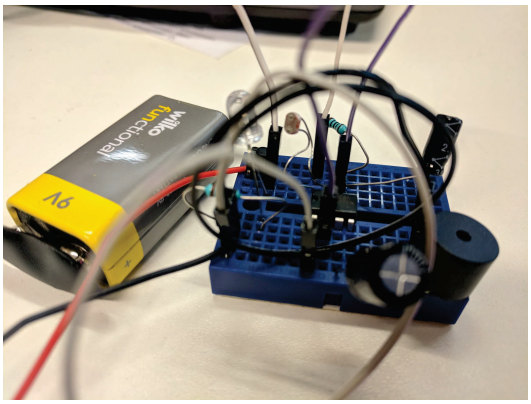
Breadboard Musical Instrument

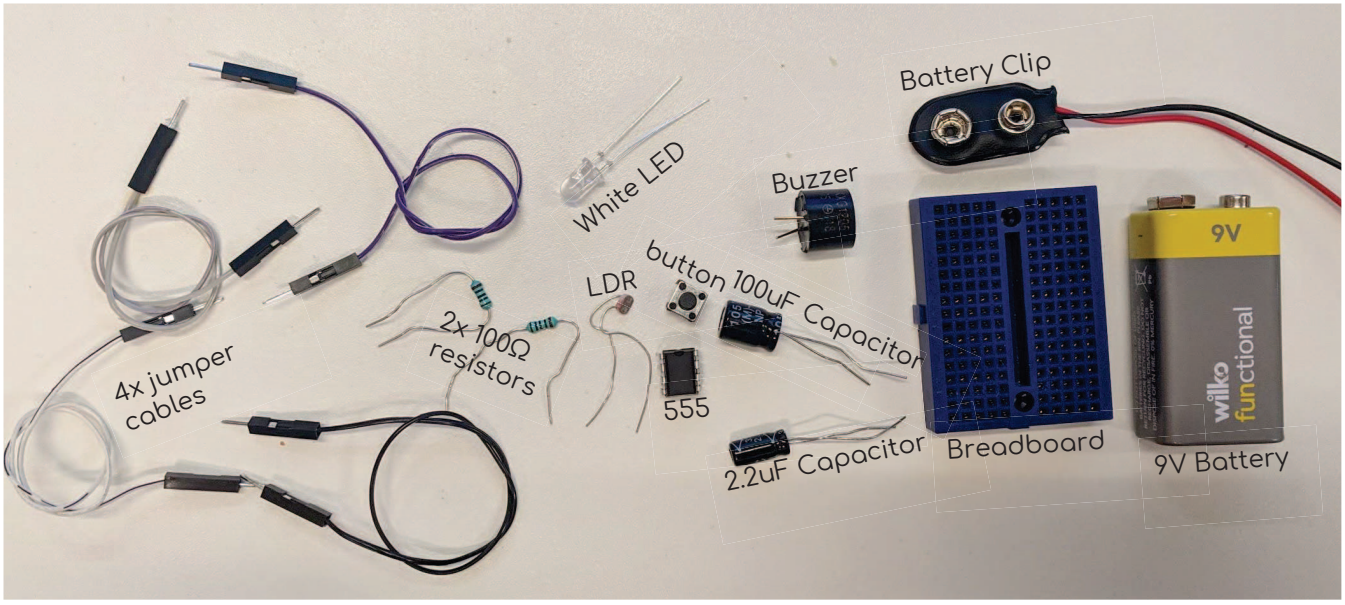
A workshop for



By Joe Brown

13th Feb 2019

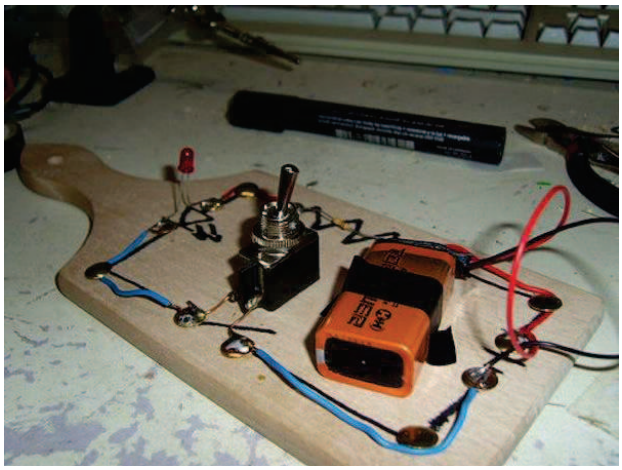
Parts needed:



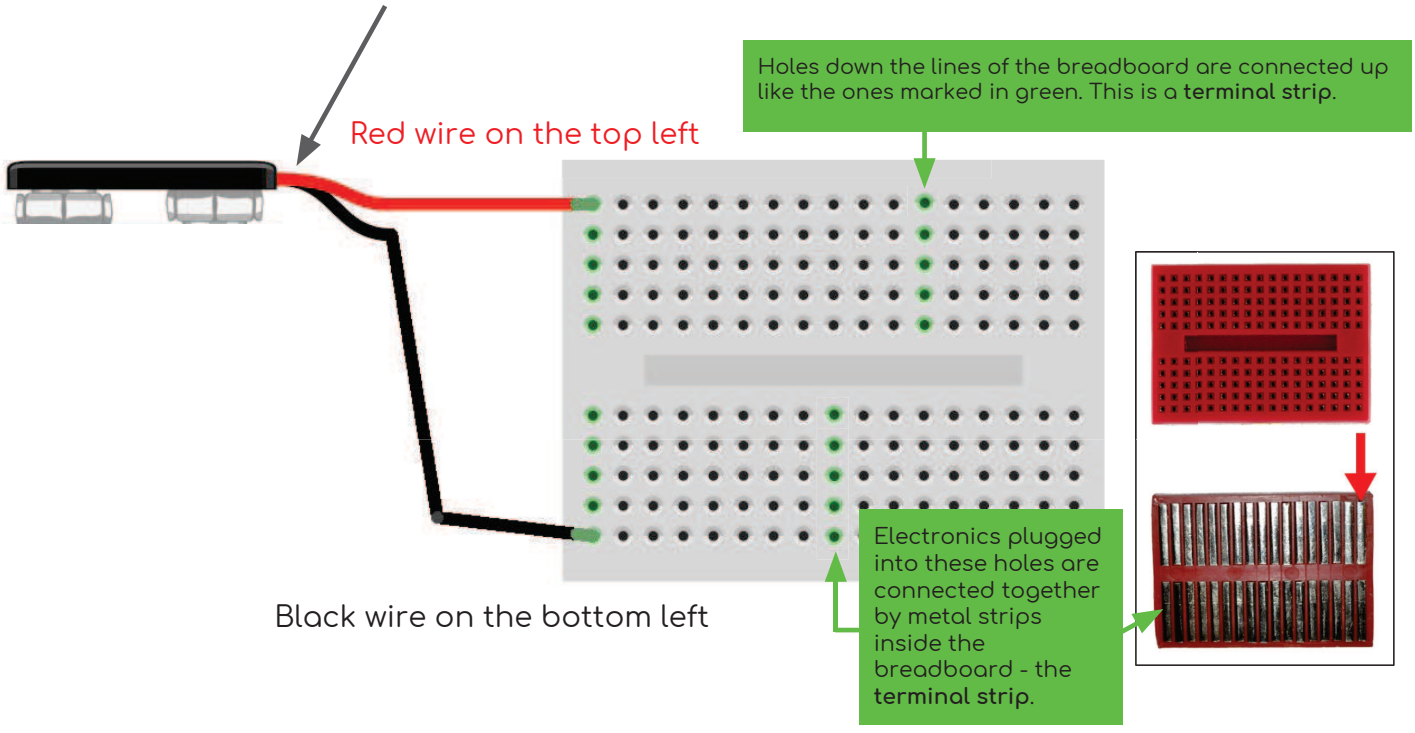
Why **Bread**Board?

Early electronic circuits were made using nails and wires connected to spare breadboards normally used for slicing bread!

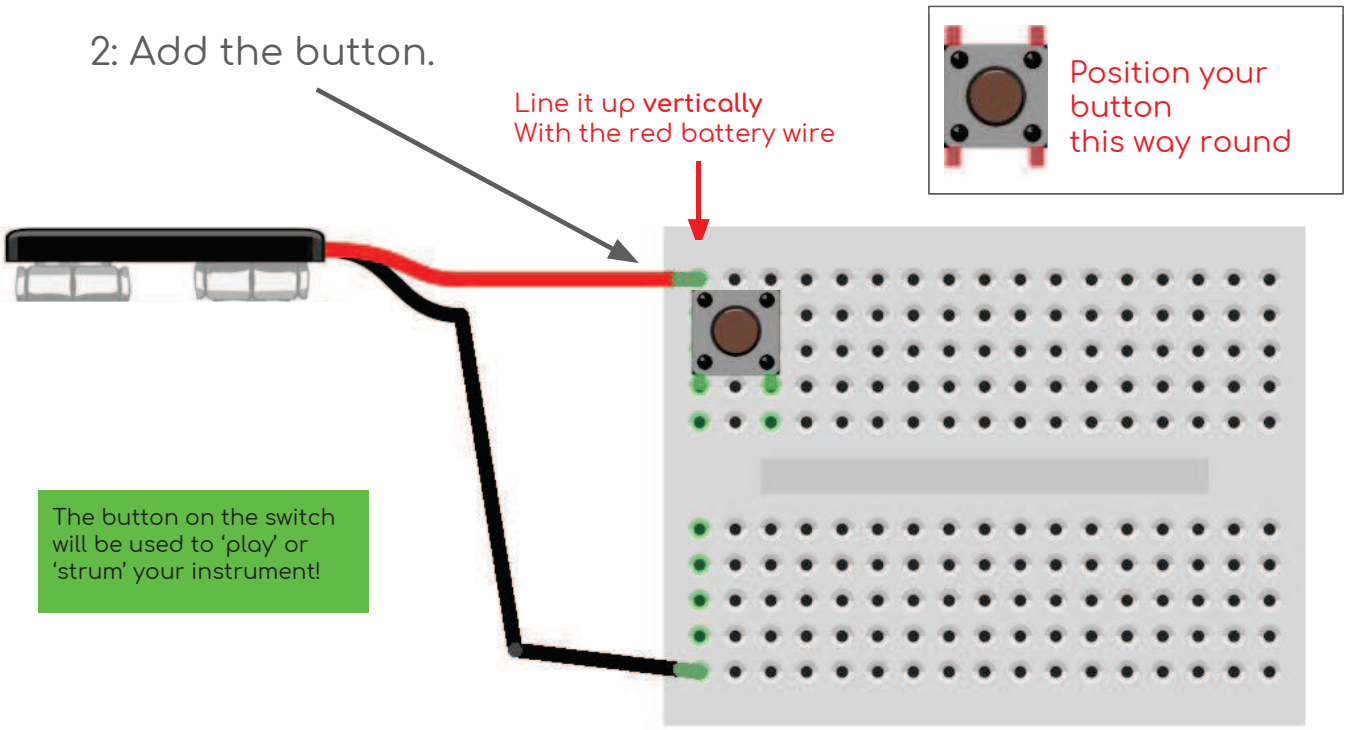
The nickname stuck as new more suitable boards for electronics were made.



