

Lab 3: Paper Circuits

SEPTEMBER 29, 2016

VERONICA SPENCER

A solid orange horizontal bar at the bottom of the slide.

Conductive Tape and Paper Circuits

You can make a circuit with a breadboard and jumper wires, or soldering together wires, or running it off of a PCB.

Conductive tape (with conductive adhesive) can also be used to make a complete circuit.

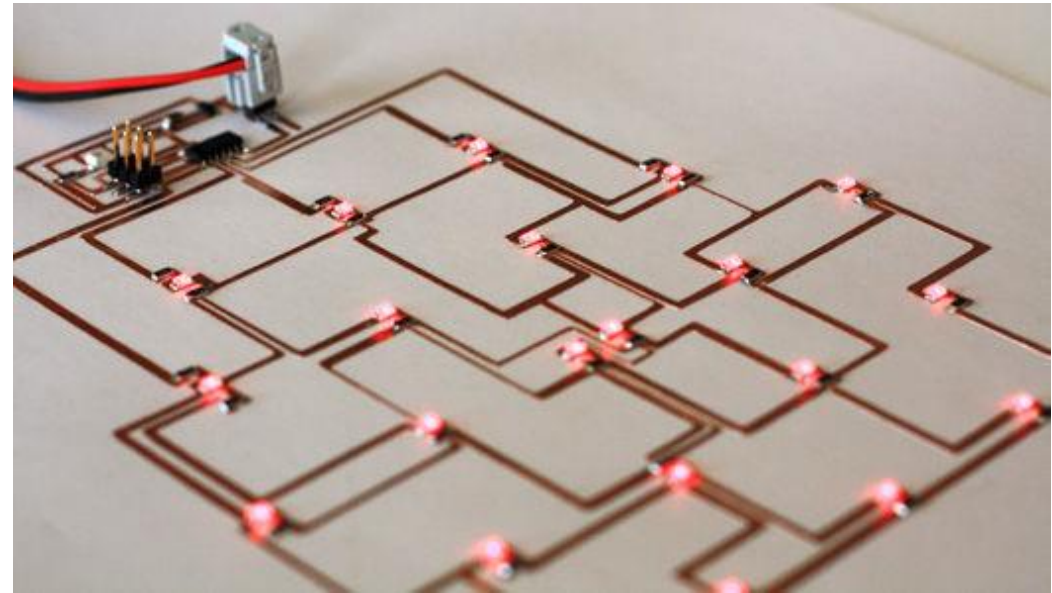


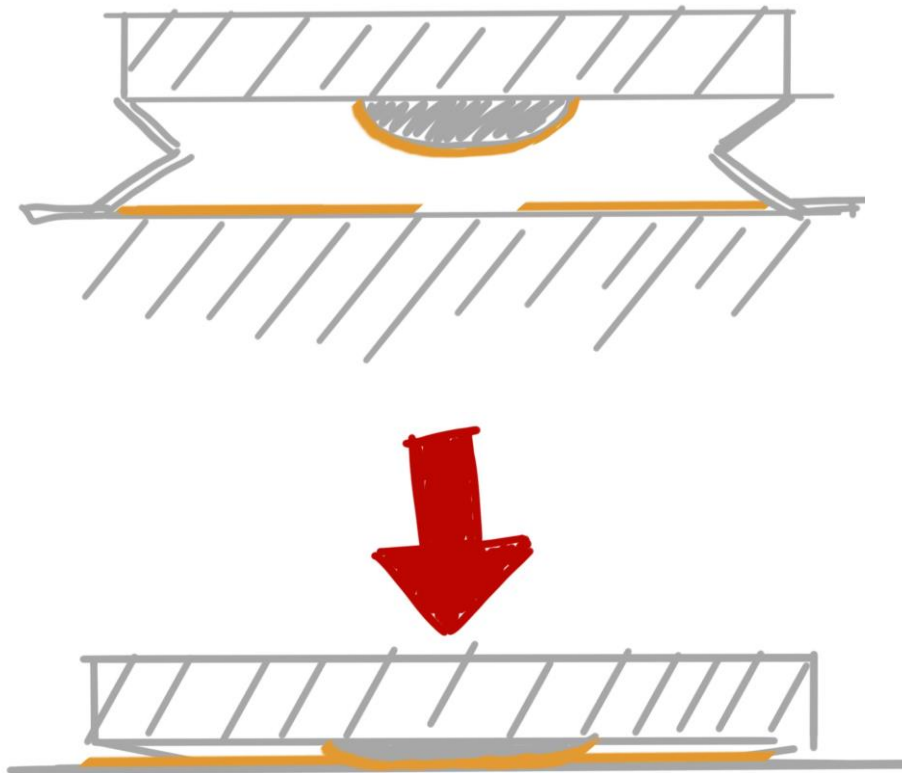
Photo Credit: <http://www.instructables.com/id/light-circuit/>

Making a Switch or a Button

When you bridge two electronic pathways of different voltages, you complete a circuit, and allow a current to pass thru.

