

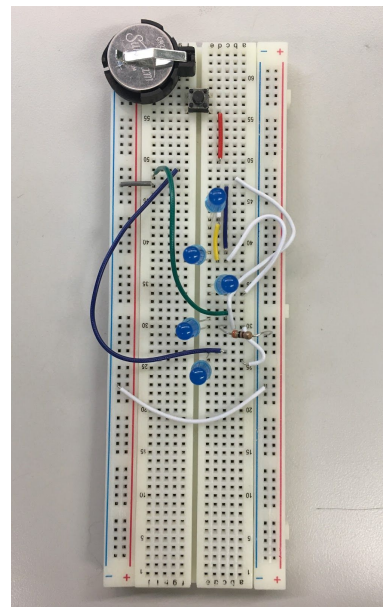
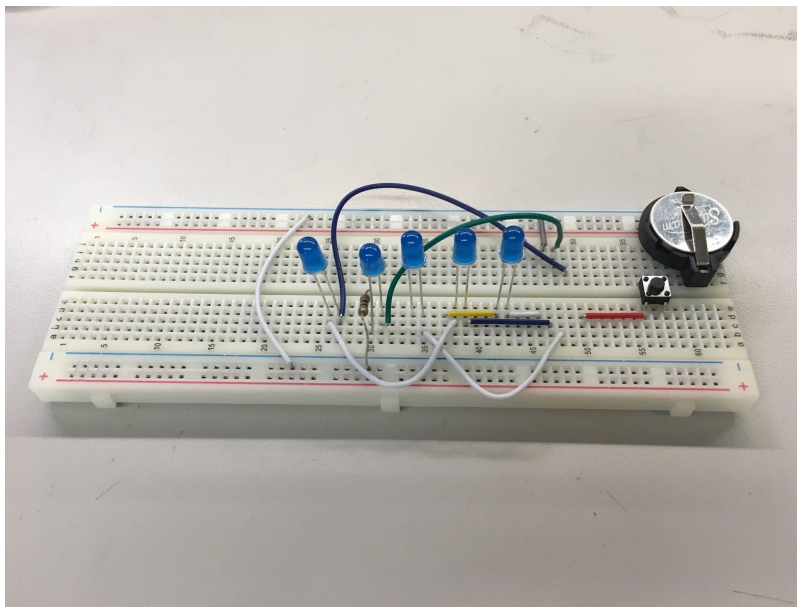
# ETUDE TWO

## Part One

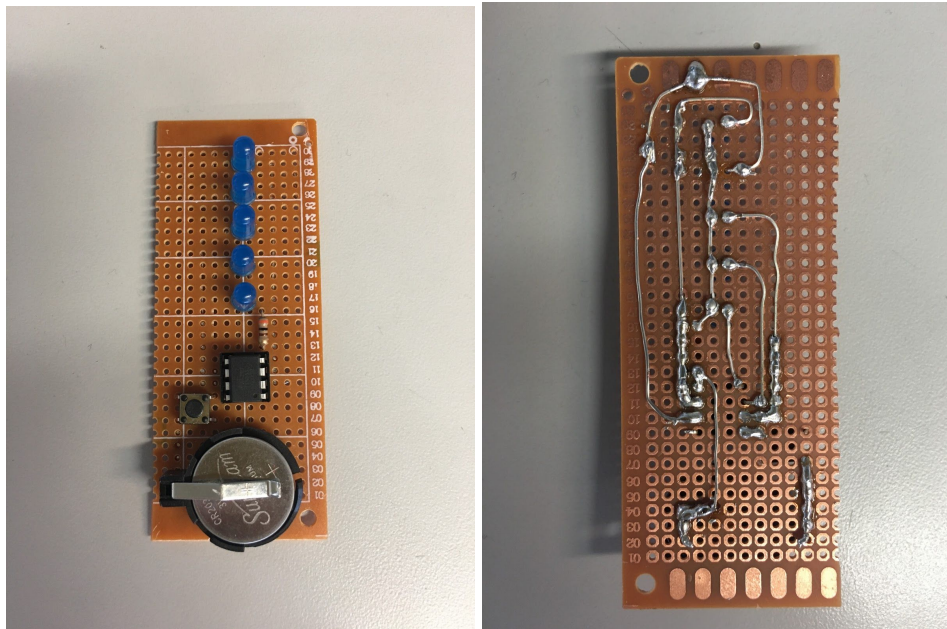
To build my Perceptron-P, I first worked on the code that I would transfer into the ATtiny85. I understood that the way the code worked for each letter was by addition and subtraction of values. With if-else statements, it is possible to identify which LED to turn on/turn off. Each letter and my new symbol (a heart) has its own series/array of integers. When the code was done, it was possible to transfer my code to the ATtiny85.

After, I started building the circuit on my Breadboard. According to the graphic depiction, the circuit was not working; some wires were missing. Basing myself from the electronic schematic, it was possible to identify the missing wires and to correct the circuit. I also realized that I had made a mistake in the wiring of my battery.

When the wiring was done and that the LED were brightening at the press of a button, it was time to test the prototype to see if it was displaying my chosen words: "I (heart) PIE". Using a low exposure option on the camera, I was able to see enough my words displaying. Obviously, the picture would have been clearer in a darker environment.



Now that the prototype was functioning, I transferred and placed the circuit's component onto a perforated circuit board (without the wires). After the soldering, the circuit was established. Weirdly, one of the LED did not seem to light properly, or light at all. After reinforcing the connections, the light still was not lighting properly. Therefore, I melted and remove the LED connection and changed that particular light.



## Part Two

The element that differentiates the Electronic Schematic of the Built Circuit and the Alternate circuit is amount and placement of the resistors. On the Built Circuit, there is only one resistor that reduces the current ( $I$ ) that will then flow in the five LEDs placed in parallel. On the Alternate circuit, there are five resistors for the five LEDs, displayed in parallel. By coupling each LED to a resistor, the circuit is likely to be more stable since the resistors divides the amount of voltage ( $V$ ) passing through them (divided by five), so that the resistors work less and will have a better longevity. Also, this Alternate Circuit is made so that if there is a problem on one resistor, only the LED linked to it has problems instead of the whole circuit.

To improve the Alternate Circuit, I removed the button and added a heart rate sensor (Sensor XD-58C). To go with my heart symbol, the Perceptron-P would be activated and modulated by the pulse, so the blood flow in the heart.