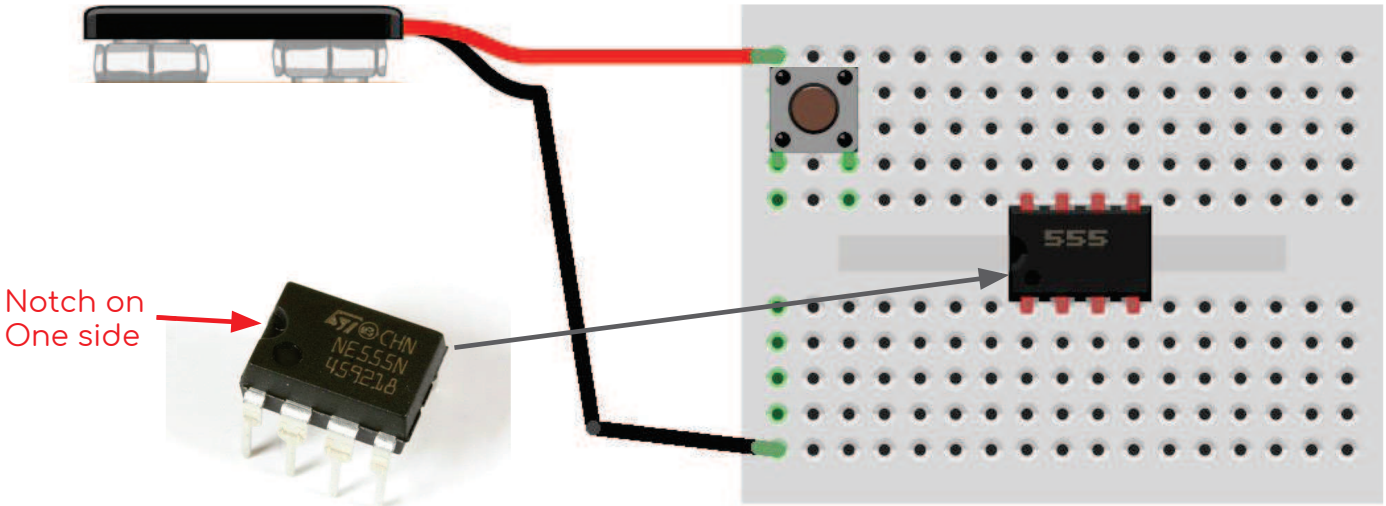
1: Connect your battery connector to your breadboard.



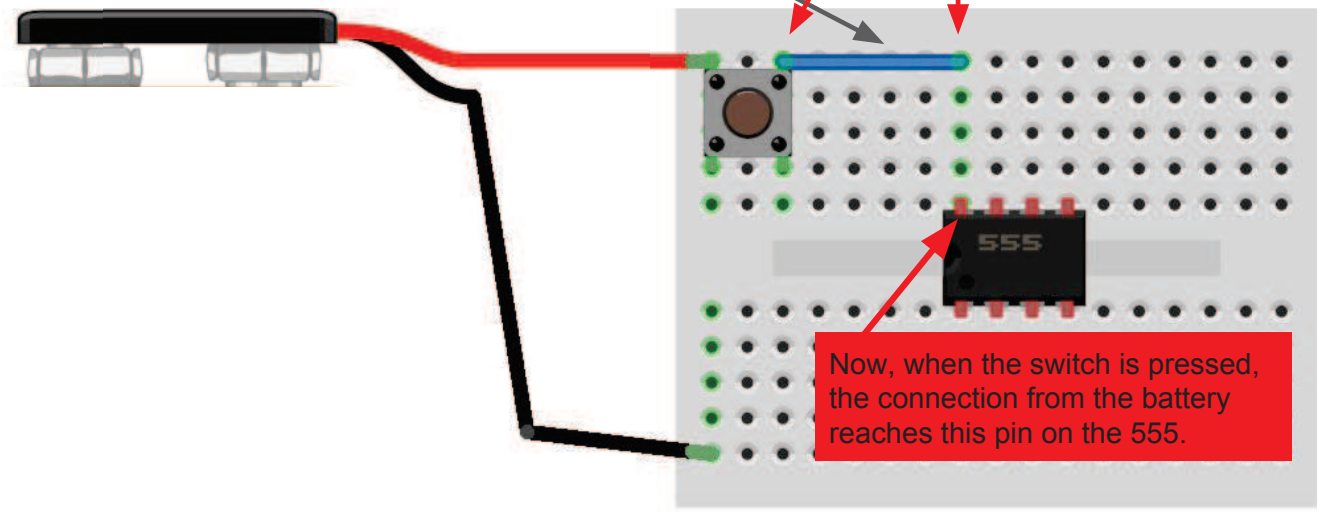
2: Add the button.



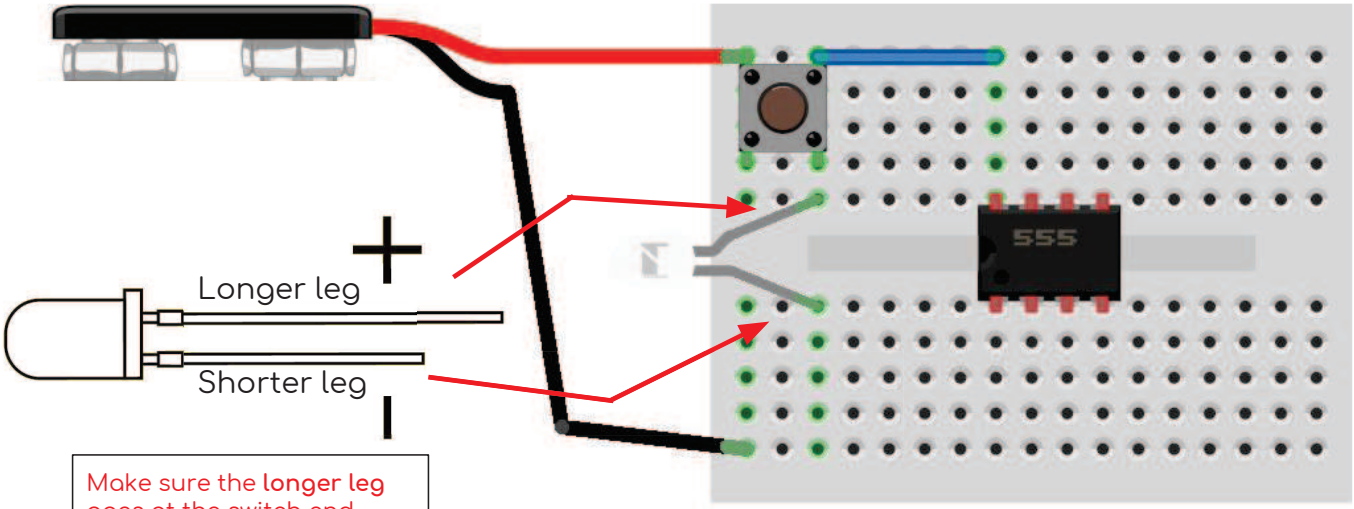
3: Add 555 in middle of the breadboard, with the notch on the left



