Work Completed:

The circuit was complete. It worked on the protoboard using the power supply as our main power source. This week the voltage regulators were added to the circuit to see the overall circuit working with the battery. It was determined that two 9Volt batteries will require for the motor, which runs on 12 Volts. When the motor is running with the wheel attached it uses 40 milliamperes. However, the current used when the motor first starts spinning is 200 milliamperes and each battery will can provide up to 500 milliamperes. Figure 1 shows the characteristic of the Duracell alkaline battery (MN1604). From this it can be seen that the battery will be able to power the motor for 10 hours continuously at 50 milliamperes. In terms of the power requirement for the Sp03, motion sensor, function module, and the microcontroller, they each require a 9 volt battery with a positive 5 volt regulator.

![Typical Continuous Performance Characteristics with Constant Current to Various Cutoff Voltages at 21 °C (70 °F)](image)

After the circuit was complete, the PCB board was designed and Bill placed an order for it on Monday the 4/16/07. We should receive it by Thursday 4/19/07 and place all the components onto the board that day.

Future Work:

In terms of the circuitry part, the most important task is to figure out how the Function module works. I complied with the datasheet provided on line, but was not able to get any output for the module. Also, we need to figure out where to place the LEDS onto the game box in order to provide visual enhancements. After the PCB board is built we need to place it into a safety box so there is no possibility of short circuit. A large hole will be drilled onto the side of the box to run the wires to the 12 LEDS, motor, motion sensor, function module and the 6 batteries. Most likely, the safety box will be attached to the bottom layer of the game base, in order to keep it away from the players. The battery
holder will be placed somewhere near the top of the game so that the staff members can easily access it when batteries need to be changed. Lastly, the speaker for the SP03 needs to be attached to the side of the game to enhance the audibility of the text to speech conversion.

**Project Review:**

Currently, we are behind in our schedule because we were supposed to be done by now according to our timeline. Unfortunately, we were not able complete. Our PCB will be here this week and we will be able to complete the overall electrical part of the project and put together the mechanical part next week. The only big obstacle right now is the function module.

**Time Worked:**

15 hours.