Worked Completed:

I spent time reading the documentation for the PIC24 microprocessor and the Explorer 16 Development Kit. Installed the MPLAB ICD software on my home computer, stepped through tutorials explaining how to connect to the development board and establish communications with the microprocessor. Attempted to read in and view the demo program on the PIC24 using the MPLAB software. The program transferred as assembler code; which I need to study further to understand what it’s doing.

I discussed concerns regarding potential solder issues with the 64 pin PIC24 chip with Dave Price; it soldering the chip to a circuit board seems possible with the equipment in the design lab, but it would be a very difficult, time-consuming task. After Dave had a chance to personally inspect both the PIC24 64 pin processor and the PIC24 PIM module that came with the development board, he expressed doubts that either of them could be incorporated into a printed circuit board using the facilities/services accessible to the BME department. He recommended that we select a new processor with a pin configuration that would more easily lend itself to printed circuit board preparation. After conducting further research on other processors, a 28 pin SPDIP version of the PIC24 processor was submitted to Dave Price as a possible candidate.

Upon contacting Microchip and verifying they would accept back the original development kit that we had purchased, the development board, processor, and related documentation was repackaged in the container they were shipped in and sent via US Post Service to Microchip’s facility in Arizona. Jennifer in the BME office has been contacted regarding returning of the equipment.
Future Work:

While waiting for the arrival of the 28 pin PIC24 processors I’ll attempt to gain a better understanding on how the MPLAB programming interface works and will go through programming tutorials and documentation in hopes of developing a few simple programs in assembler code. Initially I would like to create a program which can react to single input changes. This program will later be refined to handle the input from multiple sensors, so that the presence of the insulin bottle and syringe, as well as the size of the syringe, can be determined. I will also attempt to write a few small programs that can test reading date/time information from the PIC24’s Real Time Clock & Calendar module and test writing information to the processors onboard memory. If I find that I am still having trouble using the programming interface and working with assembly programming, I’ll invest in the “Learning to Fly the PIC24” book by Lucio Di Jasio.

Over the next week I’ll also try to assist the other team members with the building a cardboard version of the syringe loader’s case. We will further discuss what materials to use in building the actual case, look at how the various device components will interact with each other; discuss placement of sensors, etc.

I’ve also purchased a Parallax multiprocessor development kit, which had been an alternative to the PIC24 that I had been researching. I’d like to investigate it further, and compare it and its programming interface to that of the PIC24 and the MPLAB program. Even if the processor itself isn’t used in our project, some of the kits components, (which include a servo), may be of use in project’s development.

Project Review:

Having to return the 64 pin PIC24 and its development kit has cost us time. The effort taken so far to understand and use the MPLAB software to program the PIC24 will not have been wasted. Once the new 28 pin versions of the PIC24 processor arrive we will be able to test the initial programs that I’ll be writing over the next few days.

Initial work on the device case is just starting to begin; much still needs to be done on it.

Team members are currently working on their specifically assigned sections. Further coordination is needed to revise the project timeline and to best use of the time we have while waiting for delivery of various components.

Hours Worked: 14 hrs