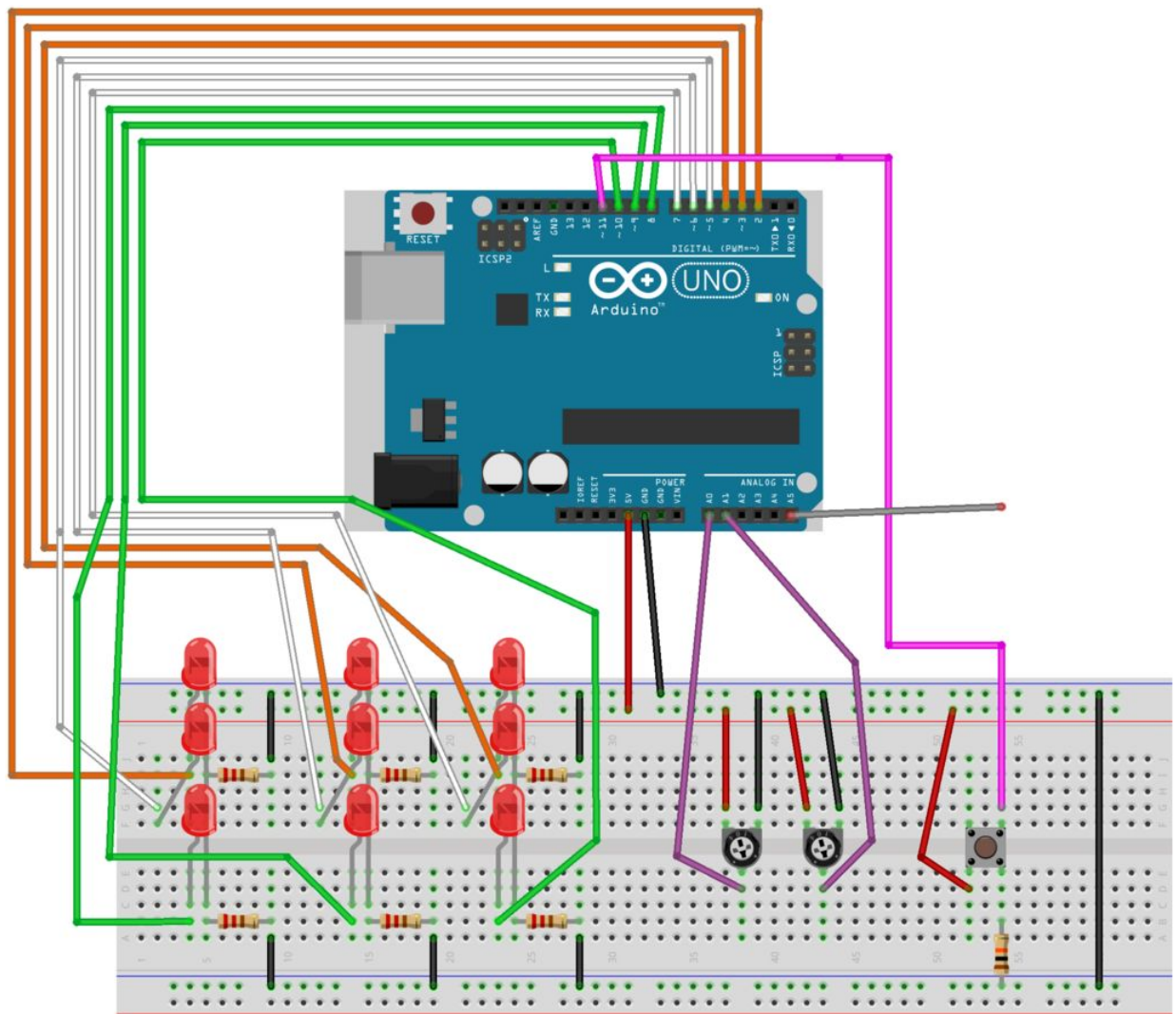


# LED MATRIX

by AaronB299 (/member/AaronB299/) Follow

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(<https://cdn.instructables.com/ELT/MN02/IDYLQ0EY/ELT/MN02/IDYLQ0EY/LARGE.jpg>)

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This describes in detail how to create an LED matrix that allows one to attempt to find a hidden element in the LED matrix. The potentiometer on the left controls the row while the potentiometer on the right controls the column selection. To guess where the hidden element is, press the button after adjusting your selected row

and column in the matrix. If you guess correctly, then the LEDs will flash on and off 3 times and the hidden element will change positions. However, if you guessed incorrectly, the LEDs will not celebrate with flashing and the hidden element will change positions.