4: Add wire connecting the switch to the 555

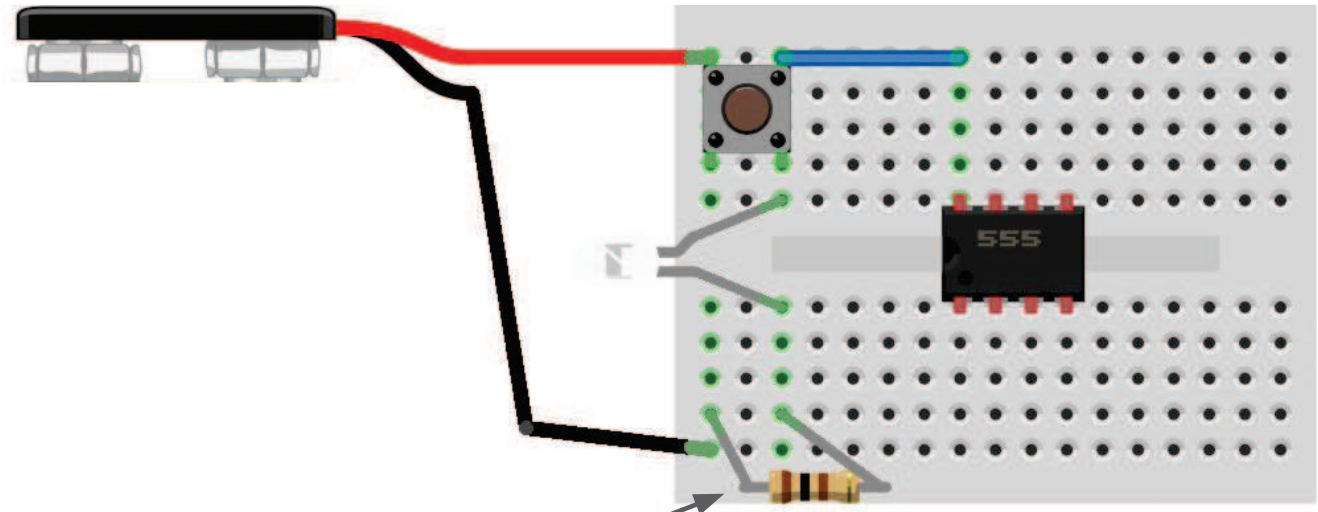


5: Add the LED connected to the switch.



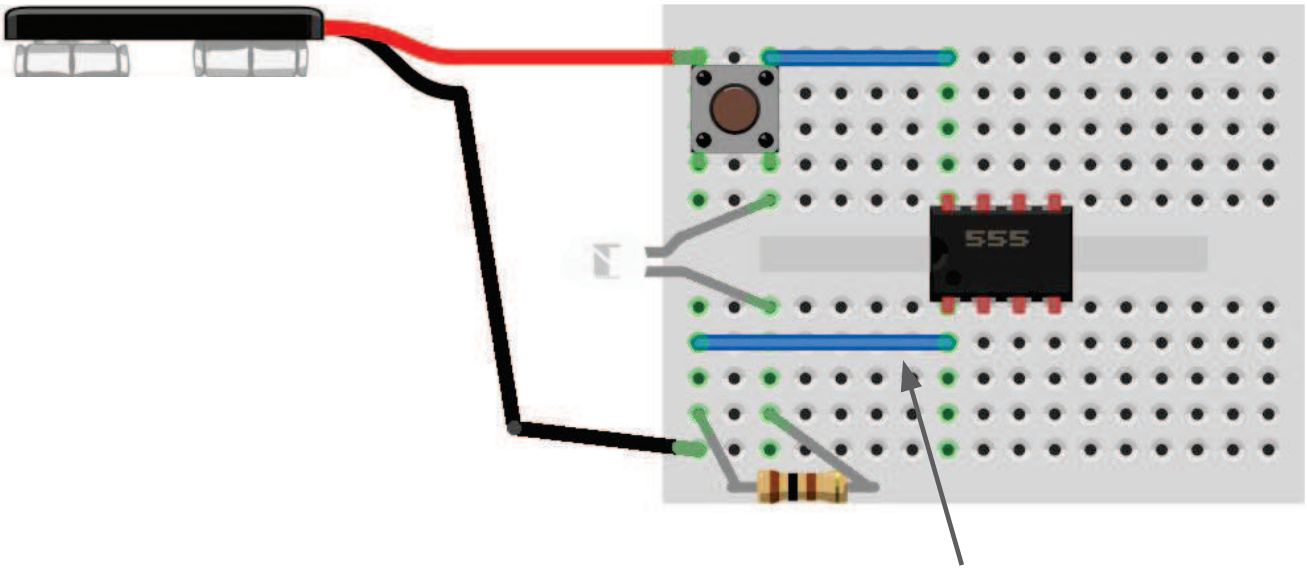
Make sure the **longer leg** goes at the switch end. We're connecting positive end of the LED to the positive end (red cable) of the battery via the switch

An LED is a **light emitting diode.** It produces light when current flows through it.



