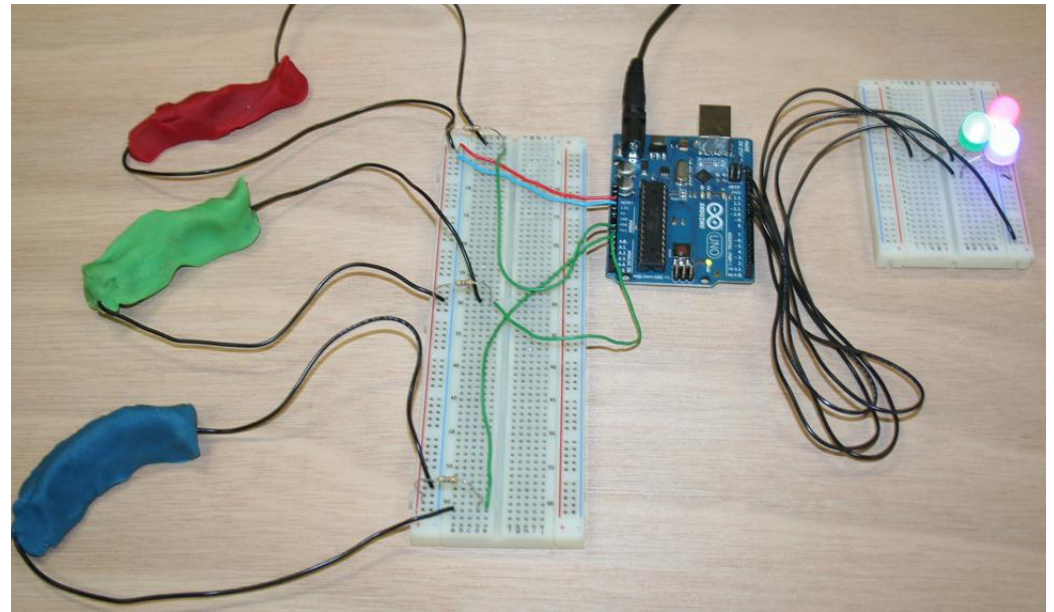




Squishy RGB LED Controller

Squishy Circuits can be coupled with microprocessors, such as an Arduino UNO board, to create advanced projects. For this example, we use dough to control the brightness of three different LEDs, one each of red, green and blue. Mixing these three lights can create many different colors and hues.



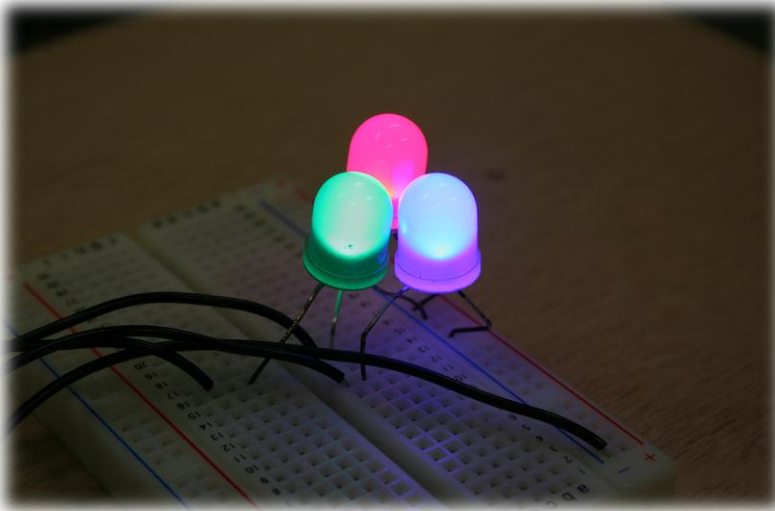


Squishy RGB LED Controller

A diffuser can be used to help mix the colors. When red, green and blue light are mixed, white light is created.