Add Tip



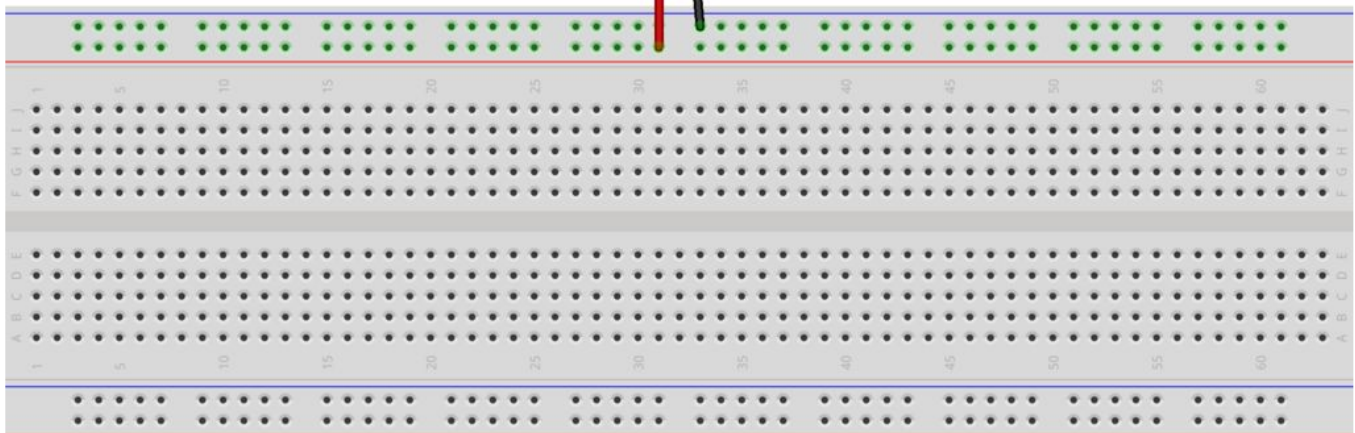
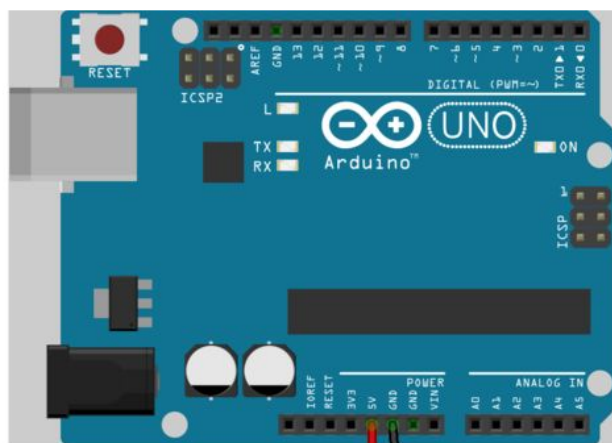
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## Step 1: Basic Setup



<https://cdn.instructables.com/F2C/ES4V/IDV1DCEP/F2CES4V/IDV1DCEP1ARGE.jpg>

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1. Add Arduino UNO R3
2. Add breadboard

3. Connect GND to the negative rail of the breadboard

4. Connect 5V to the power rail of the breadboard



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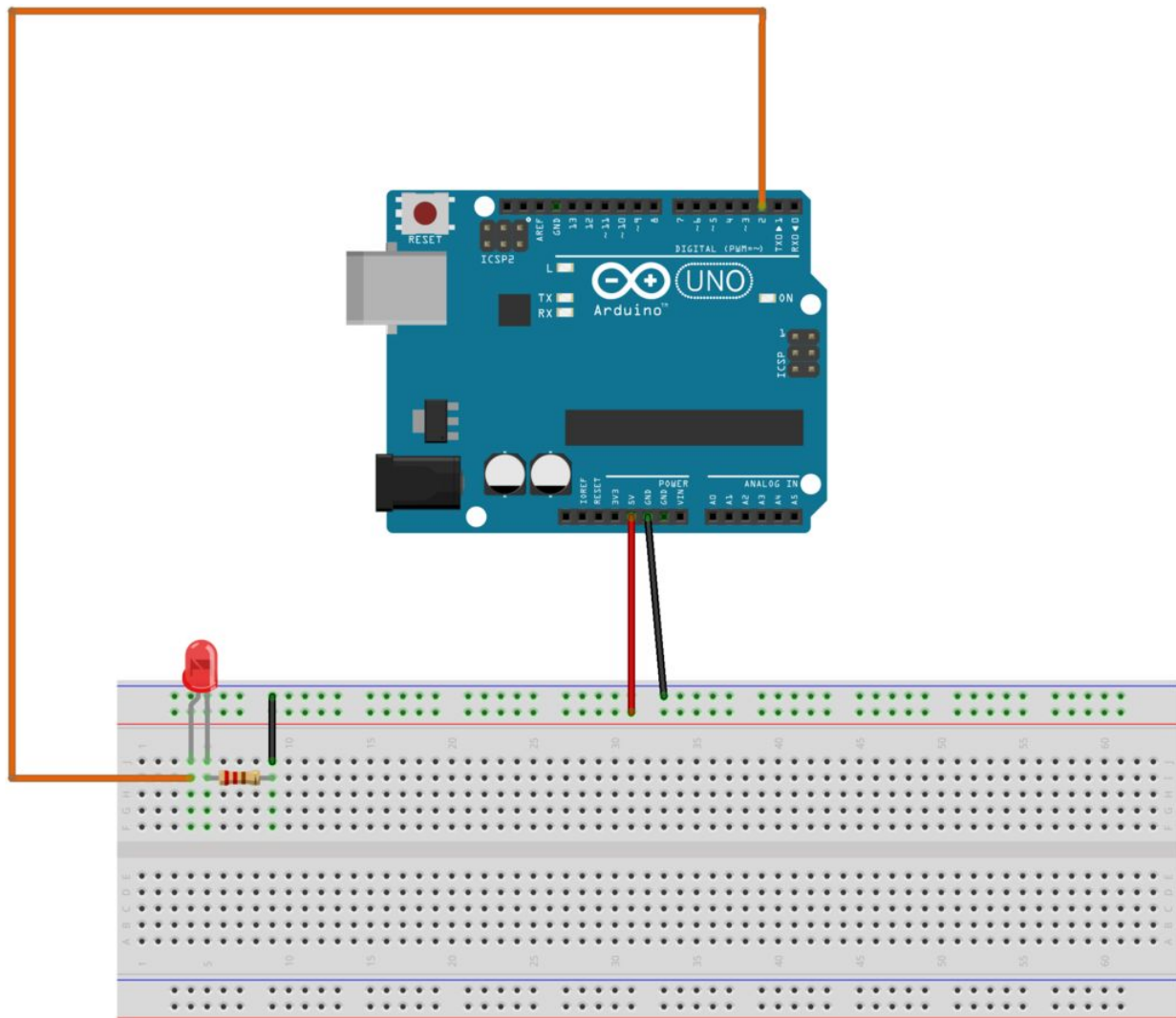
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## Step 2: Add an LED



<https://ada-instructables.com/EA1V/Q17/IDV1/IDV1/EA1V/Q17/IDV1/IDV1/LABCE/IDV1/IDV1/> 

We will be adding many LEDs (9 total). First, let us look at one LED connection:

