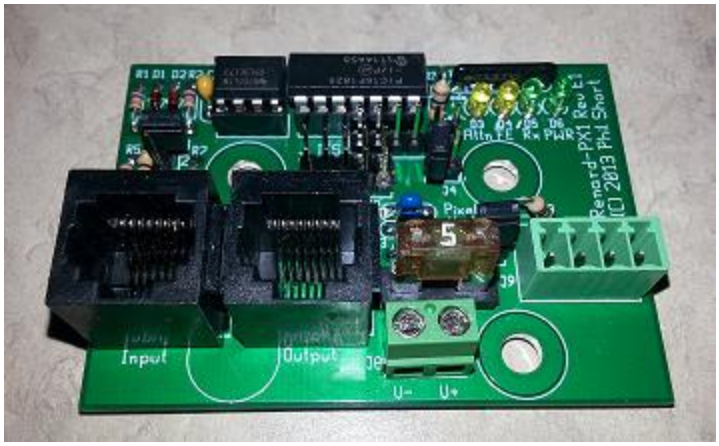


How I survived programming my PX-1 and you can, too…

I didn't purchase my PX-1s from the group buy. I bought a couple bare PCBs from dirknerkle's store at a later date and sourced my remaining parts from Mouser. This was fine, with the exception that I now had to program the blank 16F1825 pic that the PX-1 uses. No big deal, I've programmed all the pics for my controllers, as well as helping other folks do theirs. I was wrong.

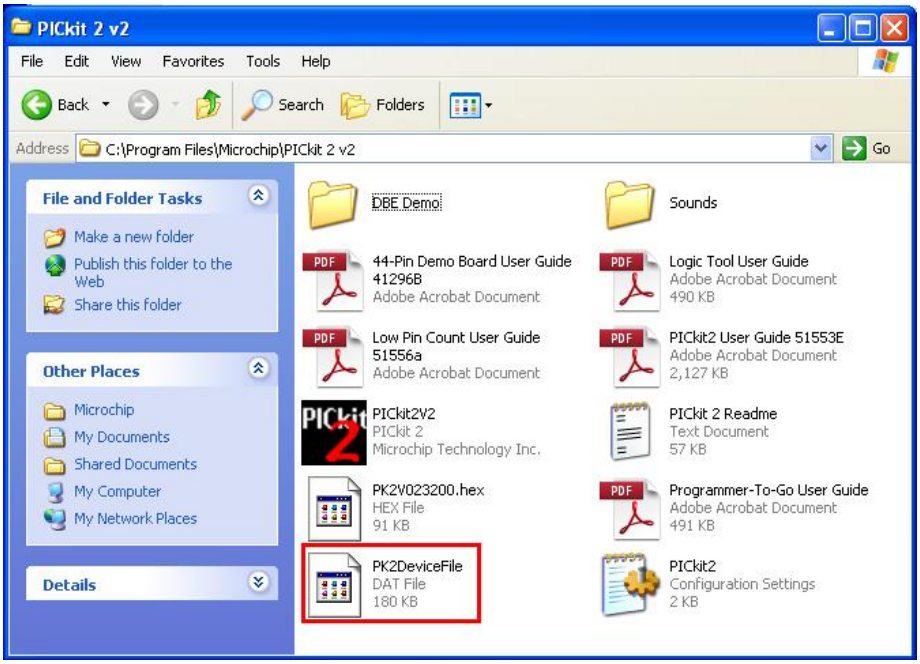
This is not meant as an end-all-be-all of how to do this. It is just an accounting of what worked for me. All standard disclaimers apply. If you toast your pic(s), not my fault. If you toast your controller, not my fault. If you toast your pop-tart, eat it before it gets cold.

Here we go:

Obligatory list of things used:
-PX-1 Rev E1, built per wiki instructions and BOM parts, except for one set of resistors that were out of stock, so I used a larger wattage capacity one. Nothing special.
-Pickit 2 with ICSP header adapter
-Desktop, windows, P4, nothing of note.
-Everthing else is software-related and will be covered as I go along.