That's what a switch does.

Copper tape can bridge connections, too.



Today's Activity

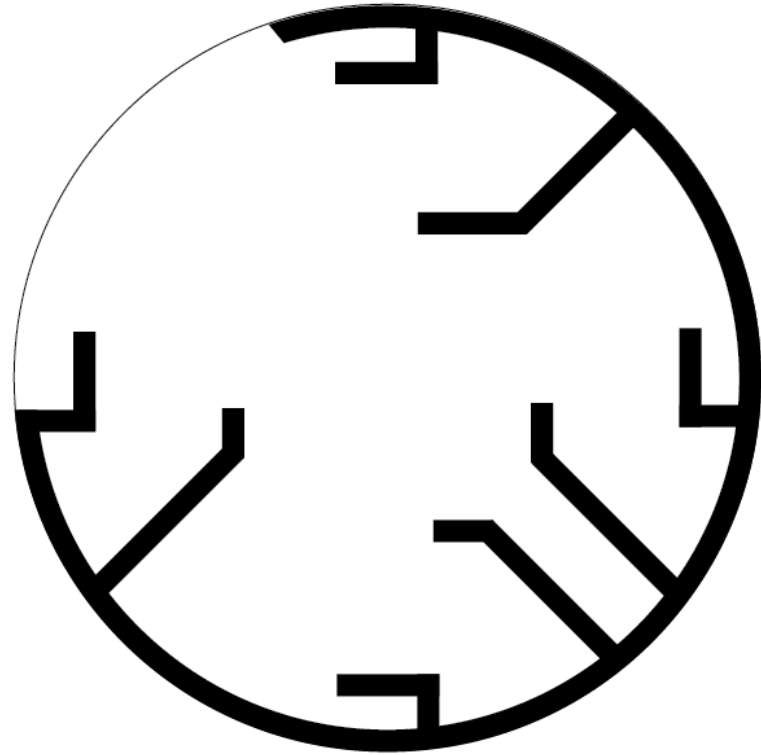
1. Choose a partner.
2. Gather your supplies:
 1. A chipboard template
 2. 4 leds (red, yellow, blue, green)
 3. Some copper tape
 4. A piezo buzzer
 5. An IPDL Arduino Kit
 6. Some jumper wires



Create your Ground Bus.

Place copper tape on the ground track.

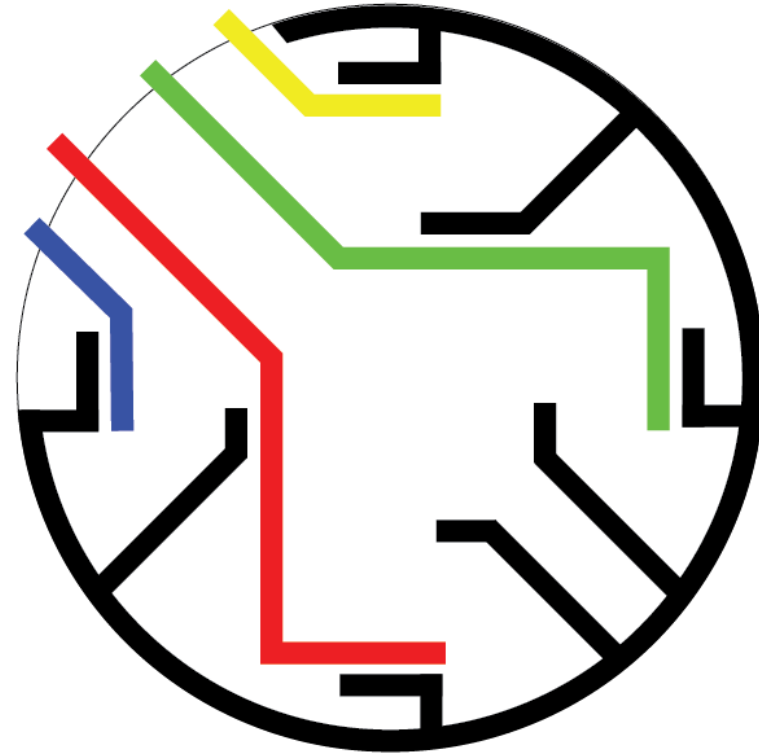
Sandwich the white wire between two layers of copper tape.



Create the button traces.

Follow the laser cut traces, and apply copper tape where appropriate.