1. Add 1 LED

2. Connect the negative line of the LED to a 220Ω resistor

3. Connect the resistor to the negative line of the breadboard
4. Connect the power line of the LED to pin 2 on the Arduino



Add Tip



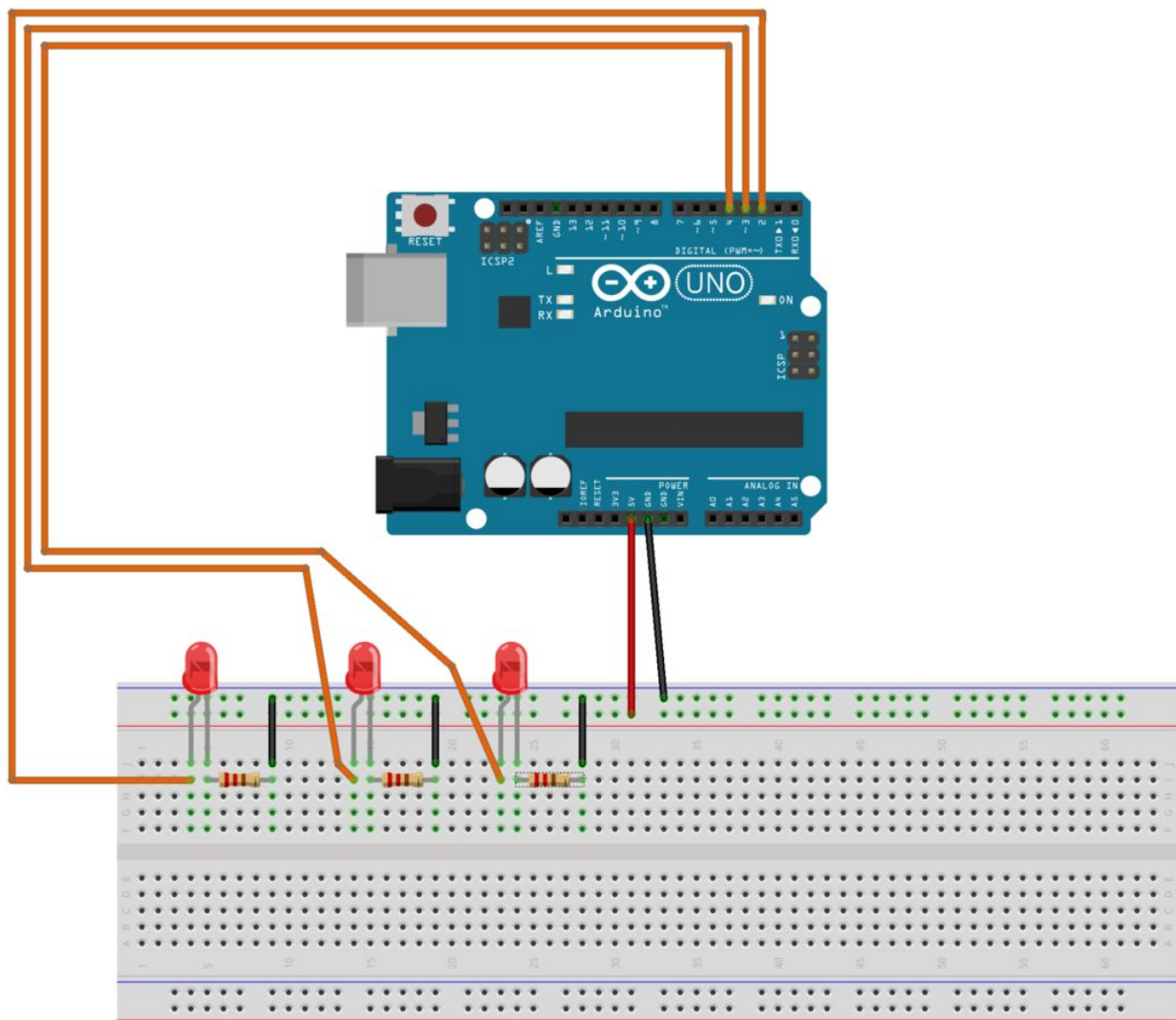
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## Step 3: LED Row 1 Setup



<https://cdn.instructables.com/F23/S2QD/IDV1B1Q1/F23S2QDIDV1B1Q1LARGE.jpg>

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Throughout the LED pin setup, the pins will be referred to by their matrix position. For example, m(row\_number, column\_number). The letter "m" denoting the matrix. For reference, m(0, 0) is the first pin added in the top left.

Don't worry if you mess this up, you can double check your connections with the provided images. For now, just follow the directions:

1. Add two more LEDs to the right of the first with their corresponding 220 $\Omega$  resistors connected to the negative line of the breadboard
2. Connect LED at m(0,1) to pin 3 on the Arduino
3. Connect LED at m(0,2) to pin 4 on the Arduino



