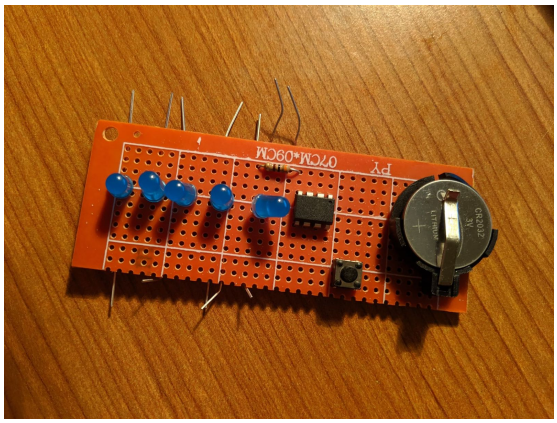
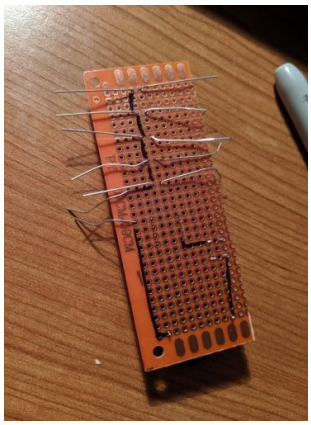
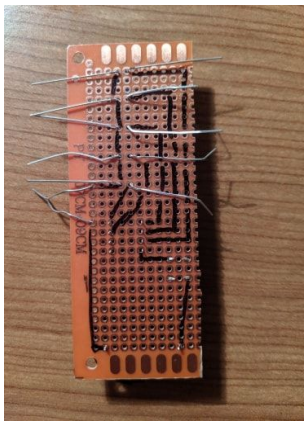
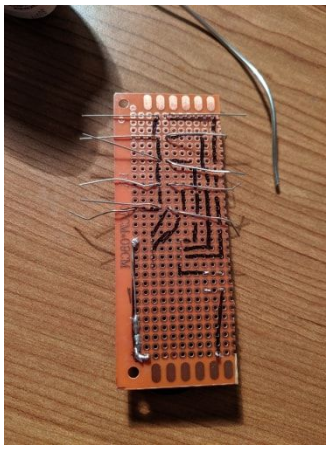
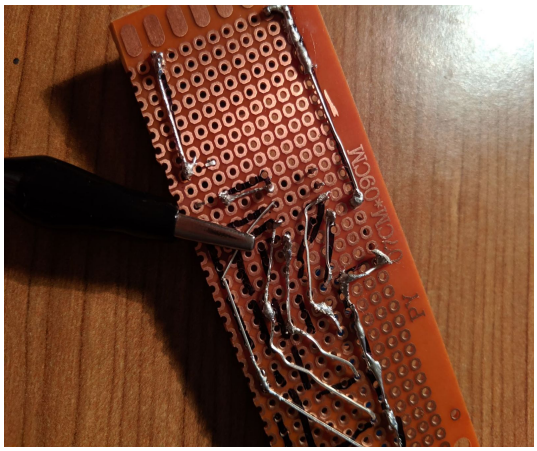
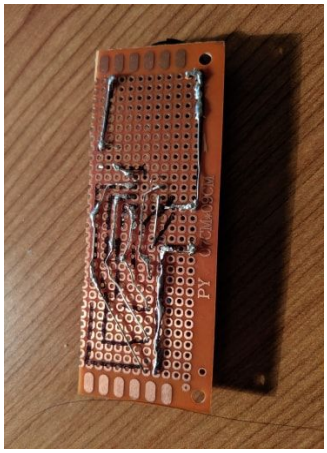
Etude 2

