Computer Science Final

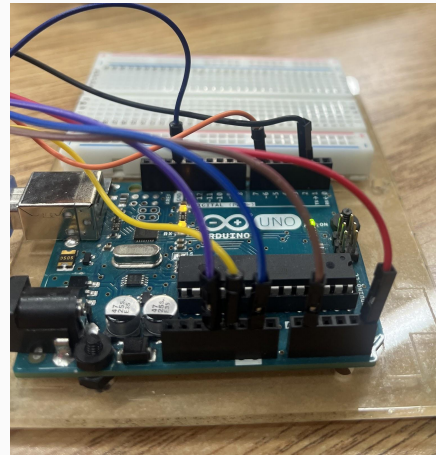## LED Strip + Analog Stick

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Materials Used

The Build

Our project consists of a 22 LED long strip, an analog stick, and some wires connected to an arduino. We have our wires plugged into ground, 3.3V, 5V, A1 and A5, as well as digital 2 and 6.

The Code

The code we designed is made in a way to activate the LED and the at the same time without the code combining and making a mess. We designed it in a way to where certain commands happen before other commands so that both can co-exist on our board.

```cpp
#include <Adafruit_NeoPixel.h>
#define BUTTON_PIN   1 // A1 AD 2 Gnd
#define PIN      6
#define NUMPIXELS 22

Adafruit_NeoPixel pixels(NUMPIXELS, PIN, NEO_GRB + NEO_KHZ800);

int randRange(int min, int max) {
    int diff = max - min;
    int r = rand() % (diff + 1);
    return r + min;
}
```

Expanding the Code

```
29 ▾  void loop() {
30
31       analogPos = analogRead(xPin);
32       xPos = analogPos/678;
33       Serial.println(analogPos);
34
35       // boolean newState = digitalRead(BUTTON_PIN);
36       pixels.clear();
37 ▾    for(int i = 0; i < floor(NUMPIXELS * xPos); i++
38         r = randRange(0,67);
39         g = randRange(0,32);
40         b = randRange(0,24);
41         pixels.setPixelColor(i, r, g, b);
42       }
43       pixels.show();
44
```

```
25   float analogPos = analogRead(xPin);
26   float xPos = analogPos/102;
27   int r, g, b;
```

```
14   int tim = 0;
15   const int xPin = 5;|
16   boolean oldState = HIGH;
17   int      mode      = 0;
18 ▾ void setup() {
19     Serial.begin(9600);
20     pinMode(BUTTON_PIN, INPUT_PULLUP);
21     pixels.begin();
22     pixels.clear();
23   }
```