Add Tip



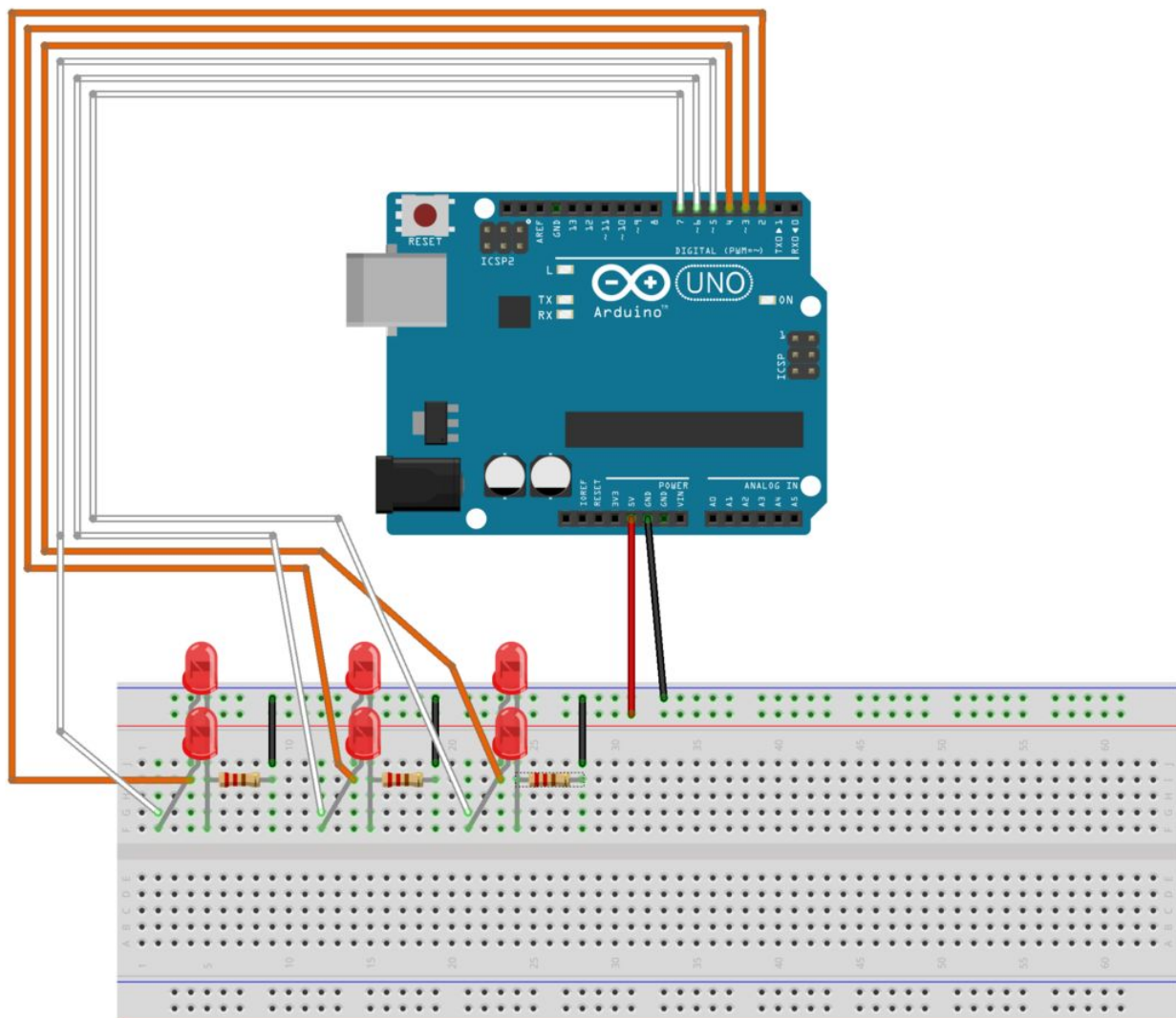
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## Step 4: LED Row 2 Setup





1. Add 3 more LEDs with their corresponding 220Ω resistors connected to the negative rail of the breadboard
2. Connect LED at m(1,0) to pin 5 on the Arduino
2. Connect LED at m(1,1) to pin 6 on the Arduino
2. Connect LED at m(1,2) to pin 7 on the Arduino



Add Tip



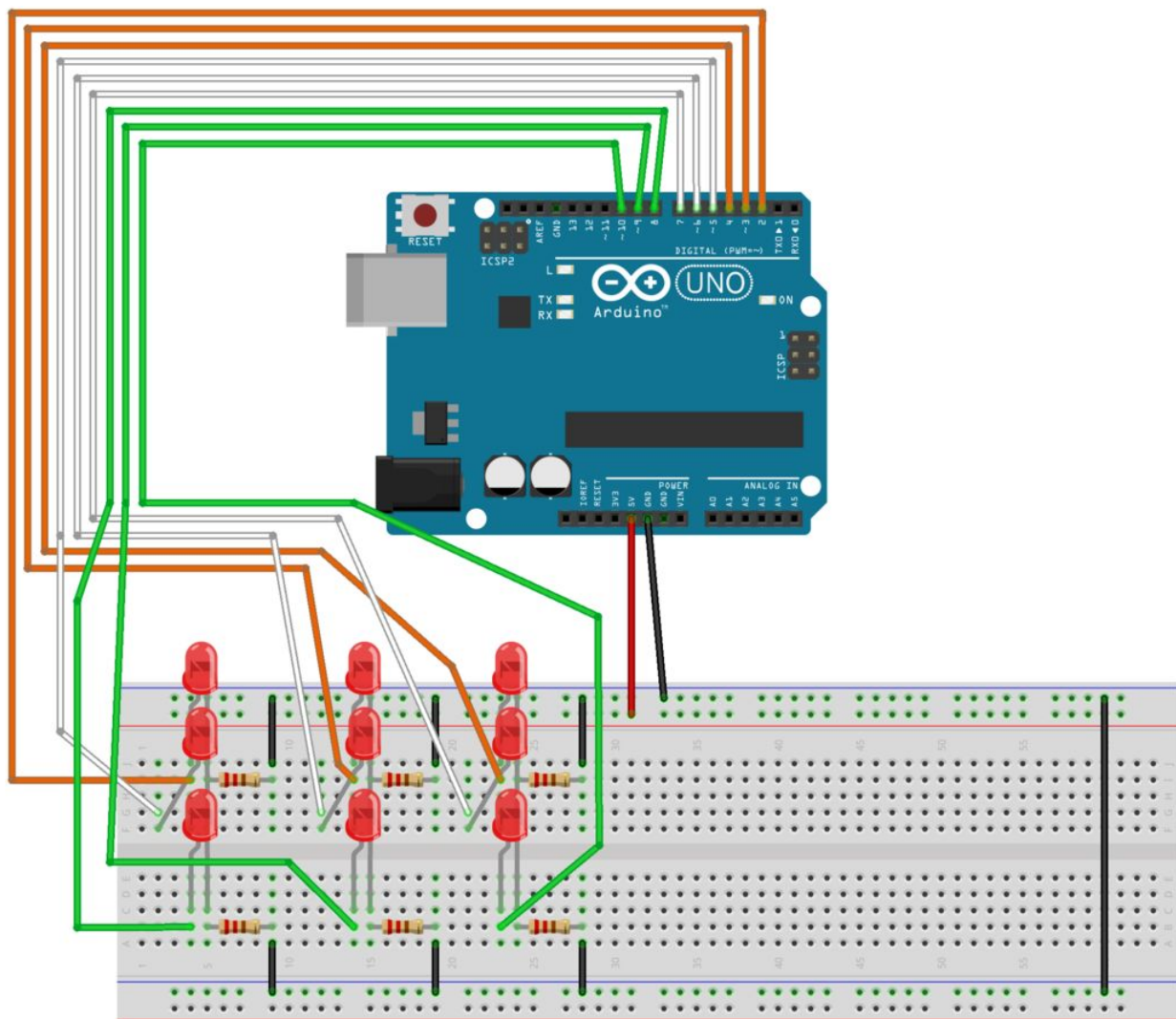
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## Step 5: LED Row 3 Setup