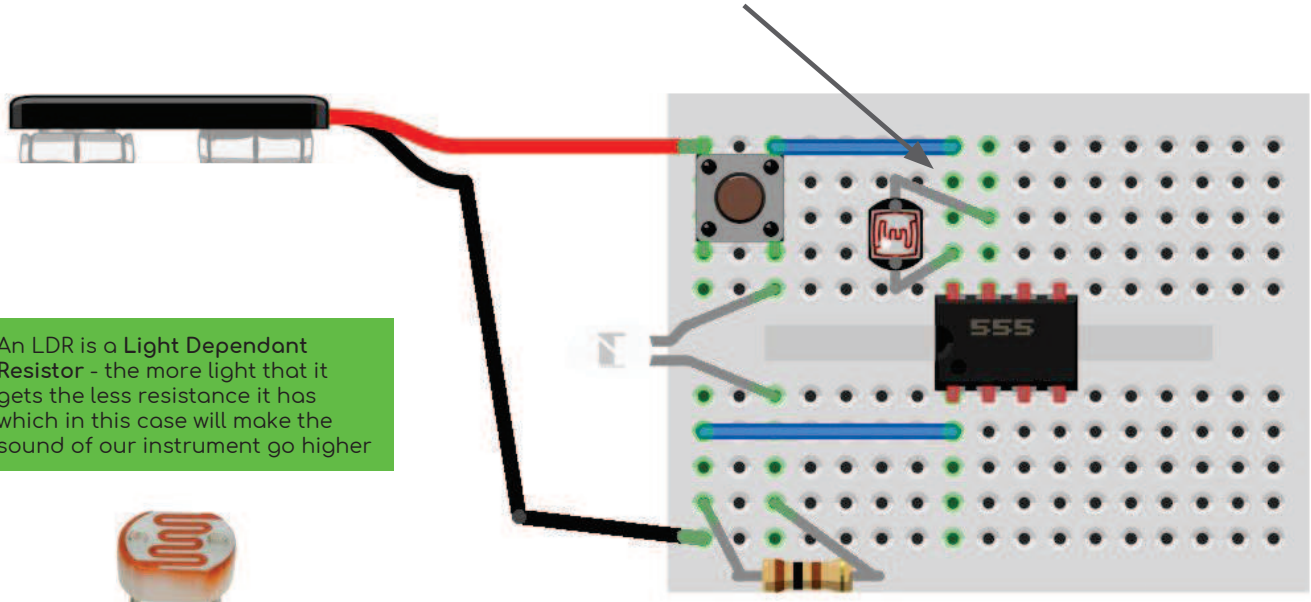
6: Add a resistor connecting the LED to the black (negative) battery cable

Remember components are connected together vertically along the **terminal strip**. See the green holes.



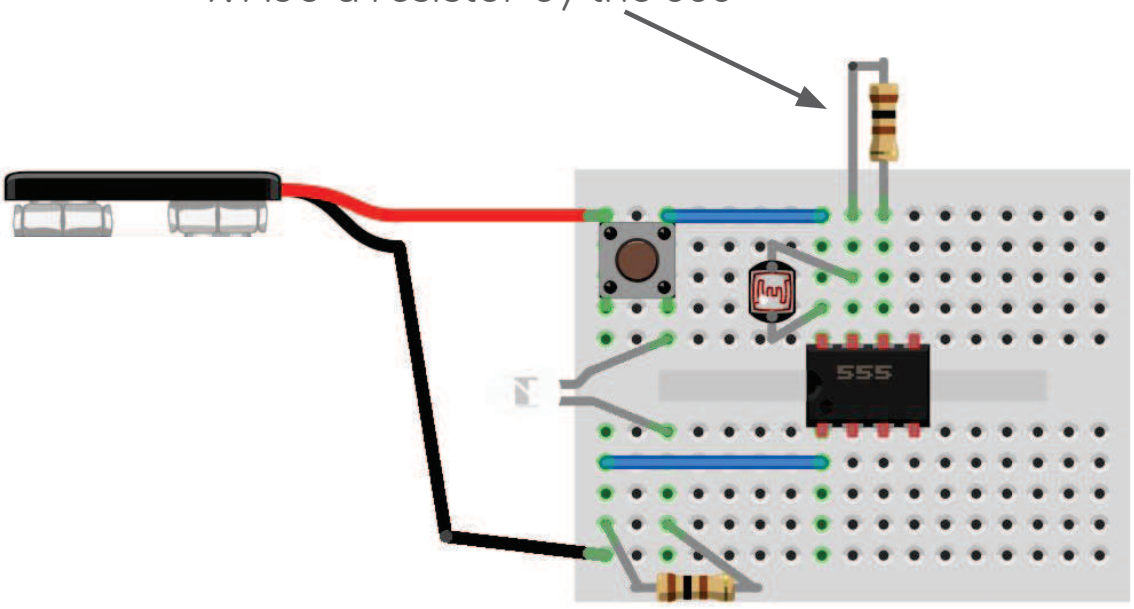
7: Add a wire connecting the black (negative) battery cable to the 555

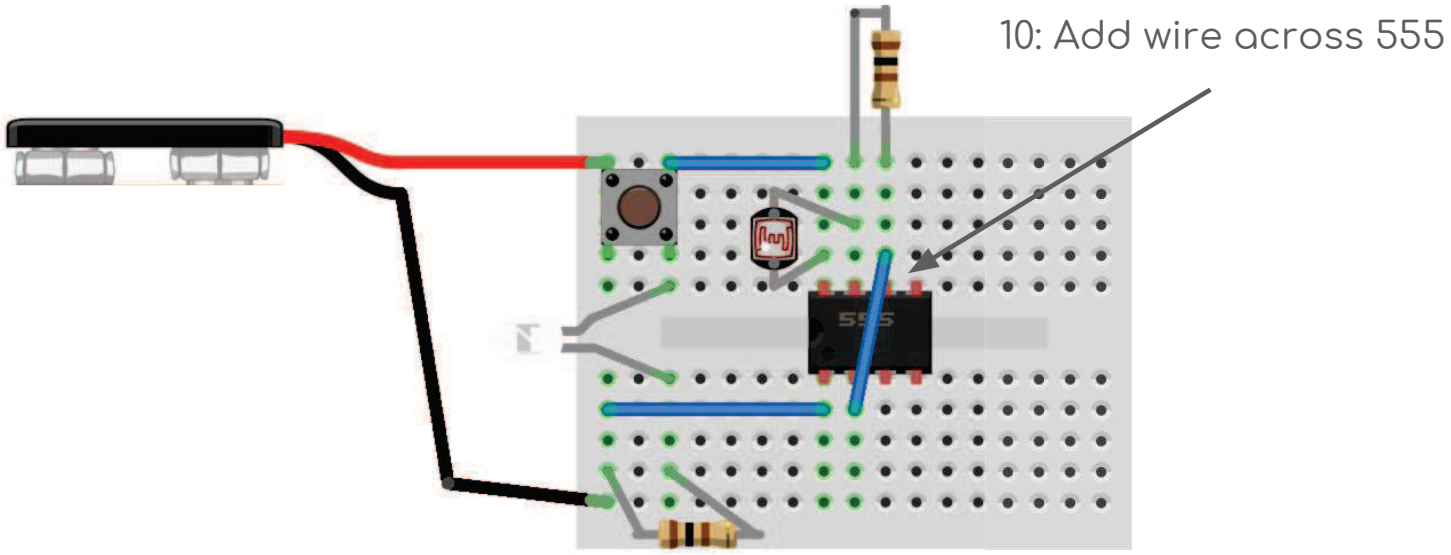
8: Connect the LDR to the switch and the 555

