**Alvin, ART385, Blink Without Delay, 3/31/20**

**Statement:** Use Blink Without Delay or MSTimer to create 'simultaneous' multiple outputs (and/or read multiple sensors (for example: apply 'Fading' to all 3 channels of an RGB LED))

Please include a simple **ART385 Design Document, which should be saved as a PDF and include the following sections:**

**Document Info**

**Restate the Assignment**

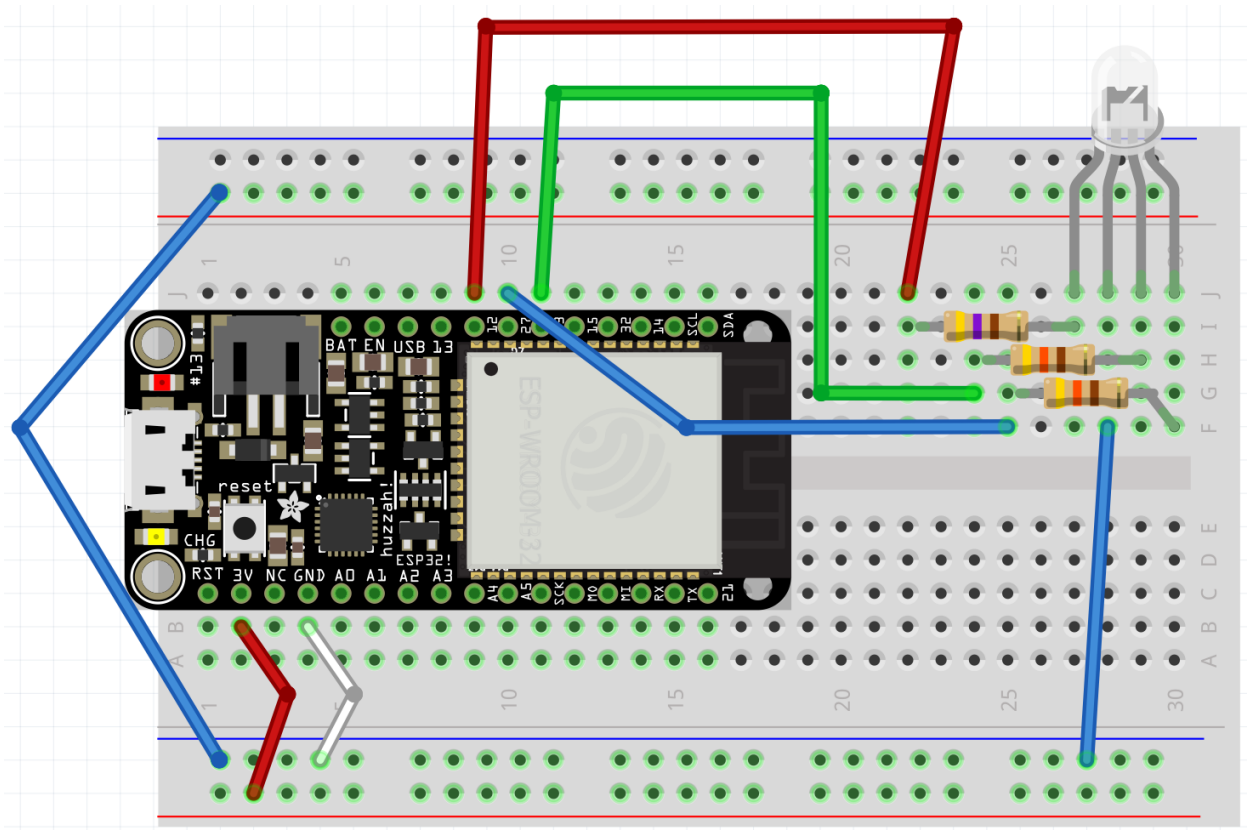**Hand-drawn or digitally drawn schematic diagram (that shows how your components are connected)**