Step One: Download and install the following programs, should you not already have them:
-MPLAB IDE V8.92
-PICkit 2 V2.61
I have opted to not include links as they are easily 'googleable' and not all the links would be live in this format anyhow.

Step Two: Download a copy of the PK2DFUpdate-1-62-14 file here:
http://ww1.microchip.com/downloads/en/DeviceDoc/PK2DFUpdate-1-62-14.zip
This file will be dropped into the PICkit folder (mine is C:\Program Files\Microchip\PICkit 2 v2) in place of the existing data file that is already there. The replacement file contains the data to allow for programming of the 16F1825 pic. I have marked the file that is to be replaced in the picture below. The new and old files will have the same names.



Step Three: Download the .asm file from the DIYC PX-1 wiki page. A link to the file can be found under the 'firmware' heading.

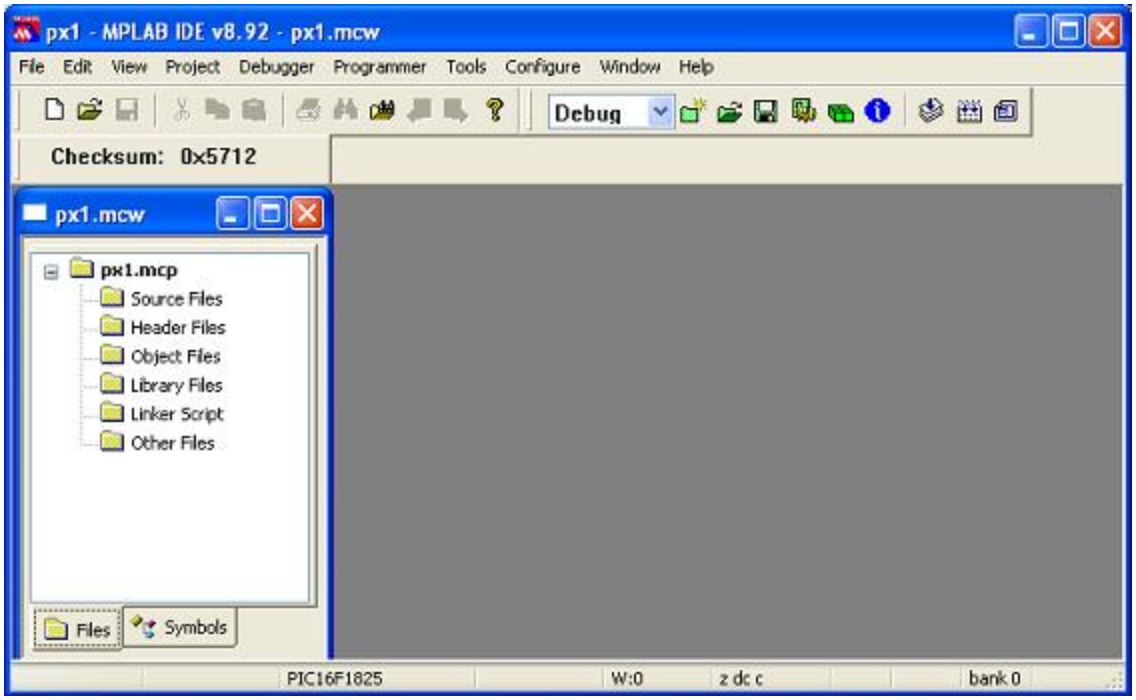
Step Four: This step will include the basic steps through MPLAB IDE to create a .hex file from the .asm file which you downloaded.

a. Open MPLAB. Close any sub-windows that show up within the main MPLAB window. This may not technically be necessary, but it gives a clean slate to work from.

b. Select 'Project' from the menu bar, the select 'New' from the drop-down menu.

c. Assign a name to your project, and choose a location to put it. I chose "px1" for my name, and browsed to the desktop for a directory to place it (I like everything to be easy to find). There is an outside chance you could run into filename length issues, depending on the file names within your computer. I did not. After you complete this step, you will once again have an empty MPLAB work window. Click on "View" on the top toolbar and select "Project." This opens your project window.

