**Introduction**

For homework 3, I had to circuit and create a program that uses a LCD display, a push button, and a potentiometer. The program revolves around a timer, and each peripheral controls a function of the program. This report details my personal experiences pertaining to the construction of both the program and the circuit.

**Preliminary Work**

Before programming I had to build the circuit. I started by soldering the 16-pin header to the LCD display. I soldered all 16 in one quick session with the exception of possibly touching a part of the circuit which resulted in black goo on the circuit board. I proceeded to solder the ribbon to the 16-pin header. This took much longer, since the soldering gun had a large, blunt tip. There were many instances where I soldered two pins together or soldered the wrong wire to a pin. After that, I ran into more trouble figuring out how the 14-pin connector worked. I found out I just wasn’t pushing the upper half hard enough. When I did push it hard enough, it was on crooked, so I tried taking it off, but the upper half snapped off with the legs still in the bottom half. I ended up manually pushing the ribbon onto the metal pin receptors. I started the provided LCD test program, but nothing displayed. I checked the wiring, made some of the soldered joints neater and tried again. Nothing displayed, so I decided to create the circuit. This was extremely simple, since I had noted the pinouts of the parts during the lecture. Still, nothing displayed and I had to continue without it.  
 I started programming by creating the flow charts below. The first describes the initial code, which initializing RAM and potentiometer inputs. To initialize RAM, I would CLR the effected addresses. The next diagram depicts the flow through the various modes, which is the main program. For the UP\_DOWN mode, I’ve provided a flow chart that shows a pattern of creating a counter for n digits. Thankfully, a lot of the hardware initializations were done in the sample code.



**Initialization & Potentiometer**

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**Modes**

**n Counter**

**Conclusion**

Again, I struggled with the hardware and am limited with testing capabilities. I was able to use a friend’s circuit early on, but did not get to test after that. The program doesn’t incorporate much of the flow charts above, because I wouldn’t have been able to guarantee they work.