1. Connect the two negative rails of the breadboard
2. Add 3 more LEDS with their corresponding  $220\Omega$  resistors connected to the negative line of the breadboard
3. Connect LED at m(2,0) to pin 8 on the Arduino
4. Connect LED at m(2,1) to pin 9 on the Arduino
5. Connect LED at m(2,2) to pin 10 on the Arduino



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## Step 6: Double Check LED to Pin Connection

Ensure each LED powerline connects to the corresponding Arduino pin.

Remember, for reference, m(0, 0) is the first pin added in the top left. Check with the following:

- LED at m(0, 0) = pin 2
- LED at m(0, 1) = pin 3
- LED at m(0, 2) = pin 4
- LED at m(1, 0) = pin 5
- LED at m(1, 1) = pin 6
- LED at m(1, 2) = pin 7
- LED at m(2, 0) = pin 8
- LED at m(2, 1) = pin 9
- LED at m(2, 2) = pin 10

Also, ensure that row 2 LEDs do not share the same positive column as row 1.



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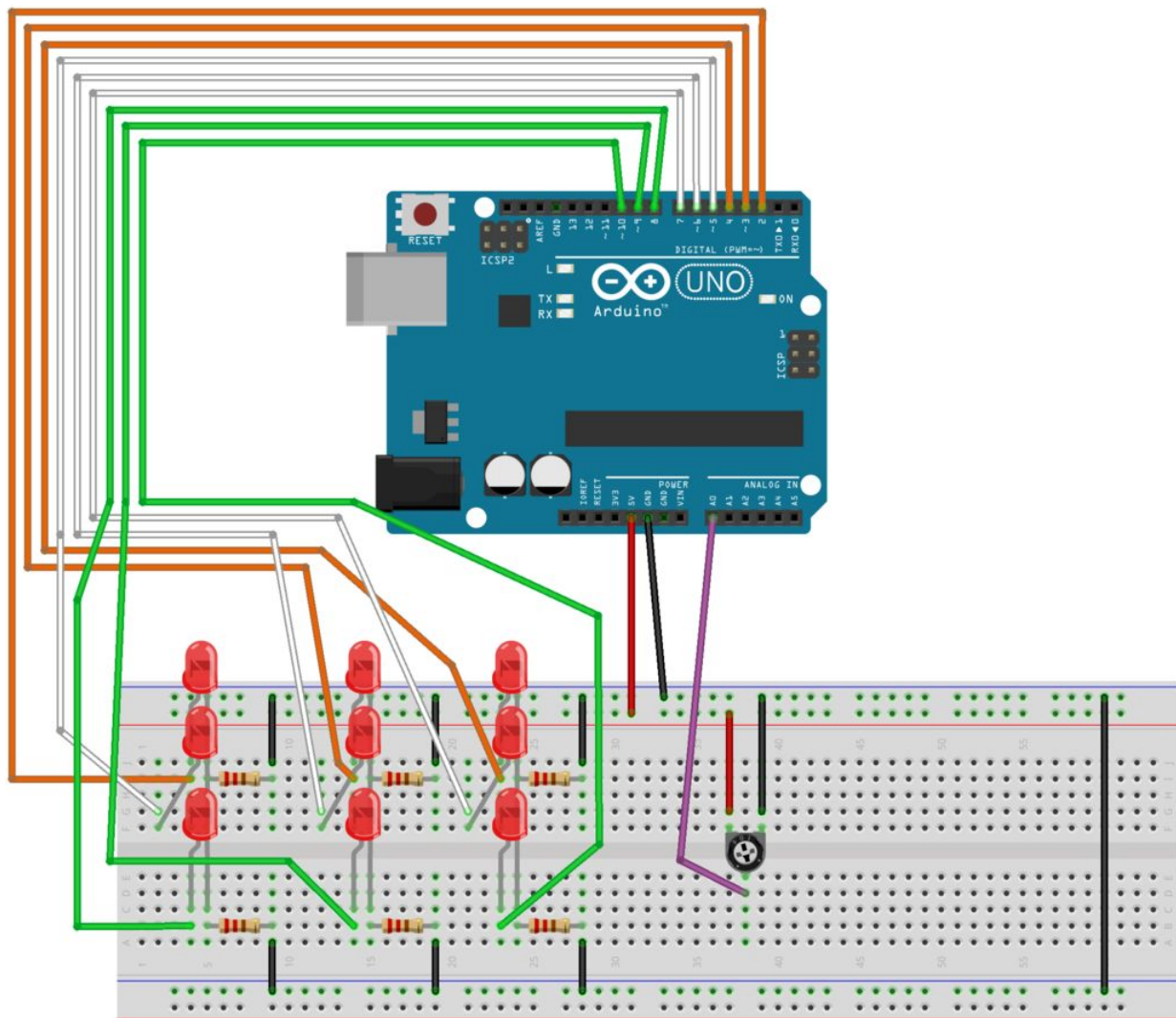
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## Step 7: Row Potentiometer Setup



