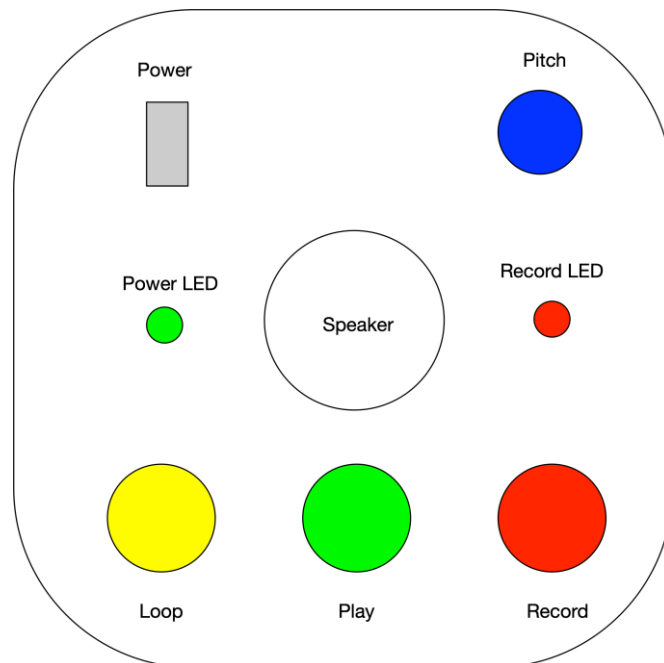


LoFi Sampler - Assembly Guide



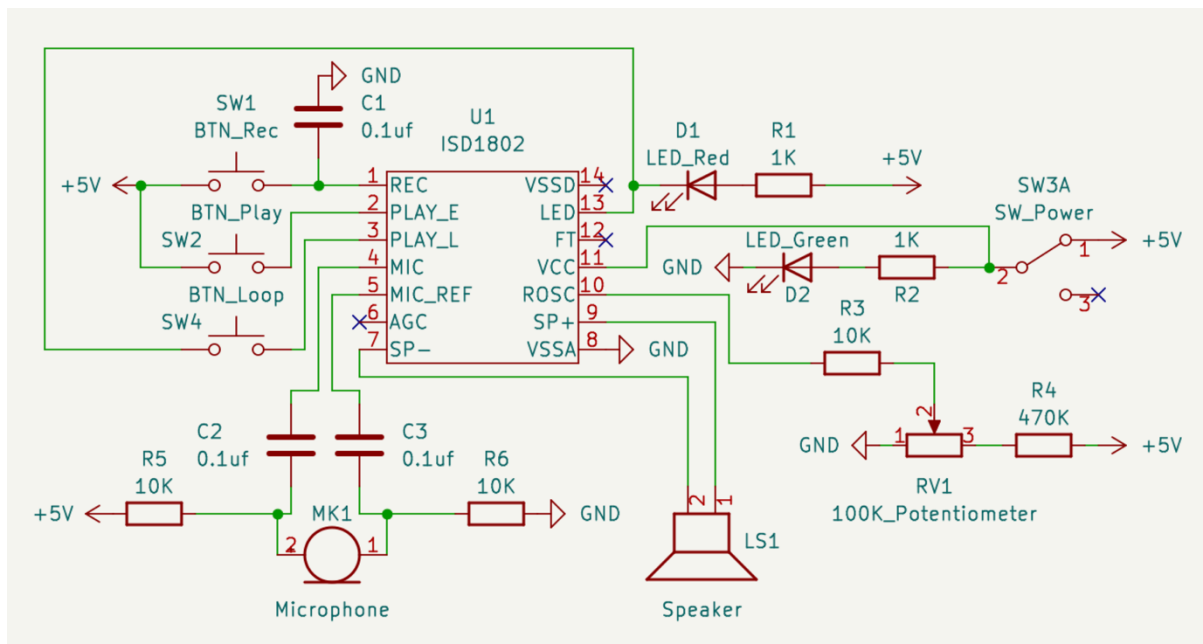
Interactive Media Lab, Griffith University, Brisbane, Australia

Parts List

Collect all the parts you need:

PART	QUANTITY	DETAILS
ISD1820 IC	1	
Buttons	3	Red, Yellow, Green
Potentiometer	1	plus nut & washer
Pot Cap	1	
Switch	1	
Microphone	1	
LEDs	2	Red, Green
Capacitors (Mic)	2	0.1uF (104)
Capacitor (Rec)	1	0.1uF
Capacitor (Power)	1	0.1uF
Resistors (LED)	2	1K
Resistor (Pot)	1	470k
Resistor (Pot)	1	10k
Resistors (Mic)	2	10k
Wooden top	1	
Wooden Bottom	1	
Wooden Sides	2	Two diff logos
Speaker	1	
Battery Case	1	
Batteries	3	AA
Screws (Speaker)	4	M3 4mm
Screws (Bat case)	2	M3 4mm
Rubber Feet	4	
Jumper Wires	5	

Schematic



Breadboard

The electronic breadboard allows us to assemble components without soldering. Holes are connected within the inner columns and outside rows (rails) so that components inserted into the same column or rail are 'wired' together. The columns are divided into two sets by the 'gap' that runs down the centre of the breadboard.

