Project Identity

Freely Adjustable and Accessible Keyboard and Arrow Pad for Client with Cerebral Palsy

Work Completed

The potentiometer, necessary in our backlighting was received as well as the large key caps used for keys such as the spacebar. Measurements of these items were recorded and incorporated into our design. Fortunately, the potentiometer fits appropriately into our PCB design. It will enable dimming of the LEDs and be mounted so that the knob is on the external of the keyboard.

Much work was accomplished this week when Steve and I were able to replace the 9 volt battery source supplying the LEDs with the USB from the keyboard controller. Within the 30 pin header on the control board there are two 5 volt pins and a ground. Using one of the 5 volt source (approximately 5.16v), and altering the resistors in our circuit to 150 ohms, we were able to power the LEDs. Using 27 LEDs that were in series with the resistors, the voltage at the last LED dropped to roughly 4.46 volts. A diagram of the protoboard and control board can be seen below in Fig. 1 and Fig. 2.

Fig. 1: USB Power Output
The PCB design has been completed, however before ordering the sheets we need to decide between two layouts for our project. One layout creates a keyboard that will be four rows wide, the other five rows wide. These two designs can be seen in Figures 3 and 4. We will discuss the pros and cons of each keyboard, comparing the differences and which will suit our client the best.
Future Work

The next week Steve and I will order the brighter, blue (upon request) LEDs and the 150 ohm resistors. Also the PCB will be double checked, and reviewed by Bill before it is ordered. Once the keyboard layout is decided upon (4 row or 5 row) we will have the dimension that will allow us to construct the external design of the keyboard. The PVC will be cut in the machine shop according to our specifications. Also the hinges, locking mechanism, and rubber bottom will be purchased from Mansfield Supply within the next week or two.

Project Review

After a few slow weeks in the beginning of the semester, our project has made much progress. The electrical aspect is almost complete, and with the finalization of the PCB Express board, the internal components can be assembled. The hardest part of our project is near completion, and figuring out the programming has been very beneficial to the process. It should save us time in the future. Since the framework measurements are also almost done, an early start on the external design will be helpful.

Hours Works:
~11