

Project Identity

Accessible Blood Glucose Monitor Interface

Week # 8 (March 13 – March 17, 2006)

Mike Rivera

Work Completed

Week 8 was spent integrating the glucose circuit with the screen as well as working on the scanner. Early in the week I began reading the owners manual for our scanner just trying to get an idea of how the scanner works. It turned out to be very simple to get a reading from the scanner onto the computer screen. I designed a LabView program that simply prompted the user to scan a barcode, and when scanned, the number on the barcode would show up on the front panel of the program. There are various websites on the internet that can create barcodes for you based on a few parameters. The present idea for the vial scanner is that we will take about three barcode numbers of various insulin's that are sold. The barcodes of insulin have been made standard by the FDA, so the barcode numbers are specific to a certain type. I will then use the website to generate barcodes for these numbers, and then print and paste these barcodes to the vials. A database of these numbers will be stored into the code being written that will be able to read in the number and output the type of insulin it is. This output can then be displayed on the screen and essentially we have insulin identification.

The next part that needs to be done for the vial scanner is a USB/Serial circuit. The microprocessor has serial port capabilities that can be directly connected through certain pins. However, the vial scanner is run through a USB connection. I have found a datasheet that gives some sample circuits that will make this conversion, as well provide power to the USB and other things. In the upcoming week I will be working more with this to hopefully make the scanner working through our microprocessor by the end of the week.

On Friday, I spent time rebuilding the glucose circuit onto the same proto-board that Dave has the screen and microprocessor hooked up to. By this time, Dave had wrote code to take a voltage measurement after two seconds from the time of sample application. One the circuit was completed on the one board; it was time for some trial runs. We ran a few tests through, and there was success. After two seconds from putting sample on the test strip, the screen would output a reading. However, the reading was very off. Figure 1 shows one of the trials that we did. The glucose sample was first tested on the working meter to get the value, and then tested through our setup to compare.

Figure 1: Photograph of the Actual Glucose Concentration to that of the Project Meter



As can be seen in Figure 1, the numbers are quite different. Currently, we have a couple of possible reasons as to why this might be. Our first inclination is that fact that our new test strips are of a different batch. It is crucial when using a glucose meter that the batch number on the container of test strips matched what the meter is calibrated to. This means that a different batch of test strips will clearly give inaccurate readings if not calibrated correctly. Is this is the reason for our incorrect measurement, and then I will have to figure out exactly how the glucose curve has changed. What may need to be done is another glucose curve for these tests strips, to then compare to the original curve. Next week I will spend time on getting accurate results from our meter.

Future Work

In the upcoming week, I plan to build the nessecary ciruits that will have the vial scanner working off of the microprocessor. Also, by the end of the week, I hope to have our meter outputting accurate readings of glucose concentrations.

Project Review

This week was a very productive one. Parts of the project are finally coming together and being integrated as one. The only major component left to be incorporated is the sound. Although this is a huge portion of the meter, I feel as though a working prototype will be accomplished very shortly.

Hours Worked: 14