Changing the Code

```
// boolean newState = digitalRead(BUTTON_PIN);
pixels.clear();
for(int i = 0; i < floor(NUMPIXELS * xPos); i++){
  r = randRange(0,67);
  g = randRange(0,32);
  b = randRange(0,24);
```
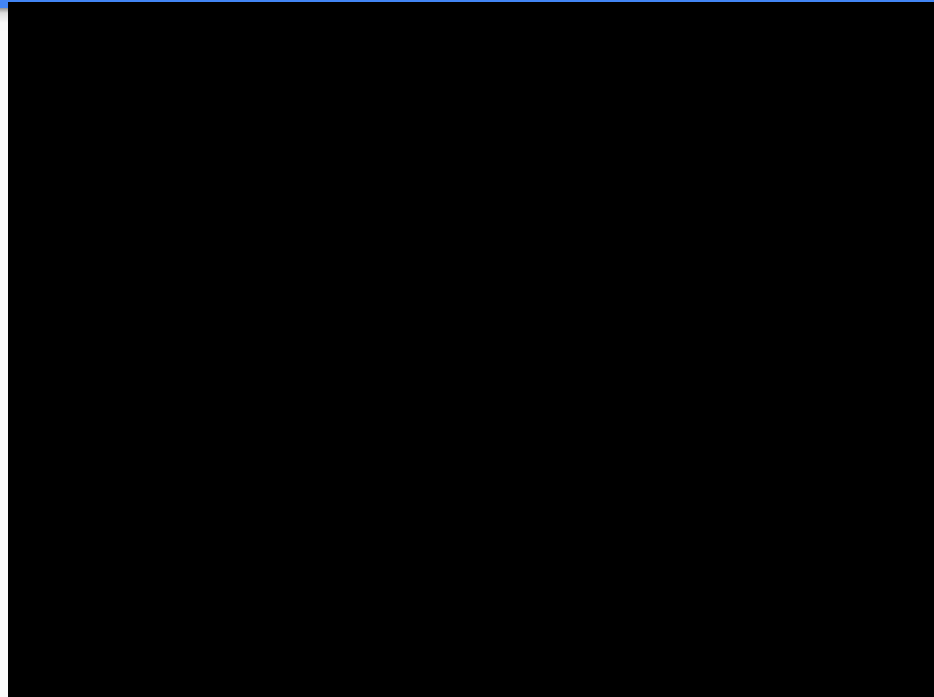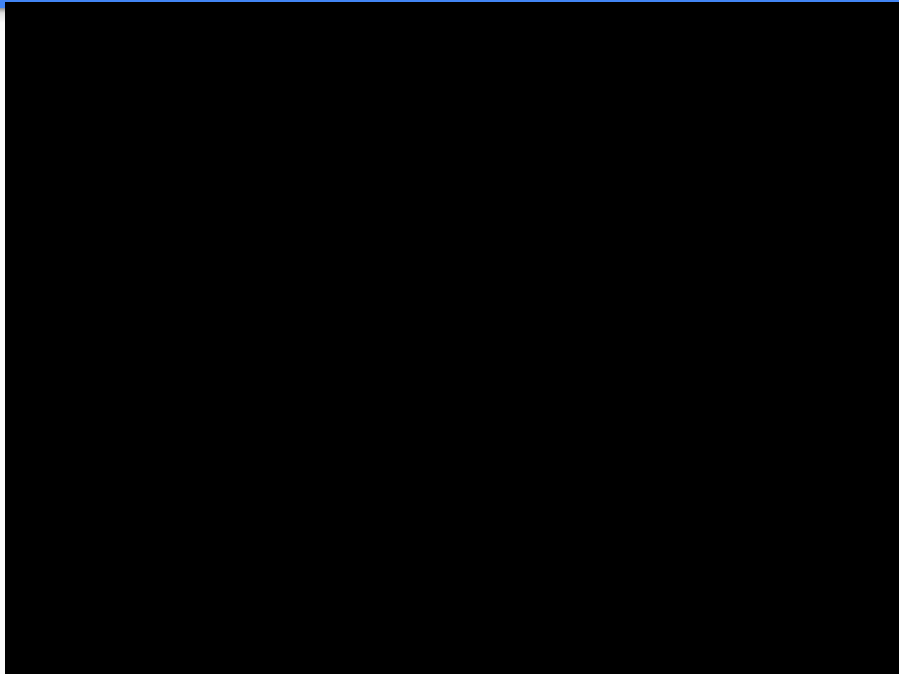
→

```
// boolean newState = digitalRead(BUTTON_PIN);
pixels.clear();
for(int i = 0; i < floor(NUMPIXELS * xPos); i++){
  r = randRange(0,67);
```

