# ETUDE 2

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PART ONE

I configured the Arduino IDE for the ATtiny85 and uploaded the initial code without much trouble. At home, I worked to prototype the circuit on a breadboard. I started by drawing the circuit schematic by hand on a piece of blank paper so I could better understand the current flow and how the circuit functioned. Then I started building the circuit. Unfortunately, I mentally reversed the current when I read the schematic, so my first attempt didn't work. I find that I still go a bit cross-eyed reading the schematics, so I'm practicing to feel more comfortable and be able to read them accurately at first glance.
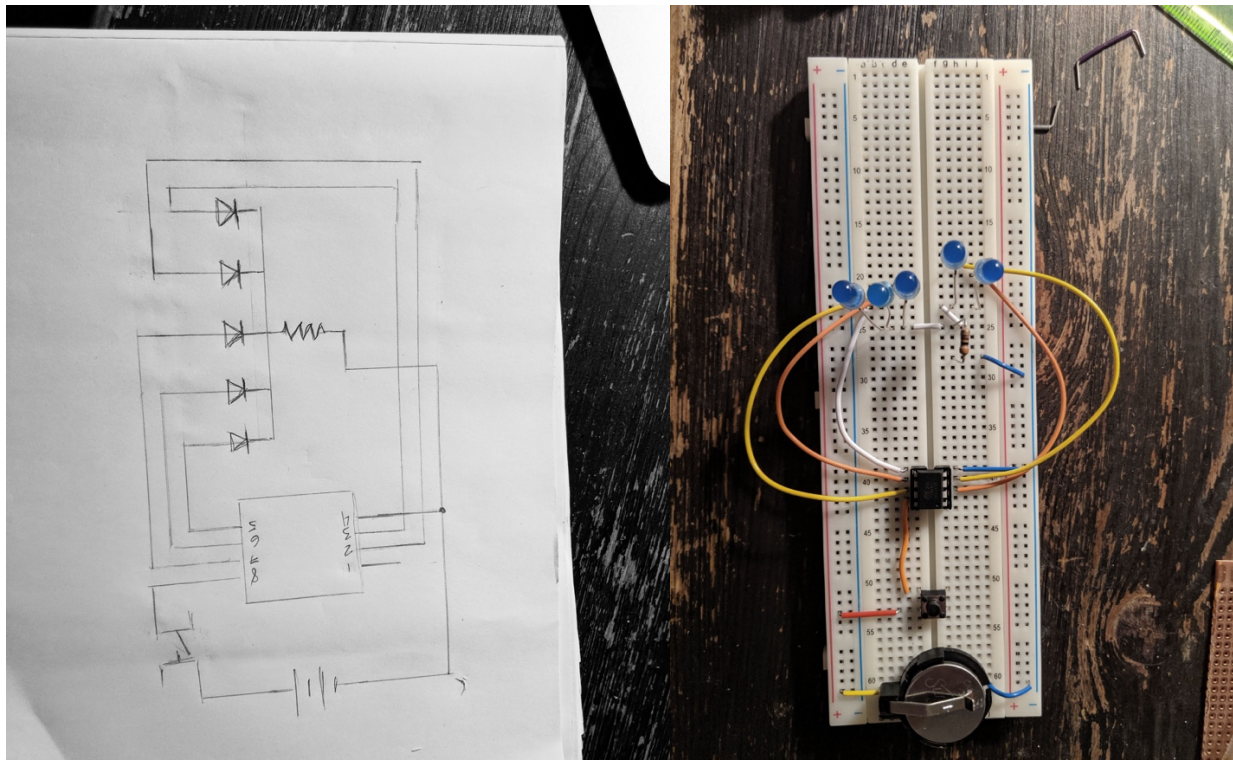
I understood my mistake the next day and updated my breadboard circuit at the Sensor Lab. It still didn't work, because I had reversed the LEDs, but that was a relatively easy fix. I also had to remind myself that the resistor can be placed pretty much anywhere in the circuit. Originally that tripped me up, as I kept thinking it needed to come before the LEDs.
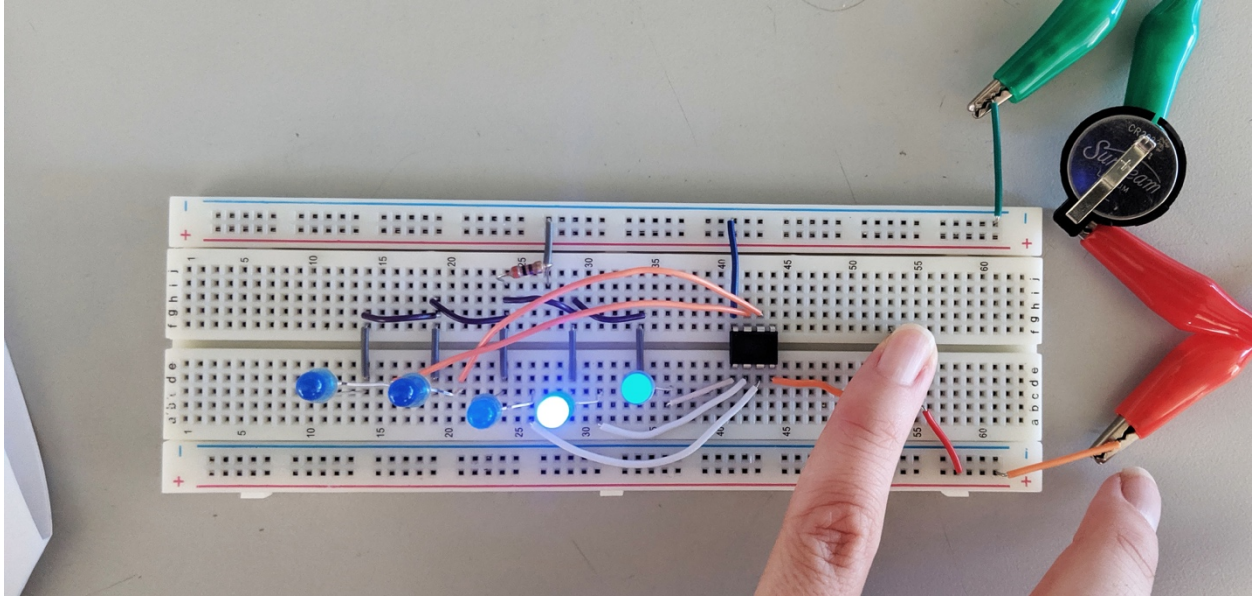
PART 2

In the *built circuit* there's a single resistor. In the *alternate circuit* there are five resistors in series. This means the overall resistance is increased and current reduced. For that reason, the *built circuit* is more reliable, as the *alternate circuit* doesn't have enough power. For example (assuming all resistors are 300 Ω):

Built Circuit	Alternate Circuit
Total resistance = 300 Ω	Total resistance = 1200 Ω
I = 3V / 300 Ω = 10mA P = 0.03W	I = 3V / 1200 Ω = 2.5mA P = 0.0075W

For my circuit modification, I chose to add a light dependent resistor. Since the effect of the perceptron is more visible and effective in low light, I thought it would be interesting if the LEDs turned on and the perceptron started working in the dark, automatically turning off in bright light. I wasn't able to complete a Fritzing diagram.

PART 3

Unfortunately, I wasn't able to finishing soldering my final project. The soldering iron I was using was finicky and stopped working for me at a certain point. The other soldering stations were occupied, so I ran out of time. I decided to upload what I had.

Even though the Etudes are meant to take around 4 hours, I'm realizing it consistently takes me longer to complete assignments. That's okay – I will try to leave myself extra time in the future.