Project Description
The UCSD Computer Science and Engineering Department has built-in capability for LED displays, namely the interior programmable LED lights from Color Kinetics. These lights are located on each of the four floors of EBU3b, in the “Big Toe” portion of the building. During the fall of 2009 I worked with a team developing a language to control these LEDs for CSE 231 course on compilers. The project concluded with a successful demonstration of several simple programs developed in our language being compiled and executed controlling the lights on one floor.

For CSE 237D, I will continue this project by developing an application for Google’s Android mobile operating system. It is desirable to extend this project to a portable embedded system as it is difficult to observer the overall effects of the LEDs from inside the building. Also, by providing students with a means to control the LEDs remotely, the installation will hopefully start being used and gain greater exposure.

The application will allow users to program in the language developed by my compiler’s team. Once a program has been written, users will be able to upload their code to a desktop that is directly connected to the LEDs. From there it will be executed and displayed on the LEDs.

If this task is completed in a timely fashion, the goals of this project can be extended to include a real-time control for the LEDs and simulator that will display an animation of how the final execution of the LEDs should appear.

This project will partially be done in collaboration with the original members of my compilers team: Catherine Wah and Emmett McQuinn. The will be assisting in obtaining and setting up the desktop when they have the time. Additionally, Dave Wargo has been and is willing to continue helping with the hardware.

Reference materials
Besides the compilers project last quarter, there is not any extensive research in the field of controlling LEDs through languages compiled into DMX signals. The majority of DMX controls are commercially made software. Mike Doyle, the head of lighting at the La Jolla Playhouse, has aided as an expert on working with DMX. The Google Android development site has extensive information on developing applications.