d. Click "Configure" from the menu bar, then choose "Select Device" from the drop down menu. This will open a window with a drop down menu in the upper left hand corner that allows you to select the PIC16F1825 as your device. You can disregard everything else once you have chosen the pic (at least I did). Steps a, b, c, and d have been completed in the following picture:



e. Right click on "Source Files" within your project window, and select "Add Files" from the pop-up menu. Browse to the .asm

file that you downloaded earlier and select it. You will now have the .asm file listed under the "Source Files" as shown below:



f. Click on "Project" on the menu bar, and select "Export Makefile." This should bring up a window in which you can choose Absolute or Relocatable. Click Relocatable. At this point, MPLAB will export five or six files to your desktop. I assume that if your .asm file was somewhere other than your desktop, they would go there. I did not test that. Hover over the newly created files until you find the .hex file. All of the other files that were exported can be deleted, as none are necessary for our purposes. At this point, you are done with MPLAB and can close out of it.

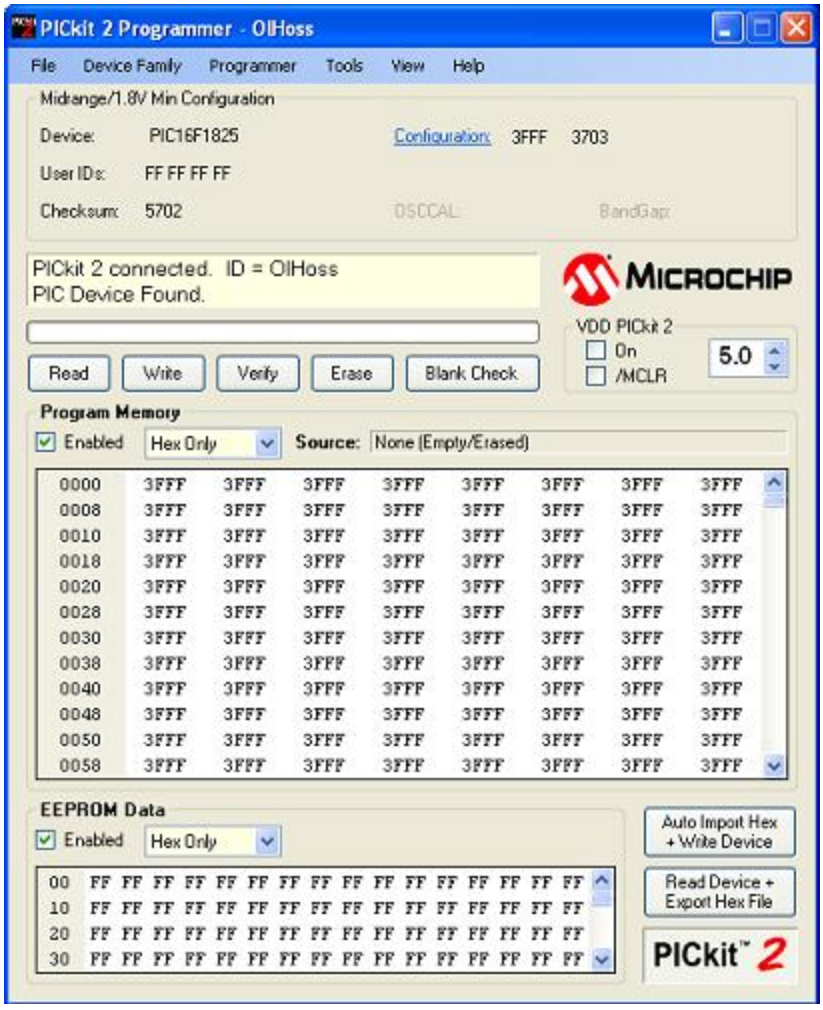
Now on to PICkit 2.

