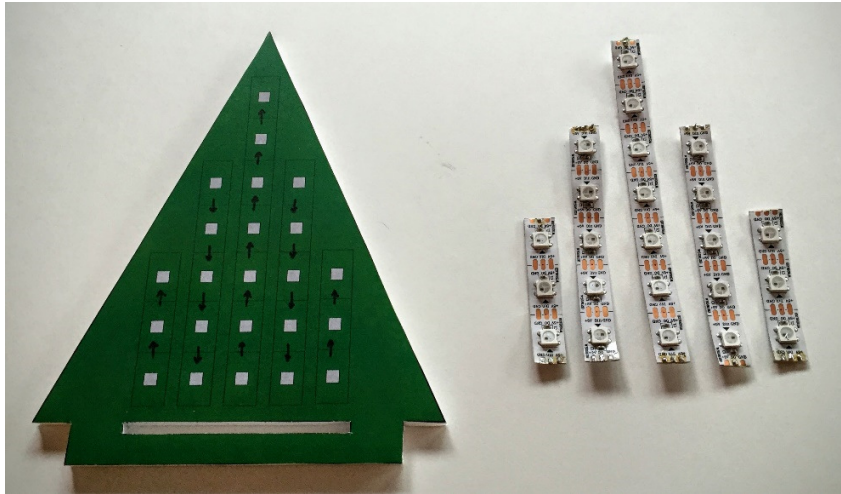


## LED Tree Instructions Part 1: Putting the LEDs on the Tree

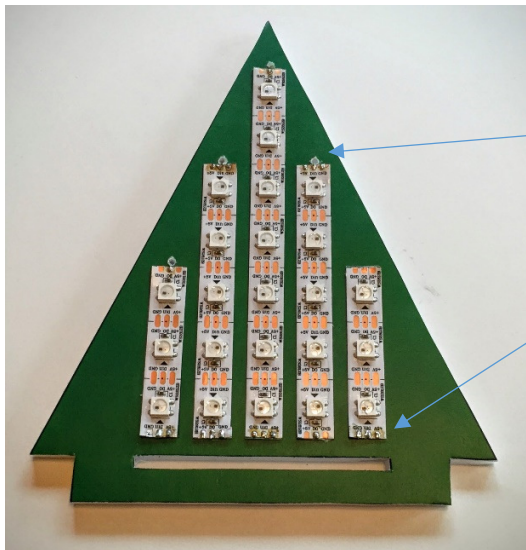
This project is a WiFi connected holiday tree with shared web control.



### STEP 1:

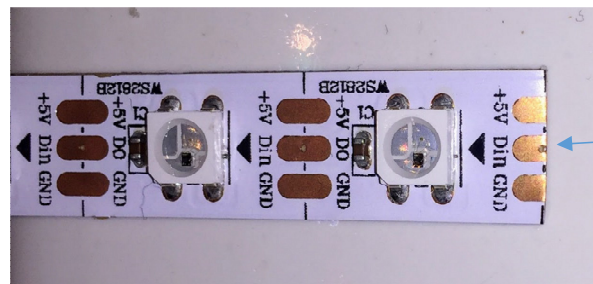
Peel and stick LEDs on the tree. *The Direction is important – the arrows on the tree should match the LED arrows!*

Try to keep the LEDs neat and lined up horizontally. Don't cover the holes at the top of the left four strip if possible, or make the holes longer if need be.



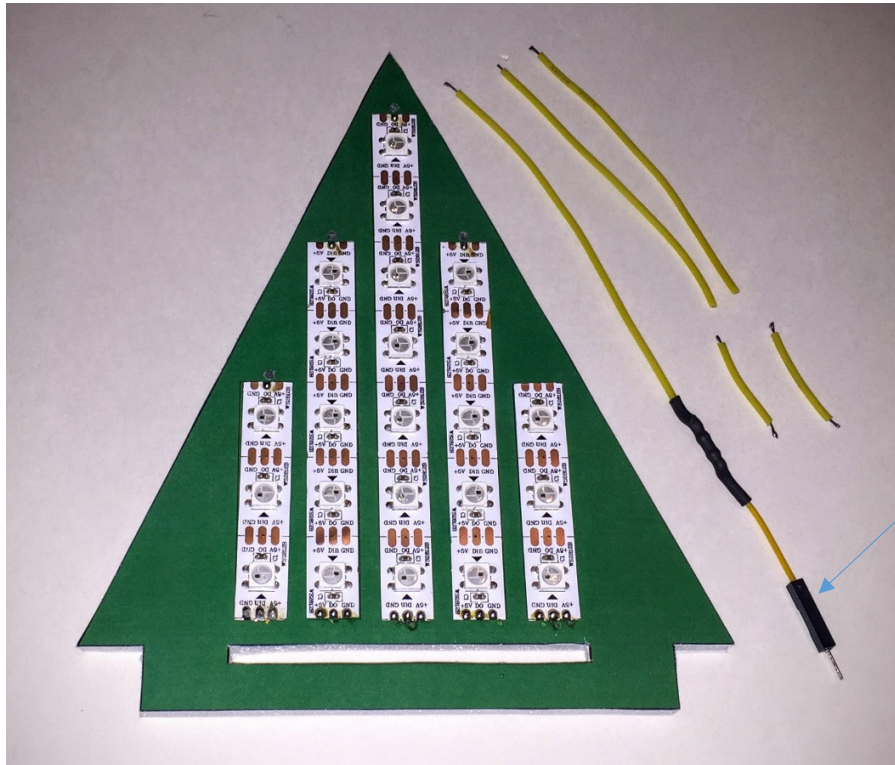
### STEP 2:

Tin (put a bit of solder on) all three pads on the bottom of each LED strip, and just the middle data pad on the top of the 4 left LED strips.



The LED strips have pads you can solder to. +5 & Gnd for the power and the Din and Dout (DO) for the data. The array of RGB data passes along the LEDs, and each LED takes its value and passes the rest down the chain.

## LED Tree Instructions Part 2: Data Wires



### STEP 3:

Cut two 3" pieces of yellow wire. Strip 1/8" of insulation off **ONE** end and tin.

Cut two 1" pieces of yellow wire. Strip 1/8" off **BOTH** ends and tin.

### STEP 4:

Solder the data input wire (the one with the jumper pin at the end) to the Din pad at the bottom of the left LED strip.

### STEP 5:

Solder a 3" wire to the top of the left LED strip - push the tinned end through the hole from the back, bend the tinned end 90 degrees, and solder down to the Dout pad on the top of the left strip.

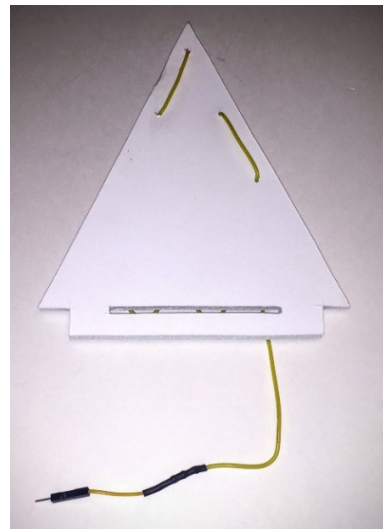
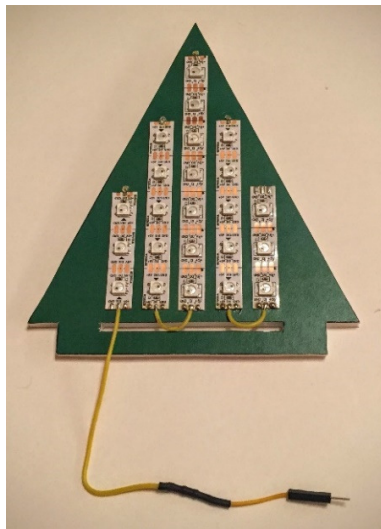
Then, run the wire to the top of the second LED strip (from behind). Bend it over the pad and cut to length. Pull it back out, strip 1/8" of insulation, tin, and put back in the hole and solder.