<https://cdn.instructables.com/50Y2H4P/IDY1DP/IV/50Y2H4P-IDY1DP/IV/LARGE.jpg> 

1. Add a potentiometer
2. Connect the top left connector of the potentiometer to the power rail of the breadboard
3. Connect the top right connector of the potentiometer to the negative rail of the breadboard
4. Connect the bottom connector of the potentiometer to the pin A0 on the Arduino





Add Tip



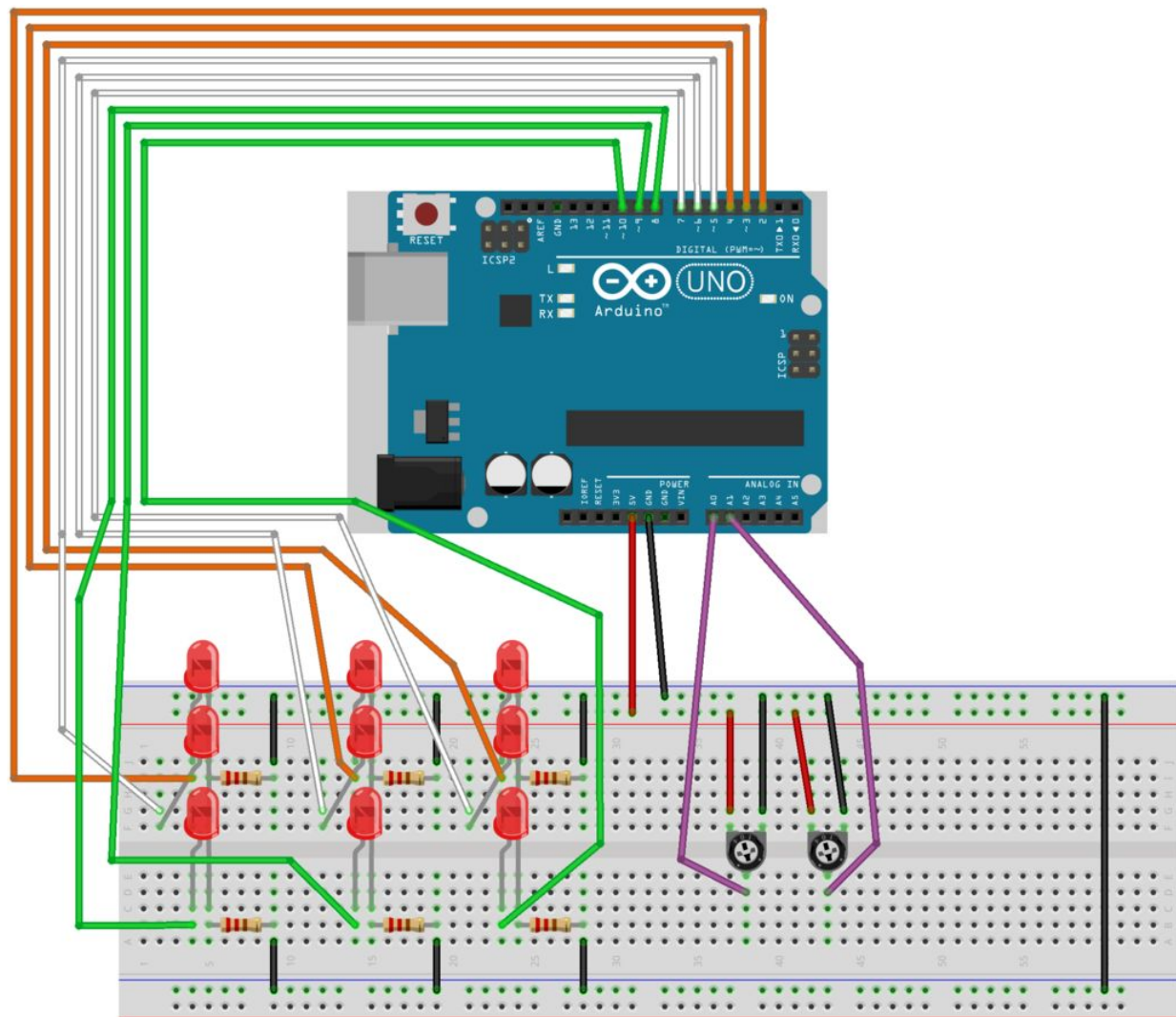
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## Step 8: Column Potentiometer Setup



<https://cdn.instructables.com/FIX/OL2O/IDVLI2WME/FIX/OL2O/IDVLI2WME/LARGE.jpg>

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1. Add another potentiometer (for a total of 2)
2. Connect the top left connector of the potentiometer to the power rail of the breadboard
3. Connect the top right connector of the potentiometer to the negative rail of the breadboard
4. Connect the bottom connector of the potentiometer to the pin A1 on the Arduino