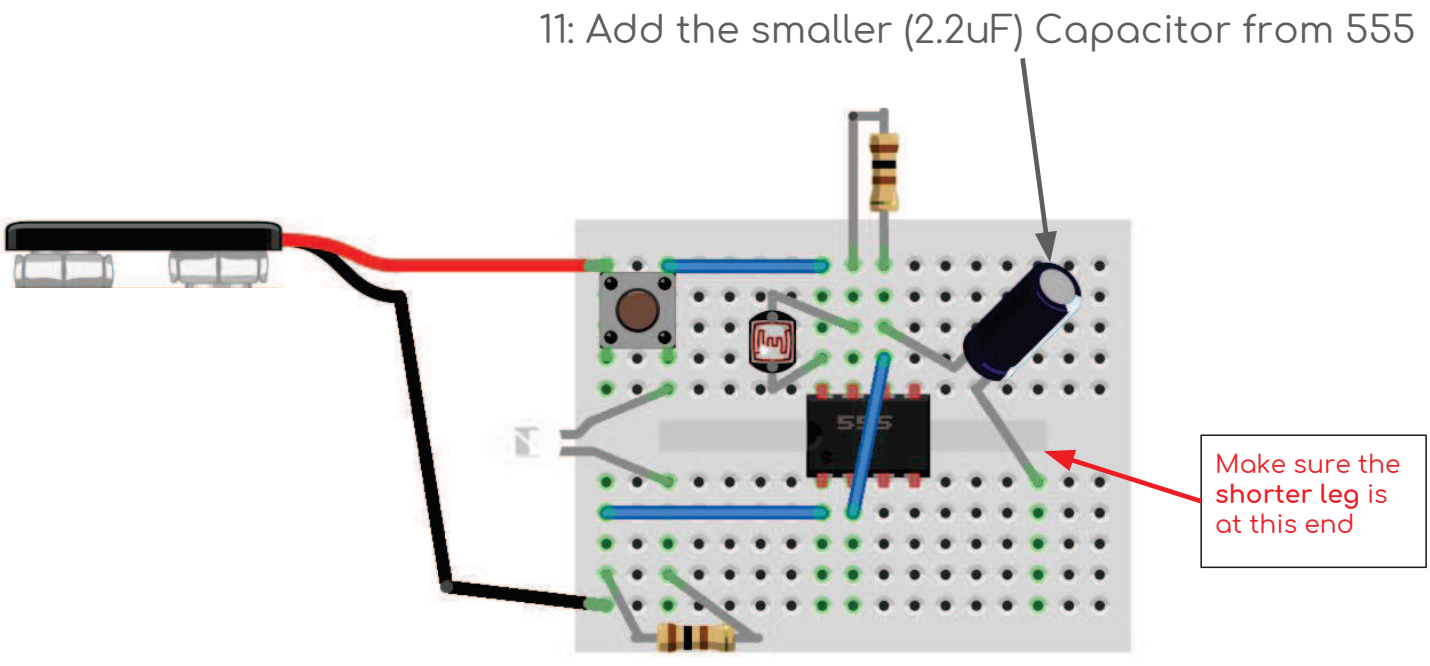


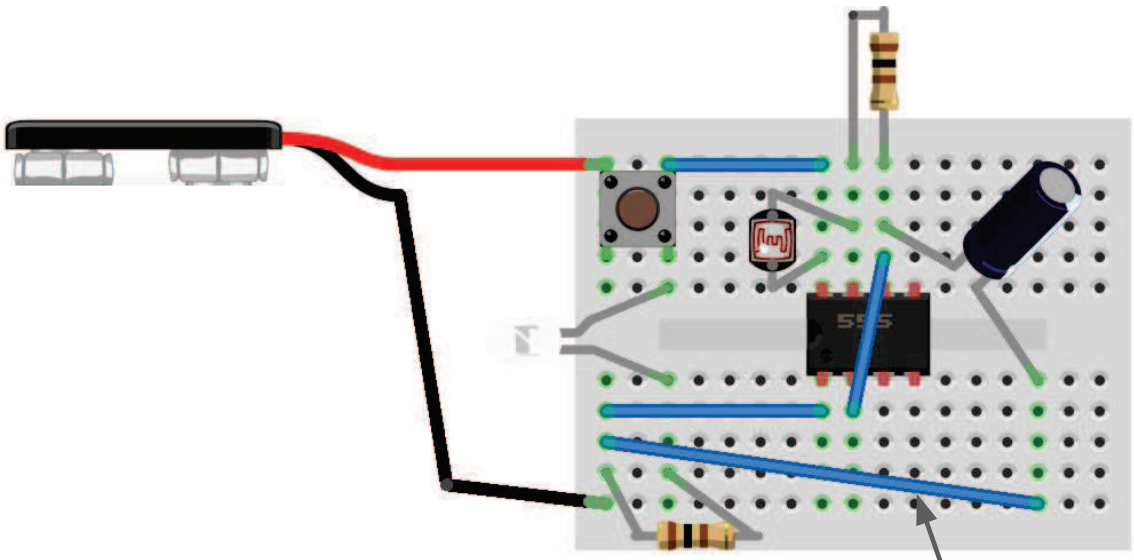
An LDR is a **Light Dependant Resistor** - the more light that it gets the less resistance it has which in this case will make the sound of our instrument go higher