<u>Step Five</u>: Connect your PX-1 to your Pickit2. I used my Pickit2 and the cables that allow it to be connected to the ICSP header on the PX-1. The connections are well labeled in the PX-1 wiki. The following pictures are included as a basic reference:

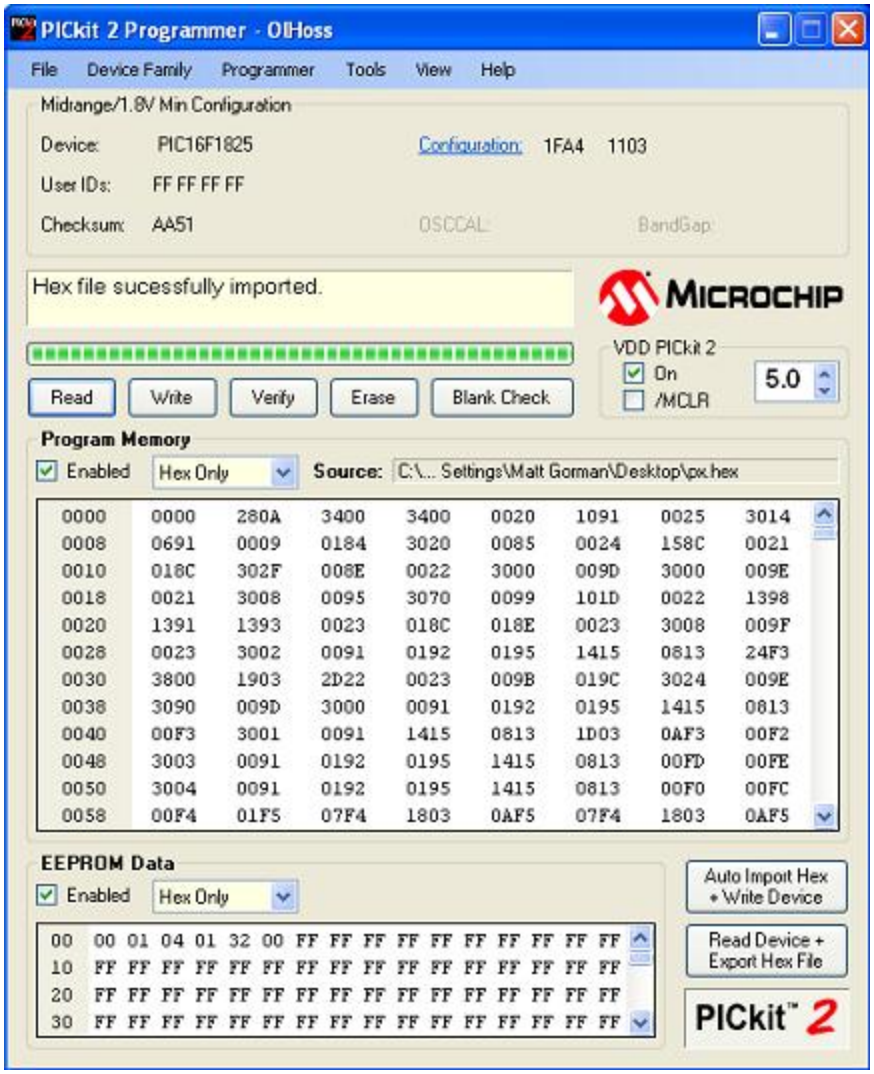




<u>Step Six</u>: Plug in your Pickit2 and open the PICkit2 software on your pc. Click "Tools" in the menu bar, then select "Check Communication" from the drop down menu. Your pic should auto-identify, giving you a window that looks like this:



<u>Step Seven</u>: Once you have made it this far, your basic functionality of the Pickit2 is the same as for the 16F688 pics. Clicking "read" will read the data from the pic, etc. At this point, you will want to click "File" in the menu bar, and then "Import Hex" from the drop down menu. Navigate to the .hex file which you created in MPLAB, and select it. When you do this, you will notice that the data area with all of the 3FFF's in the above picture will now have a variety of data:



At this point, simply click the "Write" button, and your data will be written to the pic. Note that I had to "check communications" several times through this process to keep the Pickit2 in touch with the pic. No big deal, just a little bit of a pain.

The default settings from this .asm file are laid out in the wiki. Directions to change them via a simple Vixen sequence are there as well, and work like a champ. From this point, just open your

sequencing software, set up your com port to match, punch together a sequence, and make some pixel blinky-flashy.

Hope this has been a help.

Bruce (boyelroy11) 5/5/14