Add Tip



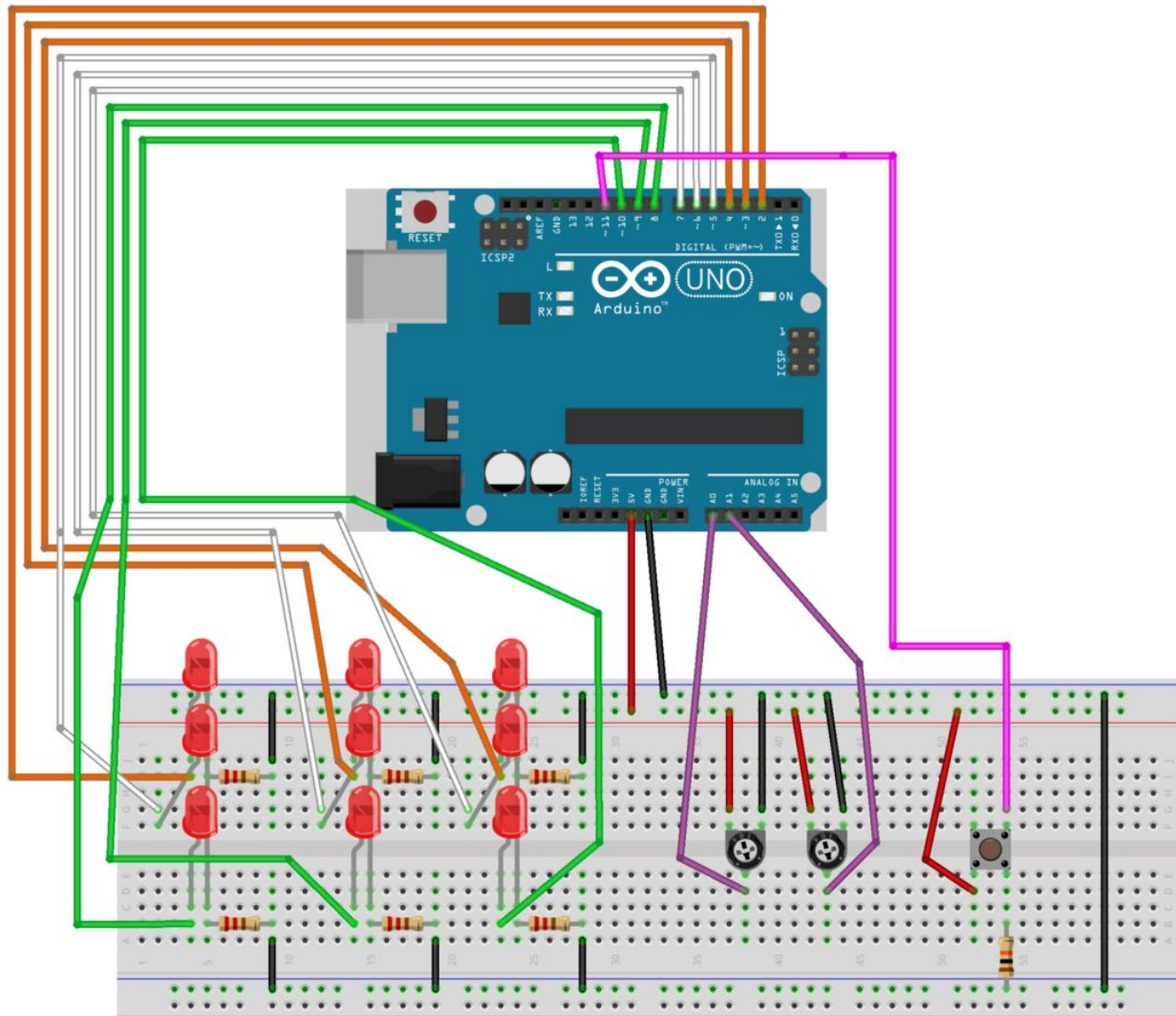
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## Step 9: Add Push Button