### STEP 6:

Do the same thing to connect the middle LED strip and the one to its right

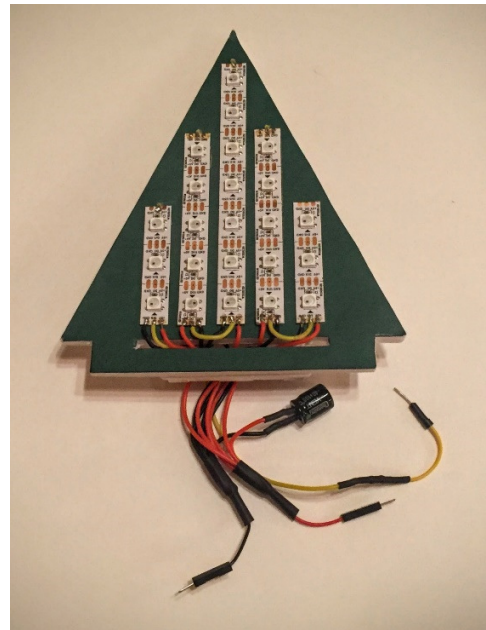
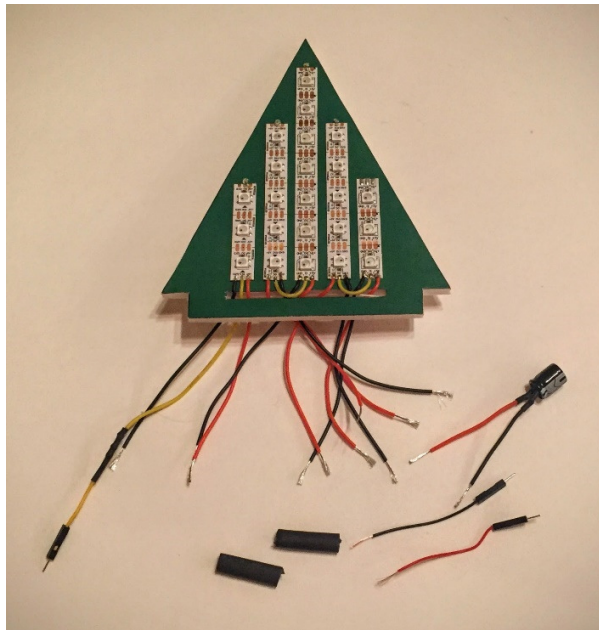
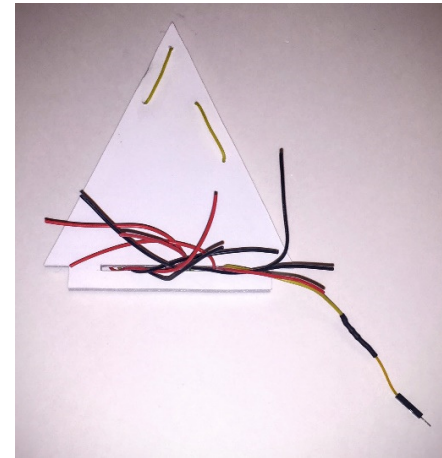
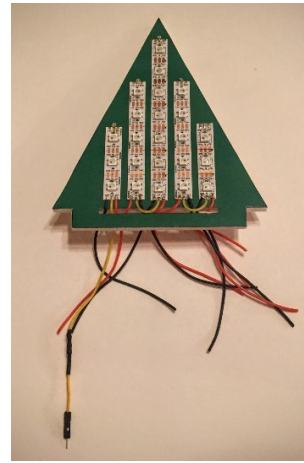
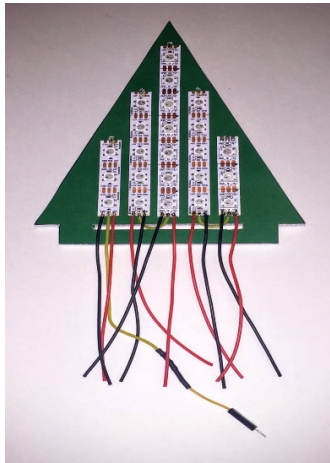
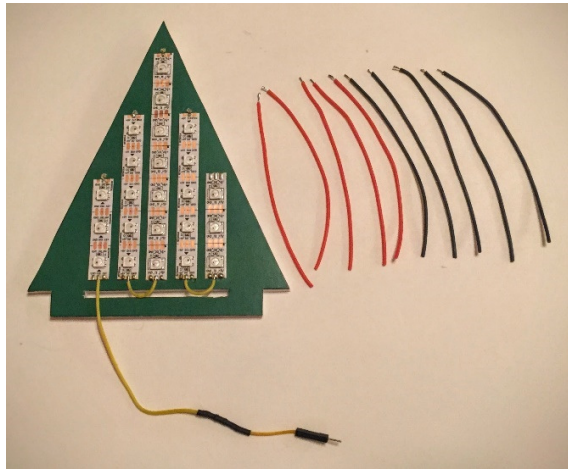
### STEP 7:

Solder the data pads on the bottom of strips 2&3 and 4&5





### LED Tree Instructions Part 3: LED Power Wires



Once this Part is Complete, Test the LEDs!

#### STEP 8:

Cut five red and five black wires – 4" long. Strip 1/8" insulation off of **ONE** end of each wire and tin them.

#### STEP 9:

Solder the red and black wires to the +5 and Gnd pads on the bottom of the LED strips. Red is +5, and black is Gnd.

Feed all the wires to the back of the tree.