To show the individual colors, we can erase 2 of them to leave 1 segment of code. For this, we will create red by removing blue and green from the code. This makes the LED only show red.
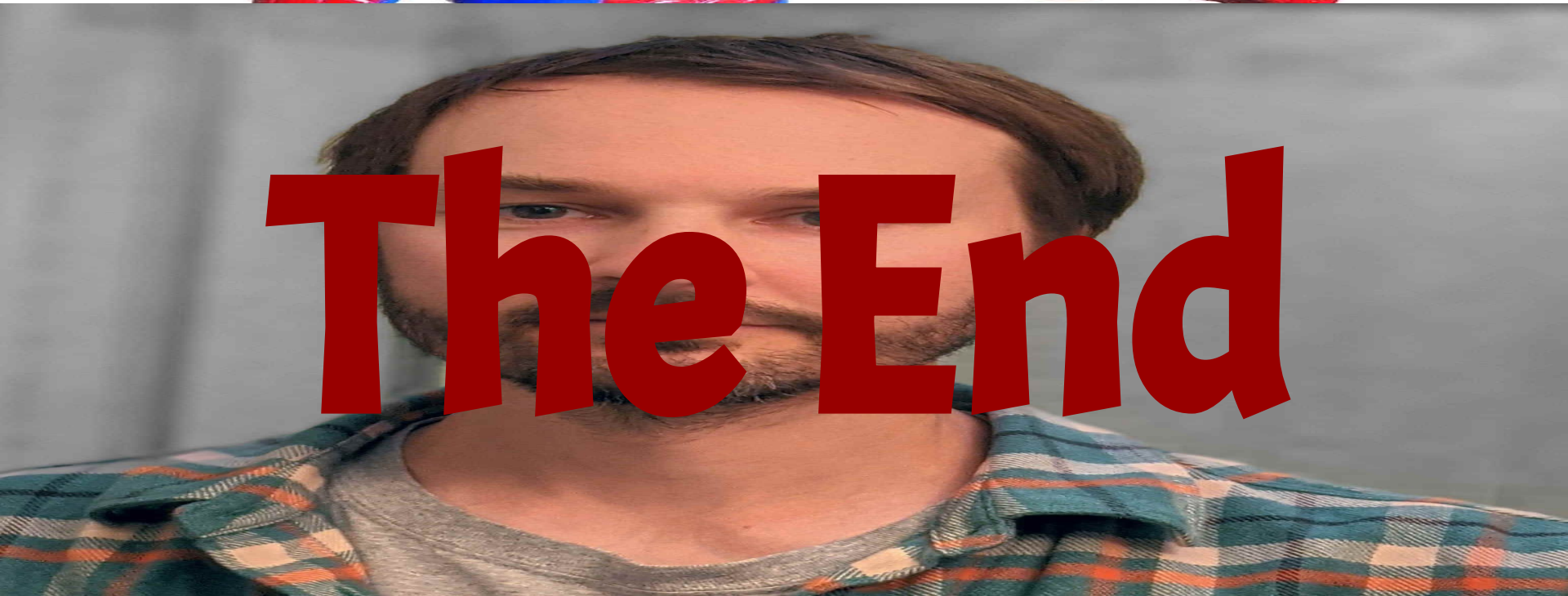
Examples
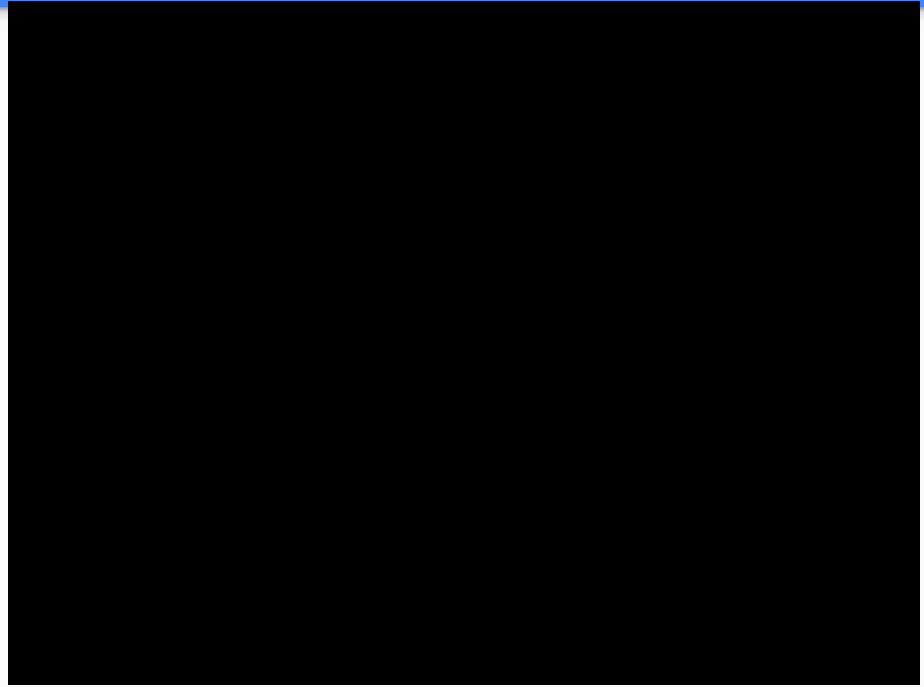
Examples

The Test

The Result

From the past 2 elements we are able to use the joystick to activate certain LED's. Moving the stick towards the wires turns them all off, and the moving the stick away from the wires turns them all on. Leaving it idle leaves 10 LEDs on, allowing for both movements being able to affect the LED.

The End

Full Code

```
#include <Adafruit_NeoPixel.h>

#define BUTTON_PIN   1 // A1 AD 2 Gnd

#define PIN    6

#define NUMPIXELS 22


Adafruit_NeoPixel pixels(NUMPIXELS,
PIN, NEO_GRB + NEO_KHZ800);


int randRange(int min, int max) {

  int diff = max - min;

  int r = rand() % (diff + 1);

  return r + min;

}
```

```
int tim = 0;

const int xPin = 5;

boolean oldState = HIGH;

int    mode    = 0;

void setup() {

  Serial.begin(9600);

   pinMode(BUTTON_PIN,
INPUT_PULLUP);

   pixels.begin();

   pixels.clear();

}

float analogPos = analogRead(xPin);
```

```
float xPos = analogPos/102;

int r, g, b;


void loop() {


  analogPos = analogRead(xPin);

  xPos = analogPos/678;

  Serial.println(analogPos);

/ boolean newState =
digitalRead(BUTTON_PIN);

  pixels.clear();
```

```
 for(int i = 0; i < floor(NUMPIXELS *
xPos); i++){

  r = randRange(0,67);

  g = randRange(0,32);

  b = randRange(0,24);

  pixels.setPixelColor(i, r, g, b);

}

pixels.show();


delay(100);
```