

gPod Accessible Blood Glucose Meter

Week 6
February 26, 2006
Matthew Bularzik

Work Completed

This week I spent mainly on the LCD screen. I spent most of the week debating on whether or not the graphic LCD screen should be kept or should a switch to a character LCD screen be made. A character screen would be easier to be work with and program then would a graphic LCD screen.

I tried searching the web about the graphic LCD screen we have and how it works. There was not a lot of information about the graphic LCD we have in particular about its controller which is needed to understand how to program it. The graphic LCD screen used a KS0713 controller. I searched the crystalfontz.com forums for information about the LCD screen and controller and not too much was found. Some example code was found through a member of the forum about programming a graphic LCD screen with the controller for our screen though it was not completely tested.

Then I began to research character LCD screens trying to find one that would allows us to create large characters on the LCD screen so they would be able to be read with ease. Most character screens are not very large and are not rectangular at all. The normal sizes I found were 16x1, 16x2, 20x1, 20x2, 40x1, and 40x2. The 16x2 or 20x2 would seem to work just fine though the normal character would be too small to see easily. A screen that would do double row characters was found although it was just sold in Europe which will not work. It also was found that its controller was not the standard industry controller, HD44780. Upon further searching it was determined that through a bit of ingenuity it was possible to make double row characters from a LCD screen with HD44780 controller. This is done by programming half the character on the top line and the bottom half of the character on the bottom line, as seen by Figure 1 below. Code was also found about how to create these double row characters.

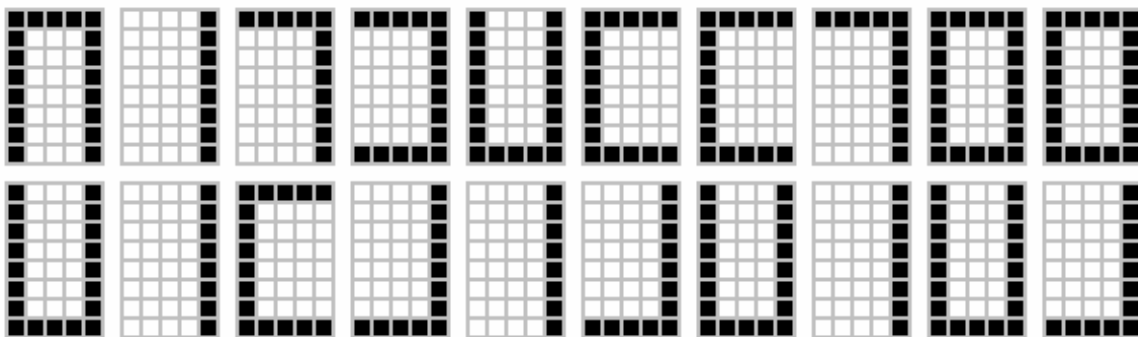


Figure 1: Example of Double Row Characters

A character LCD screen was found in the lab with a HD44780 controller and dimensions of 16x2. This should be the perfect size character screen for our project.

From the information that was found and due to the present time constraints it was decided that a switch to a character LCD screen would be made. This was made mainly due to time constraints. Figure 2 below shows the LCD pin connection diagram between the character LCD screen and the microprocessor. A potentiometer was added so that the contrast of the screen could be adjusted as needed. Figure 3 shows a picture of the character LCD connected to the microprocessor on a proto-board. A quick first test of the character LCD screen was done and nothing happened. So, further work will be needed.

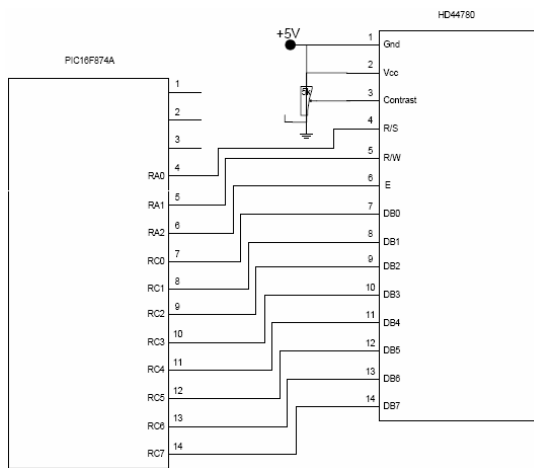


Figure 2: LCD Pin Connection Diagram

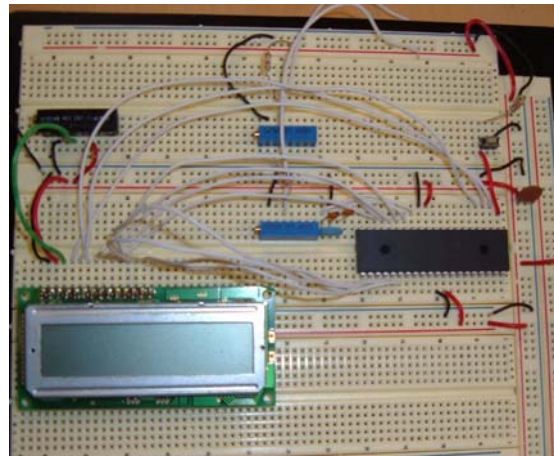


Figure 3: LCD/Microprocessor Circuit

Future Work

This week I plan to continue working on the LCD screen. The character screen needs to be further integrated with the microprocessor and the programming worked on. I hope by the end of the week to have the character LCD screen working properly. I, also, hope to have the SP03 speech chip integrated correctly by the end of the week.

Project Review

The microprocessor progress has been much slower than expected. Hopefully there will be significant progress made this week. The three systems should be integrated by the end of the week with the microprocessor and all the code added together. The glucose circuit and curve should be done real soon. The SP03 speech chip and character LCD screen should both be correctly communicating with the microprocessor by the end of the week. Total costs to date are \$681.01

Hours Worked

Hours worked on the project: 16.5 Hours