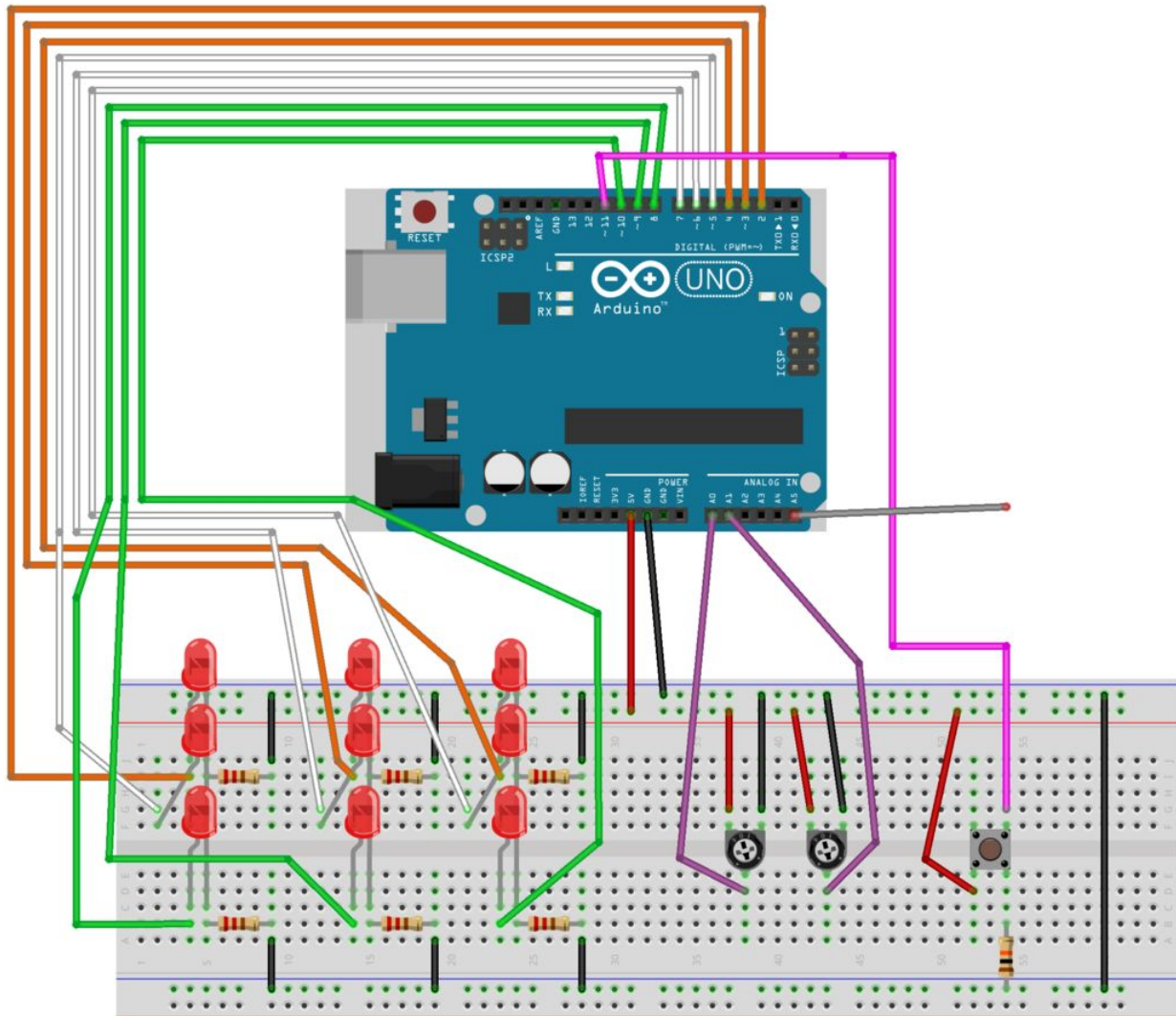


<https://cdn.instructables.com/F71Q4S7IDV1BPV1N/F71Q4S7IDV1BPV1N/LARGE.jpg> 

1. Add a push button to the breadboard
2. Connect the bottom left connector to the power rail of the breadboard
3. Connect the bottom right connector to the negative rail of the breadboard through a 10k resistor
4. Connect the top right connector of the push button to pin 11 on the Arduino

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## Step 10: Add Unconnected Wire



<https://cdn.instructables.com/FI1J5WGP/IDV1P7H7/EI1J5WGP/IDV1P7H7/LARGE/001> 

I found that the best way to generate a seed for random number generation sequences was to put a unconnected wire an analog pin and read that pin for generating a seed. Therefore, do the following simple step:

1. Add a wire to pin A5
2. Do not connect the wire



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## Step 11: Add Code

1. Connect Arduino UNO to computer
2. Download and open up provided Arduino code in the Arduino IDE
3. Upload the code



**aaron\_barlow\_exam\_1..**

Download (<https://cdn.instructables.com/ORIG/FEU/RZ7X/JDYUQ480/FEURZ7XJDYUQ480.ino>)

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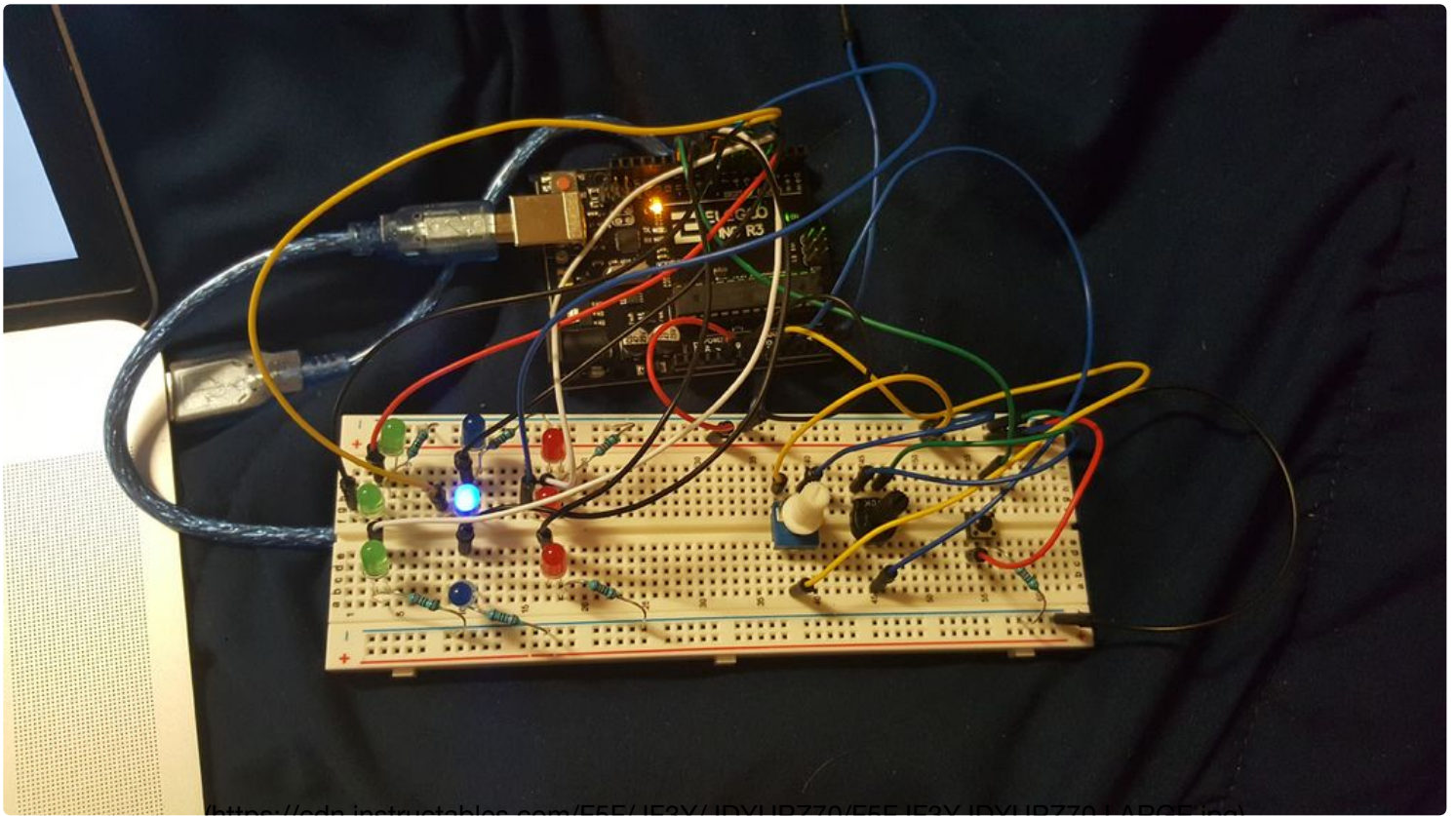
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## Step 12: Complete Project





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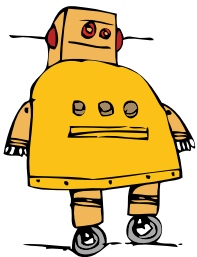


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