7 Channel Programmable LED Control

Overview
Our sponsor has presented us with the challenge of creating a programmable LED control that would be used for implementing vivid dimming. Vivid dimming is when the color spectrum of light source is altered in order to make colors more vibrant at lower light levels. Our solution to this was a microcontroller that could be programmable with Pulse-Width-Modulation outputs. connected to an LED board with 7 LEDs on it.

Objectives
Our main objectives were choosing the microcontroller and LED board and then construction of a prototype.

Approach
- We started with investigating microcontrollers
- We considered price, power output, and group members experience.
- A list of LED boards was provided for our convenience with this choice.
- Once all the parts were received, we immediately started building prototype.
- Programming the microcontroller was done by members with prior experience.
- The physical construction and design of the prototype was done by the Electrical engineers.

Outcome
Our final prototype contained an mbed LPC1768 connected to a 7 channel LED board on top a heatsink.
- A potentiometer is used as an analog input with 12 bit precision for smooth transition between dimming levels.
- The LED board contains the colors that are used with vivid dimming.
- LEDs are dimming through built in PWM outputs from mbed.
- Equations are simple to enter for controlling the dimming curves.