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Mechatronics  
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### Light Sculpture Project Proposal

#### 1. Introduction:

I have always been fascinated by both light (as it behaves as both particle and wave), and color. Prior to attending Graduate School, I would enjoy mixing and creating many RGB codes in order to assign the proper colors to the design at hand. As a visual artist and painter, I've typically gravitated towards brightly-colored, fluorescent hues, and...indigo. I can never have enough indigo. The color that is not quite blue, yet not quite purple has fascinated me for the past five years. Bubblegum pink, too. And here I was thinking that my favorite color would be royal purple from age 6 until.

A person's relationship to color can be very personal. Color can evoke feelings of happiness, gloom, excitement and jubilation. Color can also tell us when to stop, to take caution, or to forge ahead. I wanted to explore one of my favorite pastimes while stepping out into the world of electronics. When I discovered the 4-legged RGB LED, the physics nerd in me could not be more excited. I would soon learn how to program an Arduino to make any color on the RGB spectrum via the LED!

#### 2. Materials:

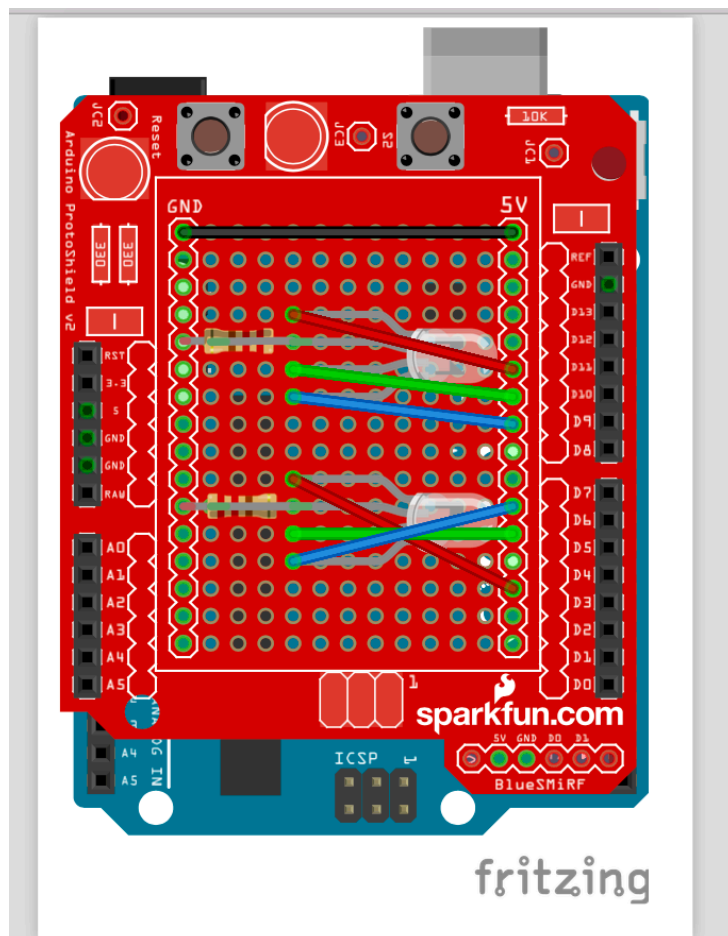
1. Arduino
2. Prototype Shield
3. Two (2) 4-legged RGB LEDs
4. Wires
5. Two (2) resistors
6. Soldering iron with requisite solder
7. One (1) 9-Volt battery
8. Wires to connect battery to Arduino
9. Vase or vessel to contain Arduino + Shield

#### 3. Procedure:

1. Build the requisite shield and solder it.
2. Fit shield into the Arduino.
3. Find, or build your own code involving the activity of 2 RGB LEDs.
4. Verify, and upload the code to your Arduino.
5. Plug your Arduino + shield into a 9-Volt Battery.
6. Be amazed!
7. If you wish to make a light sculpture or installation, place your Arduino + shield into a gorgeous vessel! Don't be afraid to get creative here.

#### 4. Outcomes/ Lessons Learned:

1. I love working with RGB LEDs, and the colors I was able to achieve are rich and luminous; pink-red-orange, turquoise and mustard yellow are just some that are present in my installation.
2. Soldering takes lots of practice. Be patient with yourself.
3. You can always heat up a cold solder.
4. You can “suck out” extra solder if you move quickly enough. This also takes some practice. 😊
5. Writing your own code is satisfying when it works!
6. If given more time, I would like to troubleshoot why each RGB LED emits 3 colors instead of 6.
7. 3D printing is expensive. Amazon provided a less expensive vessel option for my project (although I did 3D model and render some of the vessels I would have printed. [see subsequent pages for more information]).



[Image 1.] Fritzing Sketch for Project (with a too-small shield)