In order to get the lights and sound working correctly, you will need to connect them to the Arduino in the correct manner. A breadboard and the ATmega2560 will be used in this step, and you should fit them in the included slot inside the frame. You can find a tutorial about how to use breadboards [here](). All of the pins on the Arduino are numbered individually, so each one can be coded to the users preference. In this project, the code is already provided, so all that needs to be done is *upload the code* and *connect the wires*. First, we want to connect all the LEDs to a bread board so that they are able to be plugged in to the Arduino. In our example, we use orange and green LEDs, but you can use whatever color you like. It is important to note before you begin to clearly mark which end of each LED is the short and long so that you can distinguish them later.
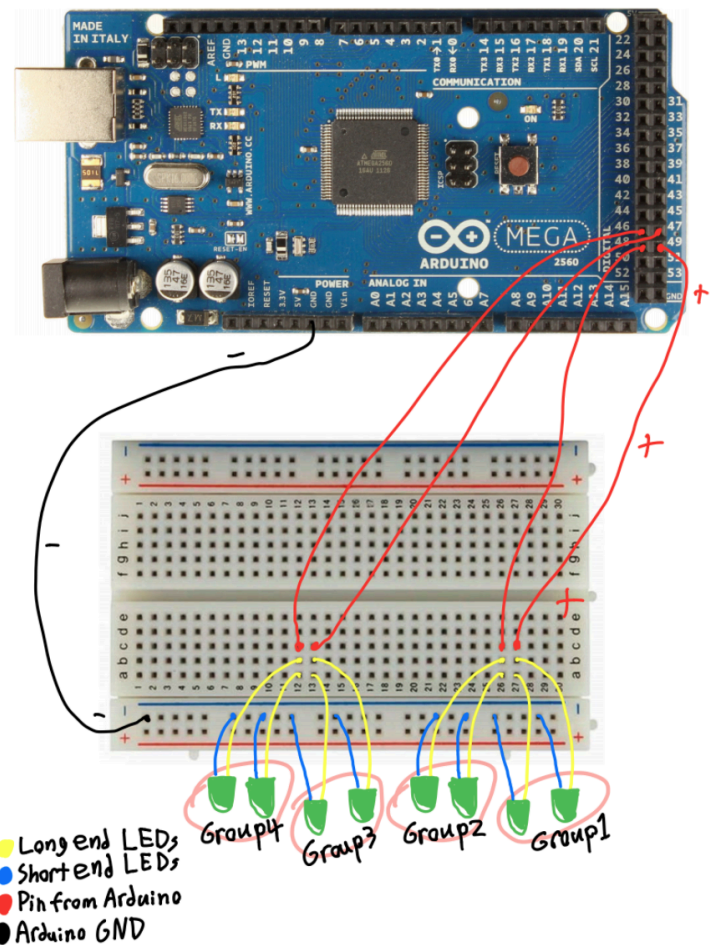
Once your LEDs are connected to the jumper wires, it's time to hook them up to the Arduino. The positive end (long end) of the LEDs will each go to a specific pin in the Arduino. The negative end (short end) of the LEDs will all go to the GND pin of the Arduino. Since there are obviously not enough spots to put each negative LED pin, we will use the small breadboard provided to accomplish this. Each pin from **42 - 49** is used to control groups 1 - 8 of the LEDs. Each group will show the same effect since they share signal from the same pin of the Arduino. The figure on the right shows how the first four groups will be connected. One LED from each "group" should be placed in order on either side of the gun for the effects to show correctly.

Once the LEDs are wired and in place, you can connect the speaker. Make sure you clearly mark which end of the speaker wire is negative (black) and positive (red). You will want to solder or crimp the wires from the speaker so they fit properly in the Arduino. Once the wires are ready, connect the red wire to **PIN 18** of the Arduino, and the black wire to another open GND pin on the Arduino.

Next, we want to connect the pushbutton so that we can trigger the effects. This part will need to be either crimped or soldered as well. These pushbuttons work with negative logic. This means that it is normally connected and sending electricity through it when it's in an unpressed state. In order to make the button function correctly, we need to connect positive voltage (**5V pin on the arduino**) to one end, and a resistor to the other end with another jumper wire going to **PIN 24** of the Arduino and ground. The figure below explains how this should look, although you will crimp or solder the connections instead of using a breadboard for this step. The resistor needed for this step is 220Ohms, and has 3 red lines indicating its value.
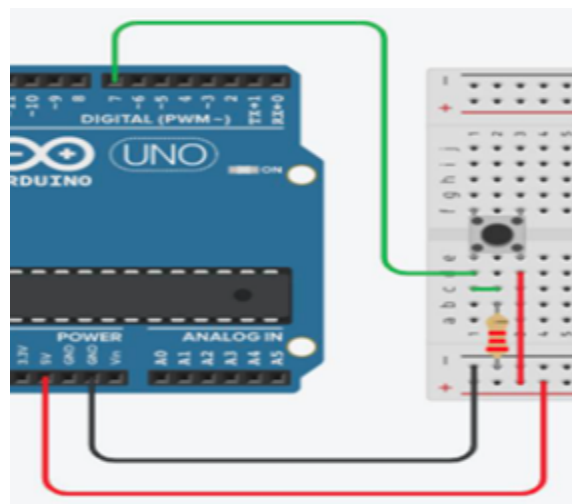
(The green wire in the picture will go to PIN 24 instead of 7)

The RGB LED will be connected with 4 different jumper wires on the breadboard. The longest pin will need to be connected to a 5V pin on the Arduino. The other 3 wires should be connected as such:

PIN 36: R
PIN 35: G
PIN 34: B

R   B

G

(+)

Common Anode

The final connection you need will be the power source. For this project we are using a 9V battery to power the Arduino. Attach the 9V battery to the DC plug adapter cable from the wiring kit, and plug it into the DC port on the Arduino.