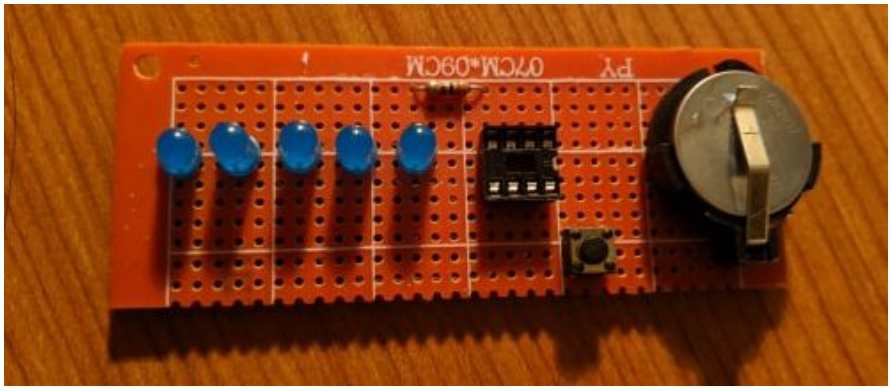
Part 1:

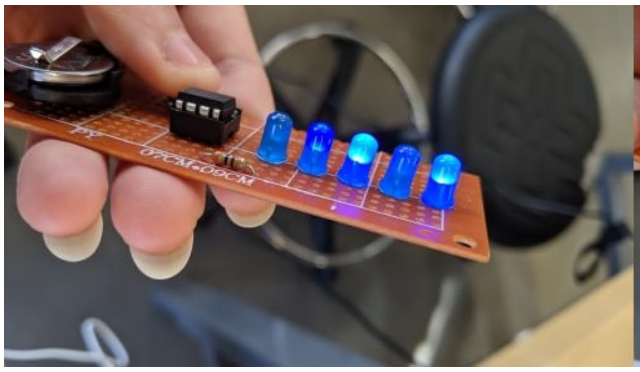
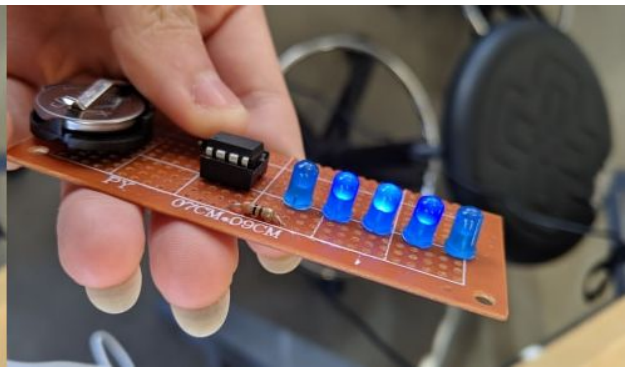
Following the general layout of the example board, the components were placed and a sharpie was used to mark an approximate layout for the circuit. Wires were bent to fit the schematic and clipped.

The soldering progress. Excess wire from clipping was saved and used to connect the longer distances between components. Alligator clips were used to hold tricky, loose and stubborn pieces down.

Realized I had made a mistake soldering the attiny directly to the board, and not the PDIP connector. Had to write out a quick diagram to figure out the pin arrangement as well. (Downloaded the etude 2 zip before the images were uploaded and only saw them later.) rectified my mistake, finished board pictured.

Part 2:

The difference between the Electronic Schematics of the Built Circuit to the Alternate Circuit is the number of resistors present in each. In the circuit we built, there is a single resistor for the whole array of LEDs versus one resistor for each LED in the alternate circuit. Electrons want to pass through the path of least resistance, and LEDs generally have small differences in forward voltages (Vf). The second circuit with many resistors is more reliable because the current will pass through all LEDs equally. In the built circuit, the LED with the lowest Vf will conduct more current than the others, resulting in different brightnesses and a shorter lifespan. However, in an application like this where the LEDs are not on for extended amounts of time and blue LEDs have a relatively high VF, it is acceptable.

To make the experience more meaningful, I would attach a small motor to the circuit. This way, it could spin on its own and I would be able to enjoy watching it light up

without having to worry about moving it myself. I'd also use the alternate circuit with the many resistors so the project would last longer. Ideally this would be installed on a long, narrow board with the motor and battery spinning the board.