Sandwich the appropriately colored wire between two layers of conductive tape.



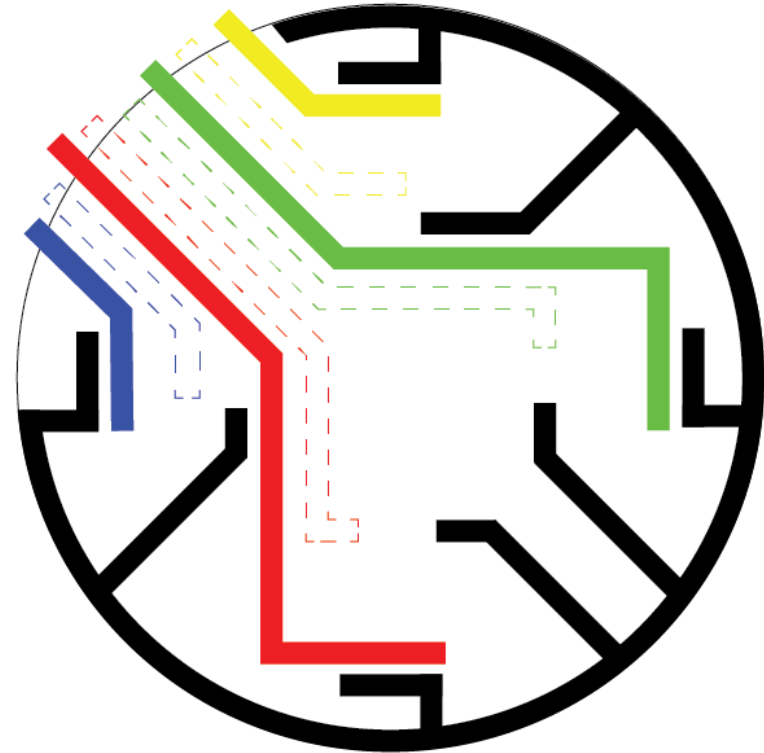
Create the LED traces.

Identify a spot to place a resistor. Leave that spot bare.

Follow the laser cut traces, and apply copper tape where appropriate.

Sandwich resistor leads between two layers of conductive tape.

Sandwich the appropriately colored wire between two layers of conductive tape at the end of the trace.



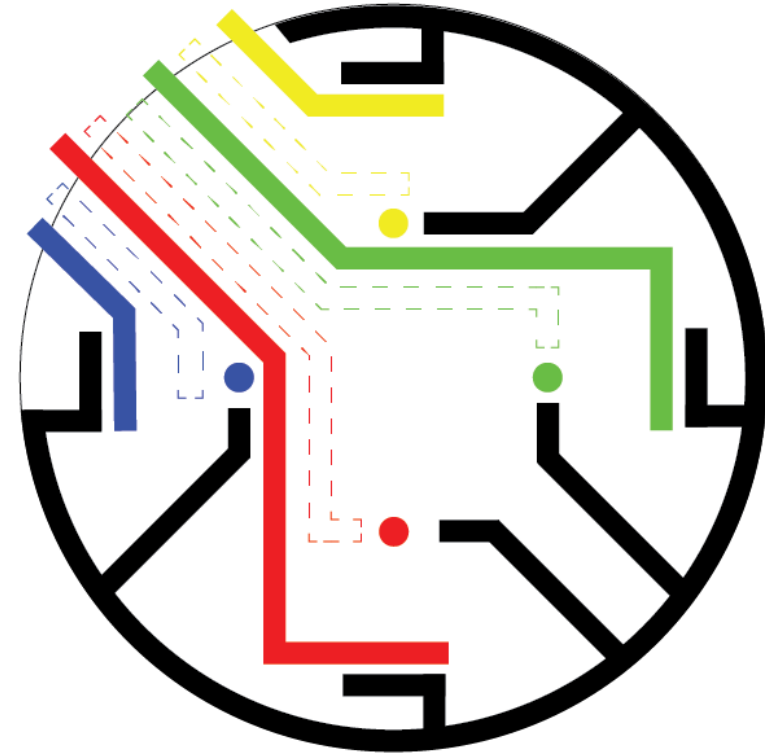
Place LEDs

Fold the leads of the LED such that they make contact with the copper traces.

Double check that the leads are in the correct orientation on the paper (ie, +/-)!

Bend the ends of the leads to make the LEDs more stable.

Sandwich the LED leads between two pieces of copper tape.



