Since last week the LCD monitor, the GLK240128-25 was successfully powered up. Scott was able to find the correct breadboard cable at an off-campus worksite, similar to the one pictured in Fig. 1. This cable was necessary to connect monitor to a 5 V power source. Initially we had taped individual wires to the +5 V and GRD pins on the back of the module, however, this connection was not secure. Once plugged into the board, a voltage regulator was used to feed a 5 V supply to the monitor from a 9 V battery. The battery casing, which had the wires soldered already, was found in the senior design supply room. By using a RS232 cable from a different kit, the monitor was connected to a PC. At this point, the GLK240128-25 was ready to be tested with the associated MOGD# software downloaded from the Matrix Orbital website. This software will enable us to easily specify graphics and fonts for visually prompting the user. The current setup including the GLK monitor and circuit board to connect the power supply is pictured in Fig. 2.

Figure 1: Breadboard cable
Additionally, since the weekly team meeting on Tuesday, the team, along with Dave and Dr. Enderle, has decided to add voice recognition to the device. This is intended to provide disabled users with a convenient and easy method of requesting and receiving the correct dosage amounts. Therefore, much of the time this week was spent on researching the correct voice recognition hardware. Our options are quite limited and much of the research has been restricted to the VR Stamp by Sensory Inc. However, the use of the VR Stamp, which would allow the team to integrate multiple languages and contains 128 Kbytes of serial EEPROM for data, 24 I/O lines, microphone preamplifier and a pulse width modulator (PWM) for the speaker, in addition to other features, requires the use of the associated toolkit. The toolkit costs approximately $350 and would exceed any single item purchased for the device. The toolkit is said, by the company, to be necessary because it includes C Compiler from Phyton, which is used to translate the programming language to the VR Stamp, also FluentChip™ which is used to create speaker independent sets, in addition to Quick T2SI-Lite™ for creating speech files. The price of $350 is also claimed by the company to be attributed to this. Additionally, the toolkit comes with a speaker, two VR Stamps and the module programmer board for downloading application code and demos. Despite the evidence on the website I decided to further contact Sensory Inc.’s sales representative, Erika Fratzke, to see if there was any way to use other sources of programming and in her e-mail response to my inquiry she said,

“I just want to issue the following disclaimer: We do not know how it would be possible to program a VR Stamp without our toolkit. If you decide to do this, we can't provide technical support since you would basically be conducting an experiment that we're unable to control.”
With that response I thought it would be best to discuss the issue together with my teammates.

**Future Work**

By the end of this week, voice recognition hardware will be decided upon and I intend on ordering something, whether it be a currently unknown alternative or the VR Stamp Toolkit by Sensory Inc. Next week I will be expected to receive the hardware and programming of the chip can begin.

Additionally, more research will go into both the voice recognition component and the GLK monitor abilities in communicating with the microcontroller that was chosen by Scott. Minor parts can also be researched such as the speaker and microphone, required by the voice activated hardware.

Hopefully by the end of senior design lab at the end of this week, the team and I can further combine our parts thus far ordered into a complete representation of the intended device in a cardboard display. This will give the team, Dave, and Dr. Enderle a better idea of exactly how the syringe-loading device is expected to look like.

**Project Review**

For me, this week was full of research due to adding an additional, unintended part to the device, the voice recognition. However, I do believe that this will significantly improve the overall design of the syringe-loading device. Luckily, the V Stamp text to speech, by RC Systems hadn’t been ordered or the part would have been useless due to the addition of the VR Stamp, which will do it all.

**Hours Worked**

22.5