Class 10 Lab
Auto-brightness via Moving Average Low Pass Filter

Hello! In this demo you will learn about how a microcontroller can take in inputs from the real world, process them, and use them to affect something physical. More specifically, you'll learn how to make a basic auto-brightness feature (like the one your phone, or computer uses).

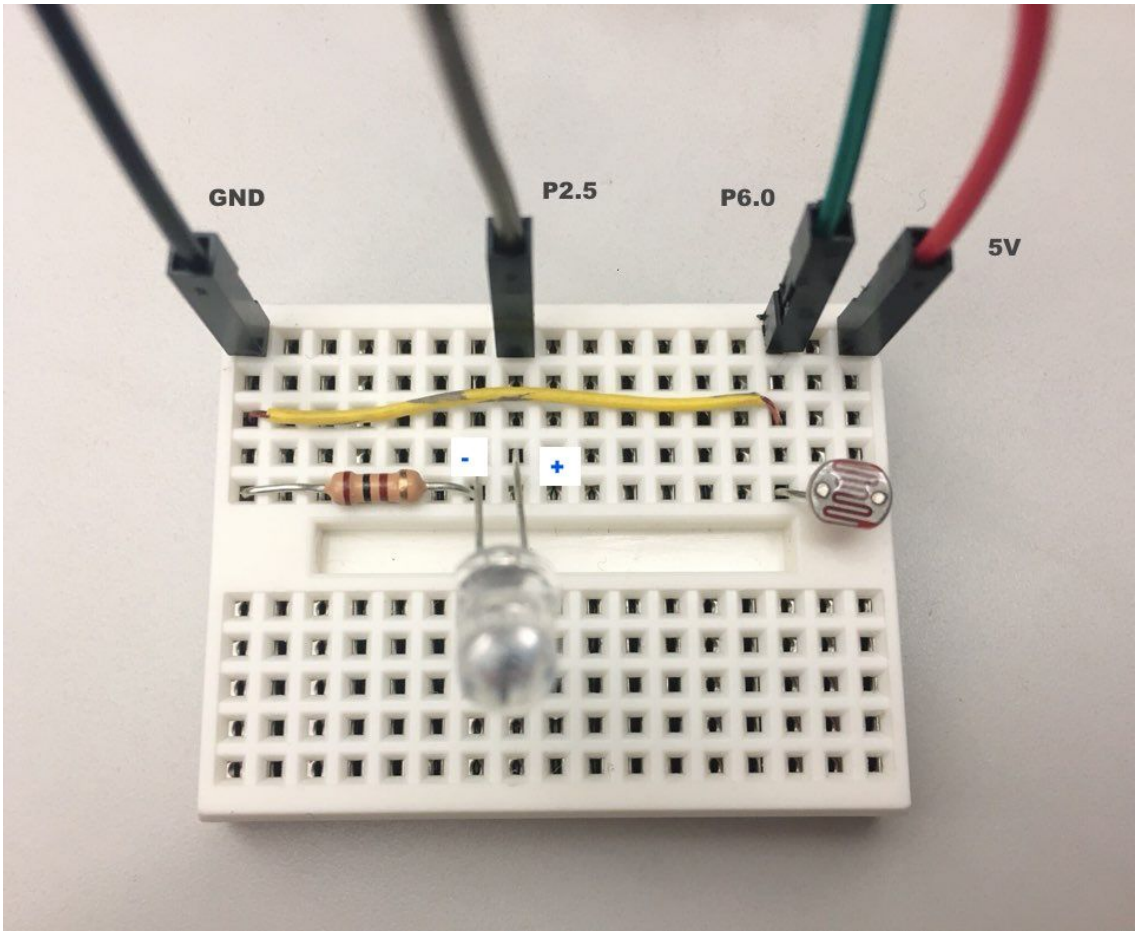
Section 1: Building your circuit:

In this section, you're going to hook up your MSP430 to an LED and a photoresistor. You will need:

1. MSP430 Launchpad
2. LED
3. Photoresistor
4. 220 Ohm resistor
5. Breadboard

Build the circuit to link the observation input (photoresistor) and the control output (LED) to the MSP:

1. Connect the 5V output of the MSP430 to the vertical red rail on the side of your breadboard
2. Connect GND of the MSP430 to the vertical blue rail on the side of the breadboard.
3. Next, connect one resistor going from the ground (blue) rail of the MSP to row 5 of the breadboard. Then, on the same row, connect the short lead of the LED. Connect the long lead of the LED to row 7. Also to row 7, use a wire to connect pin 2.5 of the MSP430.
4. Connect the photoresistor from the 5V (red) rail to row 15 of the breadboard. Also, connect pin 6.0 of the MSP430 to row 15.



Section 2: Loading the Firmware

In this section, you're going to be programming the MSP430 to read inputs from your circuit and control the brightness of the LED! Open up embedded_demo in Energia and follow the instructions in there to complete the code.