Wiring a Motion and Sash Height (MASH) Alarm

**What you will need:**
- Arduino UNO
- Piezoelectric Buzzer
- PIR Motion Sensor
- Mini-Breadboard (at least 5x8 squares)
- LED
- Magnetic Reed Switch
- 3 - 10K Ohm Resistors

**Wiring:**
- 4 - Short Male-Male wires
- 6 - Short Male-Female wires
- 2 - Long Male-Female wires
- 1 Short Female-Female wire

**Tips Before Getting Started:**
- Placing the resistors first can be helpful, as they are hard to make neat when there are many wires in the way.
- The wire extending the BLACK (Ground) column [shown below in yellow] can connect to a different column e.g. the sixth or seventh columns (or even the first column on the other half of the breadboard) if that makes construction easier.
- After wiring everything together, you can bend some of the wires on the breadboard to make the device fit neater in the box and make the connections more secure.
- If some of the connections between the jumper wires and peripherals are loose, use hot glue or another electronics-safe adhesive.

**Note:** The columns on the breadboard are connected as shown below. Wires plugged in to the same row will not be connected and wires connected in the top columns will not be connected to wires in the same column on the bottom half (unless bridged with a wire).

Your breadboard will look something like this. We will utilize a space that is 8 columns wide or 5x8 squares. We will only use 4 columns, highlighted below. It is placed on the Arduino like so:

Connect the 5V terminal on the Arduino UNO to the first square in the red column of the breadboard, and the GND (either one) terminal to the first square in the black column. (Short M-M wires)

Connect the positive (+) end of the buzzer to pin 10 on the Arduino and the negative (-) end to the last square on the 8th row of the breadboard. This row is connected to the BLACK column which provides ground to the buzzer. (Short M-F wires)

Connect VCC to the RED column, GND to the BLACK column, and OUT to PIN 2 on the Arduino. (Short M-F wires)

Connect one end (either one) of the magnetic switch to the BLACK column and the other end to the third square of the fifth row (green). This is where the switch gets power from, as the resistor connects the GREEN column to the RED column. The wire connected to pin 7 receives the input from the switch. (Long M-F wires)

**See notes on connecting the magnetic switch wires to the jumper wires**

**Be sure to connect the last square in the BLACK column to the first square in the BLUE column. Also connect the second square in the GREEN column to pin 7 on the Arduino**

Removing the semisphere part of the motion sensor will allow you to see which pins are VCC, OUT, and GND. Make sure you are connecting the right pins to the right places on the breadboard!

(One short F-F wire, one short M-F wire, one 10K Ohm resistor)

(The portion of the breadboard we utilize has been expanded to show more detail)