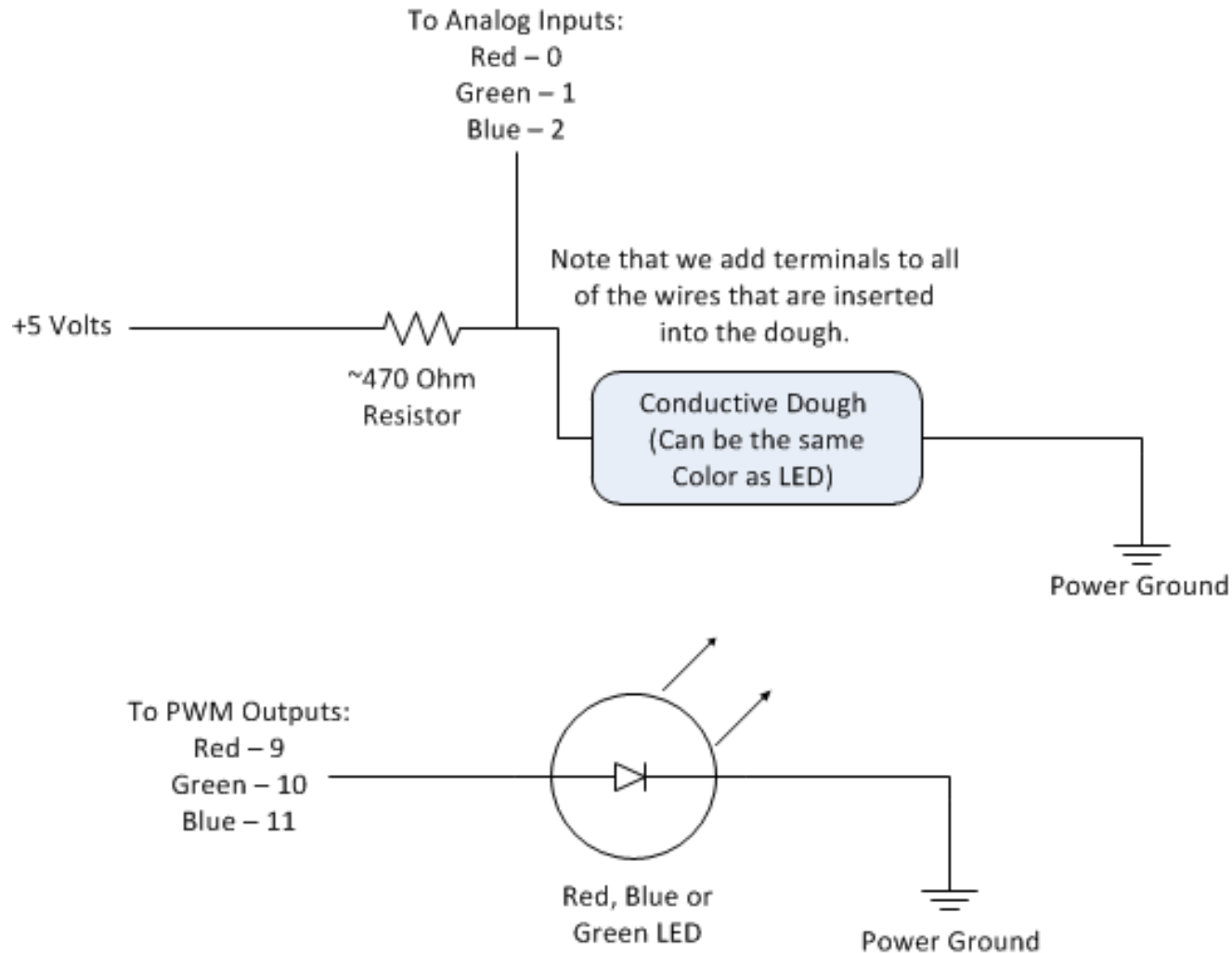
Changing the dough's length (resistance) changes the brightness of one of the three LEDs.





Schematic

You will need (3) Sets of These Schematics. One for each Color Dough and LED.





Squishy RGB LED Controller - Code

//Squishy RGB LED Controller - Code written by Matthew Schmidtbauer for the Squishy Circuits Project with AnnMarie Thomas

//Port Definitions and Variable Declarations:

```
#define RED_LED 9
#define GREEN_LED 10
#define BLUE_LED 11
int analog_RED = 0; // common resistor connected to analog pin 0 outside
leads to ground and +5V
int raw_RED = 0; // variable to store the raw input value
int BRIGHTNESS_RED = 0; //Variable to store Brightness Value (0-255)
int analog_GREEN = 1; // common resistor connected to analog pin 0 //
outside leads to ground and +5V
int raw_GREEN = 0; // variable to store the raw input value
int BRIGHTNESS_GREEN = 0; //Variable to store Brightness Value (0-255)
int analog_BLUE = 2; // common resistor connected to analog pin 0 // outside
leads to ground and +5V
int raw_BLUE = 0; // variable to store the raw input value
int BRIGHTNESS_BLUE = 0; //Variable to store Brightness Value (0-255)

void setup()
{ //Serial.begin(9600); //Uncomment all Serial Commands to allow Serial
Communications for Debugging
//Set Output Pins:
pinMode(RED_LED, OUTPUT);
pinMode(GREEN_LED, OUTPUT);
pinMode(BLUE_LED, OUTPUT); }

void loop()
{ //Read Voltages over Dough:
raw_RED = analogRead(analog_RED);
raw_GREEN = analogRead(analog_GREEN);
raw_BLUE = analogRead(analog_BLUE);
```

```
/* Serial.print("RED: ");
Serial.print(raw_RED);
Serial.print(" Green: ");
Serial.print(raw_GREEN);
Serial.print(" Blue: ");
Serial.println(raw_BLUE); */
```

```
//Generate Brightness Value (PWM Values = 0-255) from Raw Voltages (0-
1023)
if(raw_RED <=150)
{BRIGHTNESS_RED=255;}
if(raw_RED >=500)
{BRIGHTNESS_RED=0;}
else
{BRIGHTNESS_RED=-.7286*raw_RED+364.45;}
analogWrite(RED_LED, BRIGHTNESS_RED); //Output PWM Value to Light

if(raw_GREEN <=150)
{BRIGHTNESS_GREEN=255;}
if(raw_GREEN >=500)
{BRIGHTNESS_GREEN=0;}
else
{BRIGHTNESS_GREEN=-.7286*raw_GREEN+364.45;}
analogWrite(GREEN_LED, BRIGHTNESS_GREEN); //Output PWM Value to
Light

if(raw_BLUE <=150)
{BRIGHTNESS_BLUE=255;}
if(raw_BLUE >=500)
{BRIGHTNESS_BLUE=0;}
else
{BRIGHTNESS_BLUE=-.7286*raw_BLUE+364.45;}
analogWrite(BLUE_LED, BRIGHTNESS_BLUE); } //Output PWM Value to
Light
```