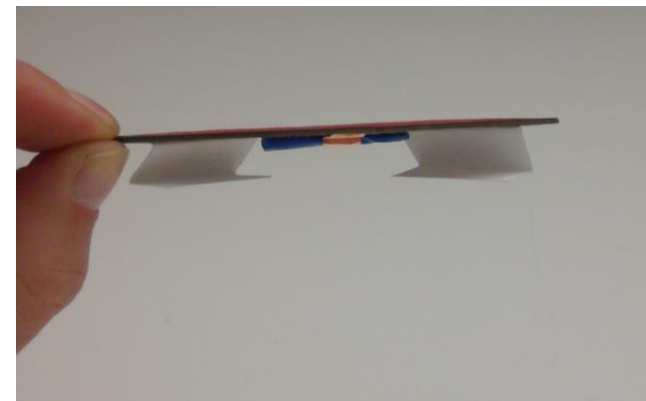
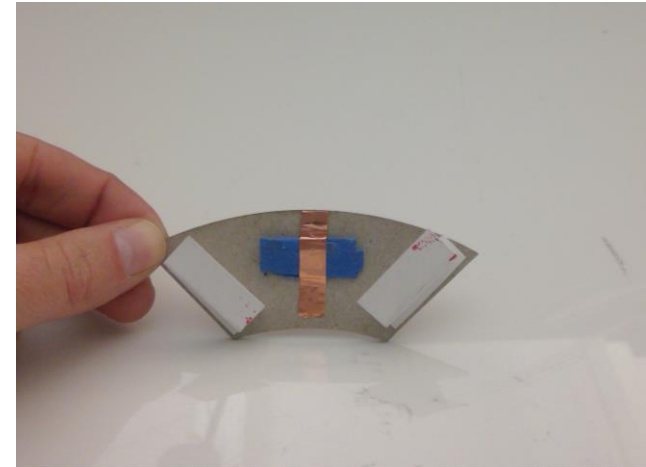
Make 4 Buttons – View example.

Create a small roll of tape for the copper tape to wrap over.

Center copper tape over the blue tape bundle.

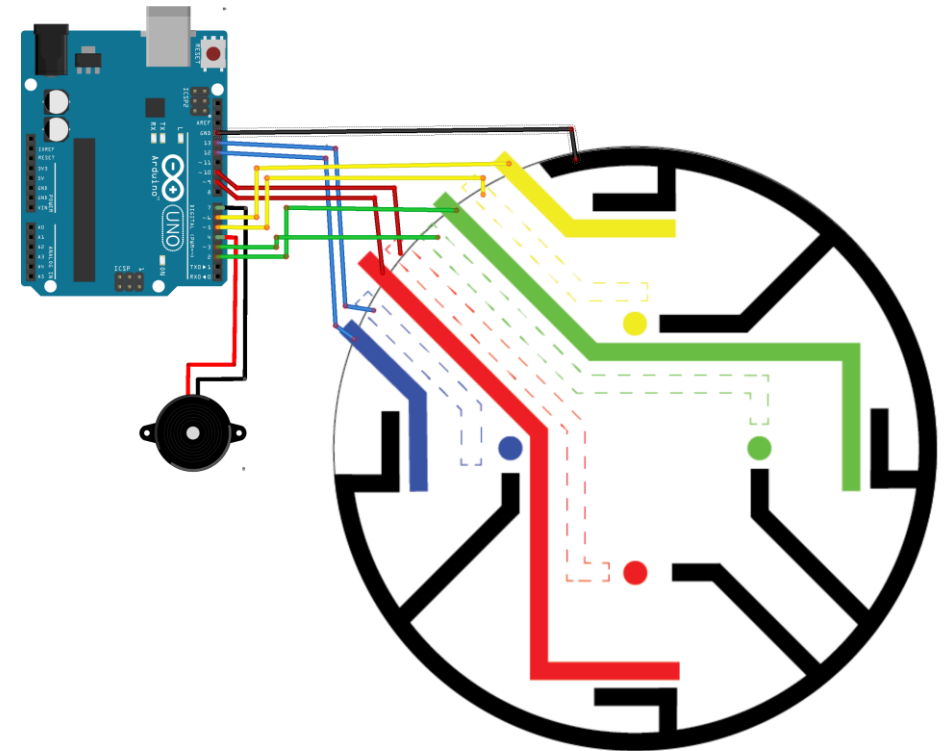
Make 2 accordion feet per button, and attach them at the edges of the button.

Glue the accordion feet into place on the circuit board. (Use the top cover for alignment.)



Hook up your game to the Arduino:

- 2: Green button
- 3: Green LED
- 4: buzzer wire 1
- 5: Yellow LED
- 6: Yellow Button
- 7: buzzer wire 2
- 9: Red Button
- 10: Red LED
- 12: Blue Button
- 13: Blue LED
- GND: Ground bus



Load up the code!