#### STEP 10:

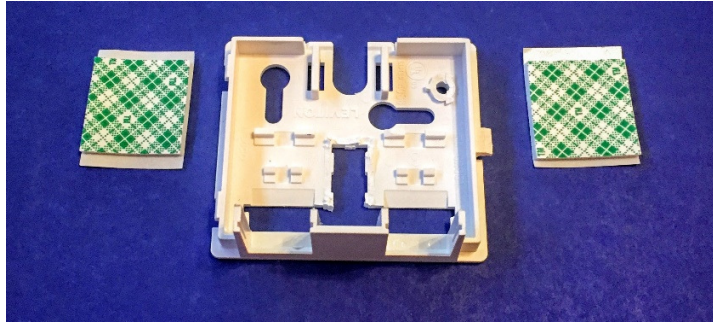
Use a red and black male jumper wire, and a capacitor assembly.

Strip 1/2" of insulation off **all** the wires (jumper + capacitor + LEDs). Twist all the red wires together and all the black wires together. Solder those bundles. Lots of solder!

Use the 6mm heat shrink tubing to insulate them. You can bend the jumper wire so it sticks out on the end.

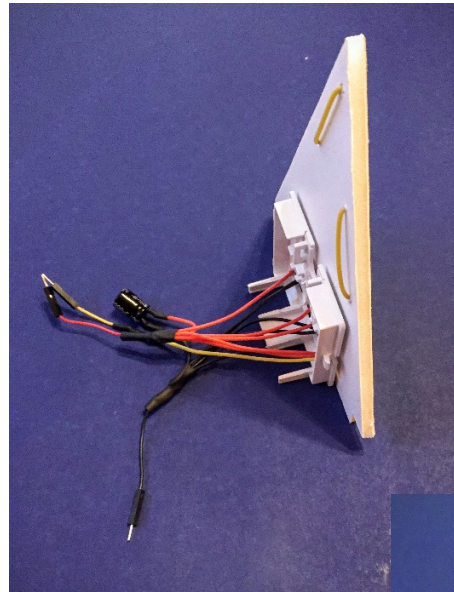
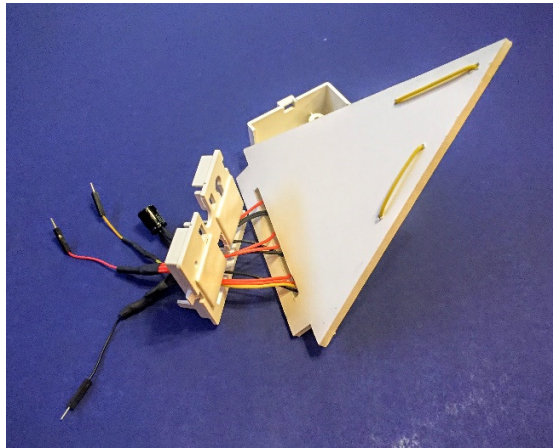


## LED Tree Instructions Part 4: Final Assembly



### STEP 11:

Push all the wires through the base of the box – the big T shaped hole. Attach the box to the back of the tree with the foam tape. Stand them up on a table when you do this so the bottoms line up together.

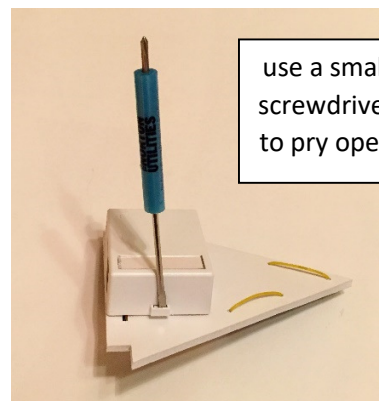
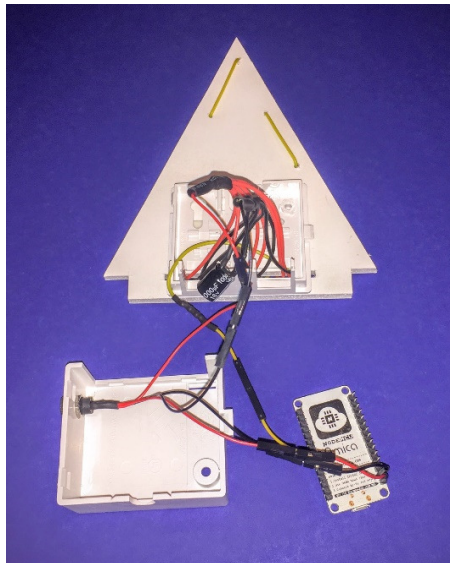


### STEP 12:

Connect the jumpers. The power jack powers the LEDs and the ESP8266. Just match up the colors and connectors.

Power it up! If it works, you can snap the back of the box on.

It should be OK being powered from 5v or a USB power source. It might be a bit much for a PC port – can draw ~1 amp if fully on. With 5v, though, there could be some erratic flickering due to voltage mismatch between the 3.3v ESP8266 and the 5v LEDs, so the 4.5v wall adapter will work well.



use a small screwdriver to pry open