9: Add a resistor by the 555

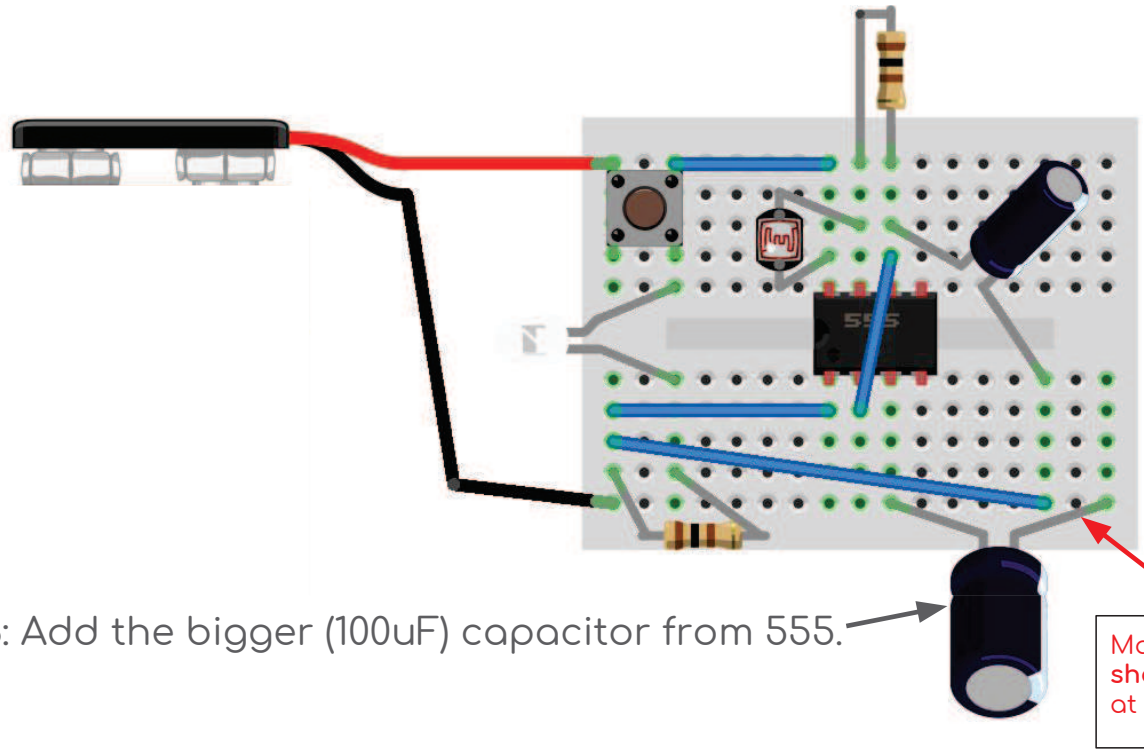



10: Add wire across 555


11: Add the smaller (2.2uF) Capacitor from 555
Make sure the shorter leg is at this end

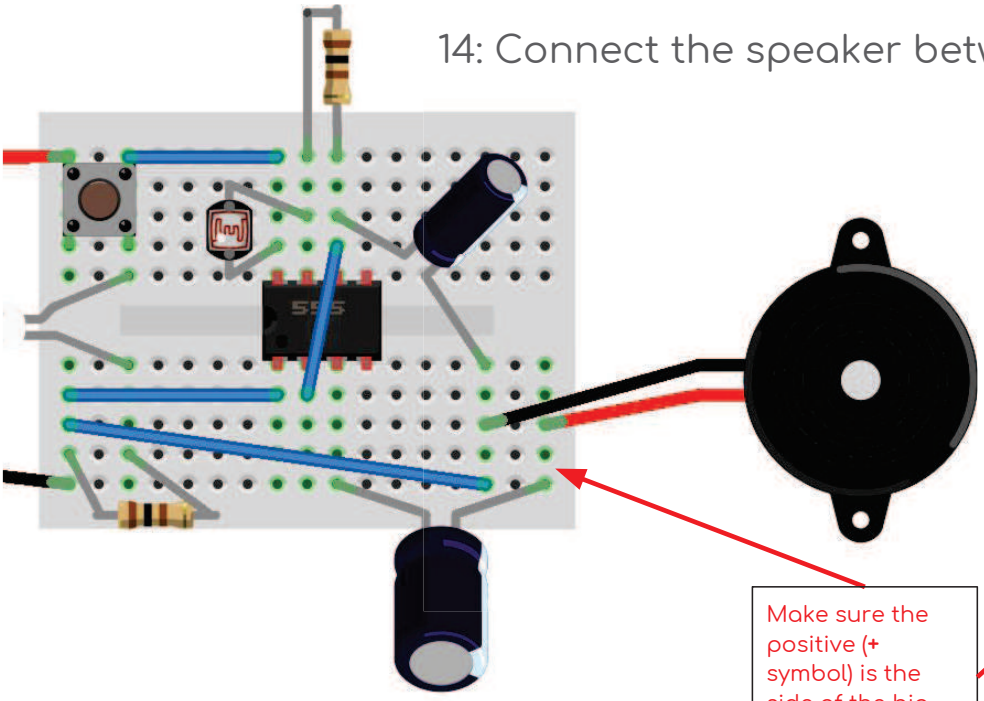


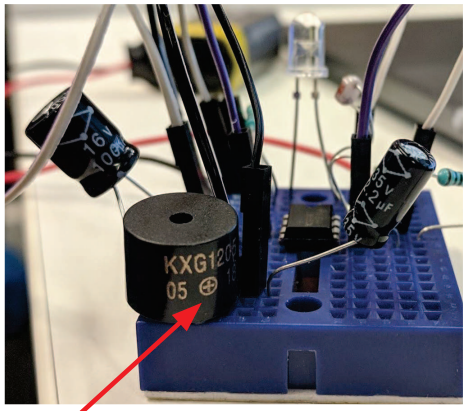
12: Add wire from the black (negative) battery to the capacitor



13: Add the bigger (100uF) capacitor from 555.