**Reflections**

You will be assessed on code legibility (specifically the comments), proper structure for the state machine, GitHub management, experimentation, the look-and-feel of the design document itself and following all the instructions.
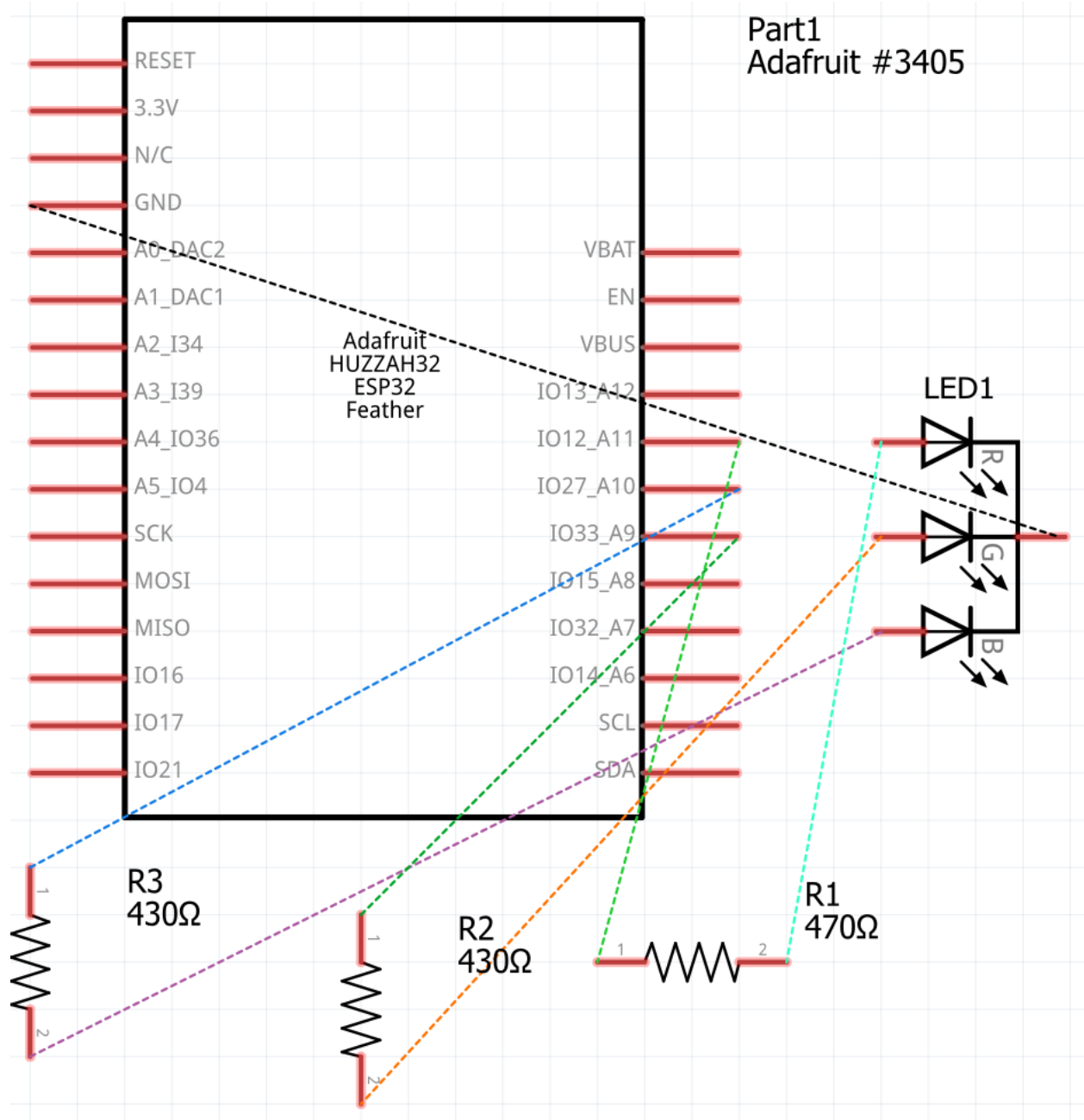
The GitHub repo should be Called **"BlinkWithoutDelay"** and should include a README.md and LICENSE file and the Art385 Design Document (called DesignDocument.pdf).
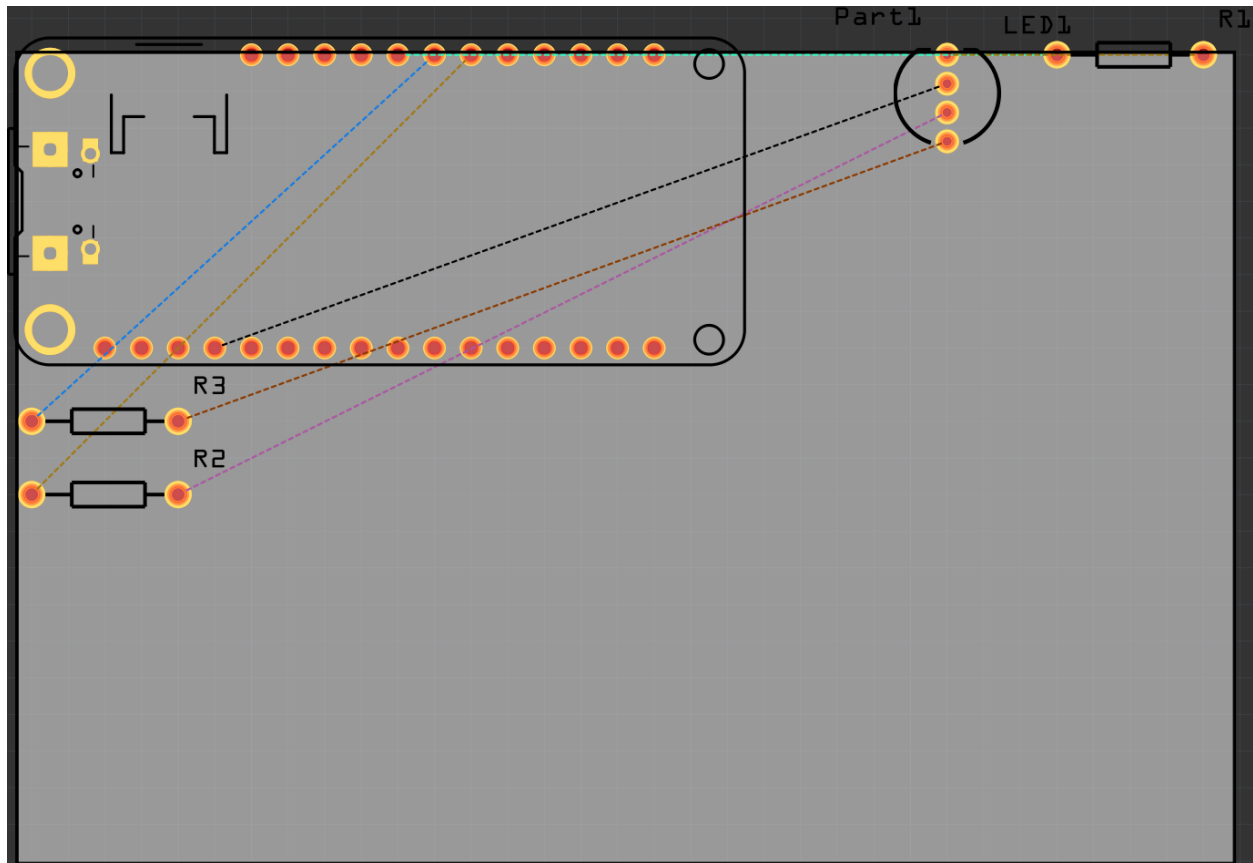
## Hand Drawn Sketches:

