**Work Completed**

This week I did a lot of work on the two servomotors that we will be using in our project. The first servomotor, the HiTec HS-645MG Ultra Torque will be used to push the blade on the track and cut the pill. This servo has enough torque for this application and can be told to rotate a certain amount so it pushes the T Knot forward which in turn pushes the blade and cuts the pill in half. It is important that the servo can withstand a certain amount of force for this application, since it takes about six pounds to cut a pill in half. A servomotor is a good product for this application since it operates on a closed-loop circuit. It constantly checks for error in its position. Also, if a heavy load is placed on the motor, the driver will increase the current to the motor coil as it attempts to rotate the motor.

The second servomotor, the HiTec HS-422 Deluxe, will be used to turn the rotating discs. This servo has to be precise because in order for the pill to be cut and dispensed the holes on the rotating discs must line up exactly with the funnel and chute leading out of the device.

Two servomotors can be controlled on a single circuit. They will be sent separate signals and move individually. The circuit is fairly simple and only involves a power source, microcontroller, oscillator and the two servomotors. The microcontroller that we will be using is the PIC16F747. A 5V power source sends voltage to the microcontroller and motors. The voltage to the motors can be increased up to 6V. An increase in voltage will increase the amount of torque from the motor. The oscillator is hooked up to the microcontroller and controls the clock frequency. The two pins RB0 and RB1 send pulse-width modulation (PWM) signals to the two servomotors through their signal pins. The following picture, Figure 1, is the circuit that I built this week. Our two servomotors are hooked up to the proto board and a 5V signal is sent with a DC power supply.
I have also been working on the source code for the servomotor control. The microprocessor will be programmed using C++.

**Future Work**

Next week I will finish modifying the source code for the control of the servomotors. Tim and I will also finish machining the rotating discs. We need to drill holes in them so the pills can fall through, attach them to the axis and minimize the amount of space they take up. We also will design the layout of the pill cap.

**Project Review**

This week has been a very productive week for our team. All members did a lot of work and we are on track with our schedule. The hardware portion of our project is all done and we need to now focus on the software programming and putting together the physical components of the project. Below is an updated timeline for the next few weeks.
This week I worked 12 hours on the project.