14: Connect the speaker between the capacitors.



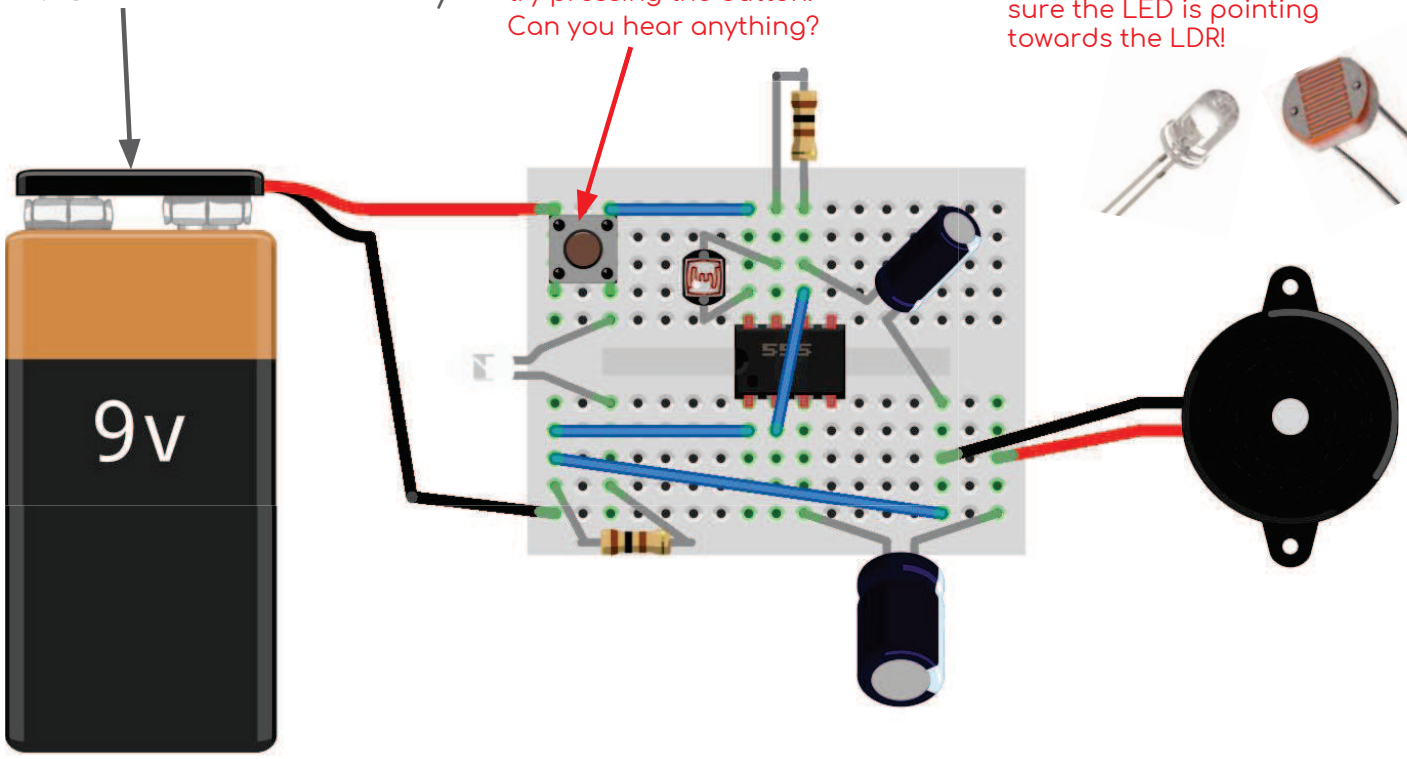


Make sure the positive (+ symbol) is the side of the big capacitor

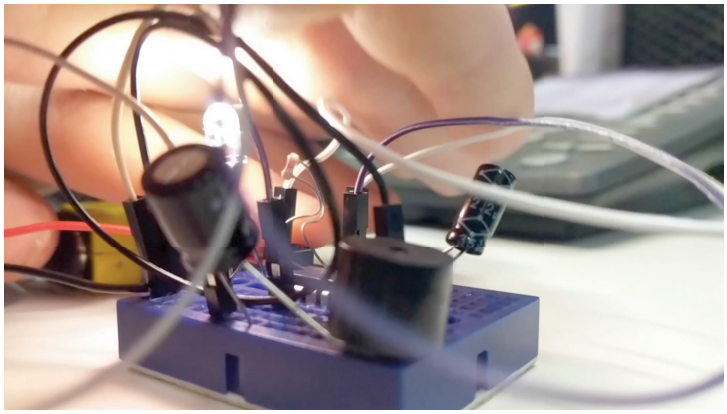
15: Connect the battery

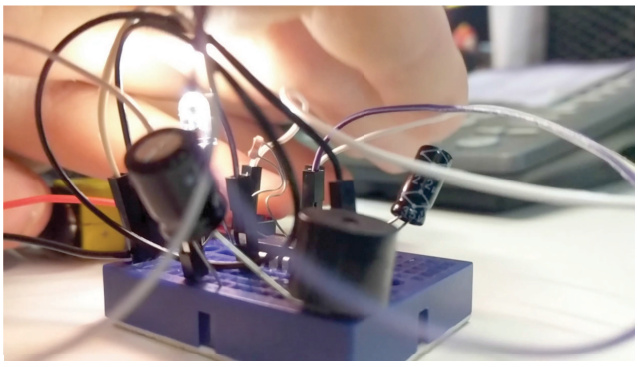
try pressing the button! Can you hear anything?

If nothing is happening make sure the LED is pointing towards the LDR!



16: Try waving your hand in front of the LED light while pressing the button, what do you notice?





If you've got it set up right:

- as you put your hand **closer** to the LED you're giving

-the LDR (light dependant resistor) **more light** and this causes

- its **lower resistance** and

- a **higher pitch** of your musical instrument! A higher sound.

And as you move you hand away it goes lower.