Breadboard:

Schematic:



Part1
Adafruit #3405

RESET
3.3V
N/C
GND
A0_DAC2
A1_DAC1
A2_I34
A3_I39
A4_IO36
A5_IO4
SCK
MOSI
MISO
IO16
IO17
IO21

Adafruit
HUZZAH32
ESP32
Feather

VBAT
EN
VBUS
IO13_A12
IO12_A11
IO27_A10
IO33_A9
IO15_A8
IO32_A7
IO14_A6
SCL
SDA

LED1

R3
430Ω

R2
430Ω

R1
470Ω

PCB:



**Reflections:** This was the first assignment I had real trouble with. For one, I had no idea what the directions meant. Once I finally figured out that what the instructions were calling for, the next part was coding…which turned out to be *much* more difficult than I thought. For one, I had to figure out *which* sample code to use; whether the RGB_PWM, BlinkWithoutDelay (Hint: This one!) or the Fade worked the best.

Of course, I had to find out after much debugging that I had wired my board wrong. And then after that, I had to figure out how to trigger my different lights. My biggest problem was trying to turn off any lights I was not using. After *even* more trial and error, I settled on using a counter coupled with a modulo operator. True, the fact that it was a modulo meant that the RGB

pattern was randomized after the first three patterns. But I could not get how to turn off the lights

I did not want on. With only two lights, I could get this to work flawlessly. With three lights

however, it took some trial and error, and even then, it was somewhat flawed.

For Project 2, I would most likely use the same board setup, except I would also add a

button and the LDR. Of course, it turns out that wiring the board turned out to be the easy part

for me in this class. If I follow the rules and color-code my wires correctly, my board should

work. It is the coding that is kicking my butt; I consider myself an average coder at best. And if I

lack any means to double-check my work on an actual board, I fear that the rest of the semester

is going to be miserable for me.