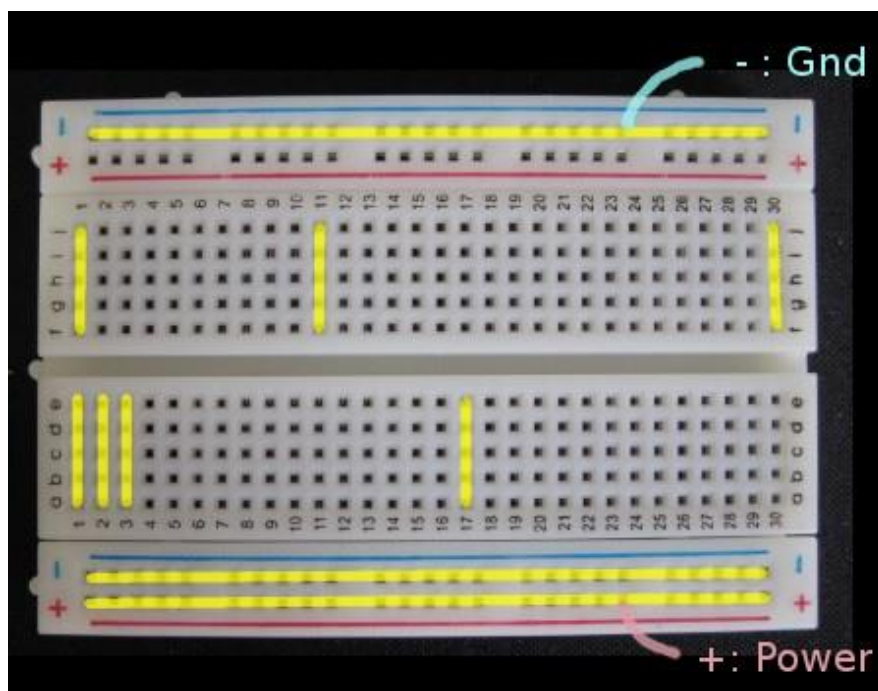


Figure 1.

Assembly

Place the ISD1820 in the middle of the breadboard, with legs on either side of the centre divider. Note the orientation of the chip, with the half-moon dimple being the 'top'. Make the top face left.

Pins of IC are numbered 1 to 14, as shown in the schematic above. Pin 1 is top-left, pins count 1 to 7 down the left side then around the bottom and from 8 to 14 up the right side.

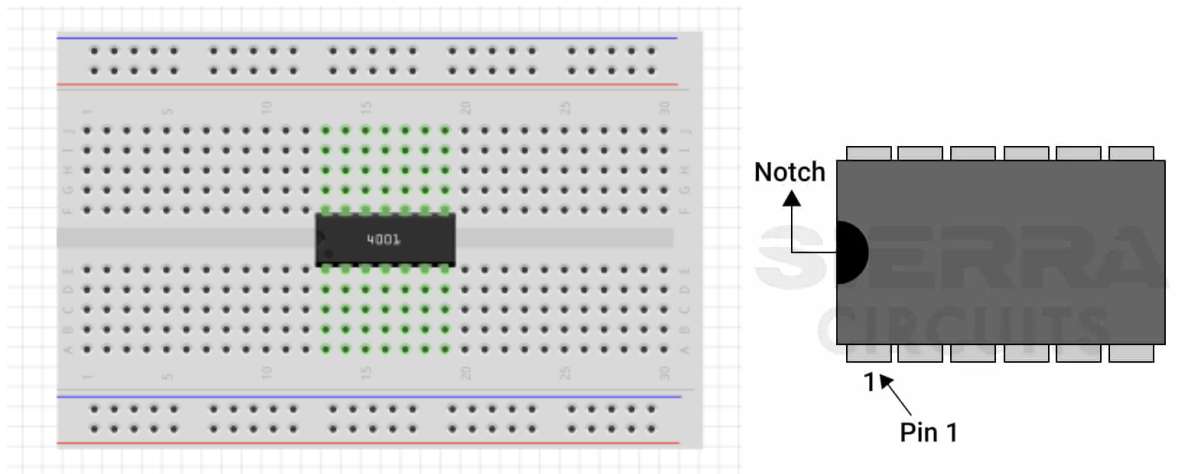


Figure 2.

Stage 1: Power

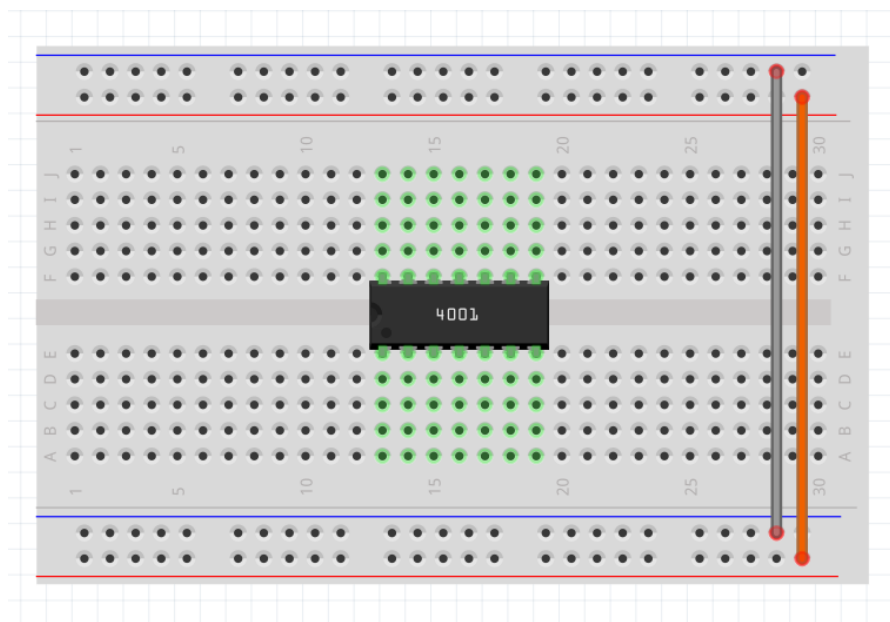


Figure 3.

- Use jumper wires to connect the power and ground rails on either side of the breadboard.

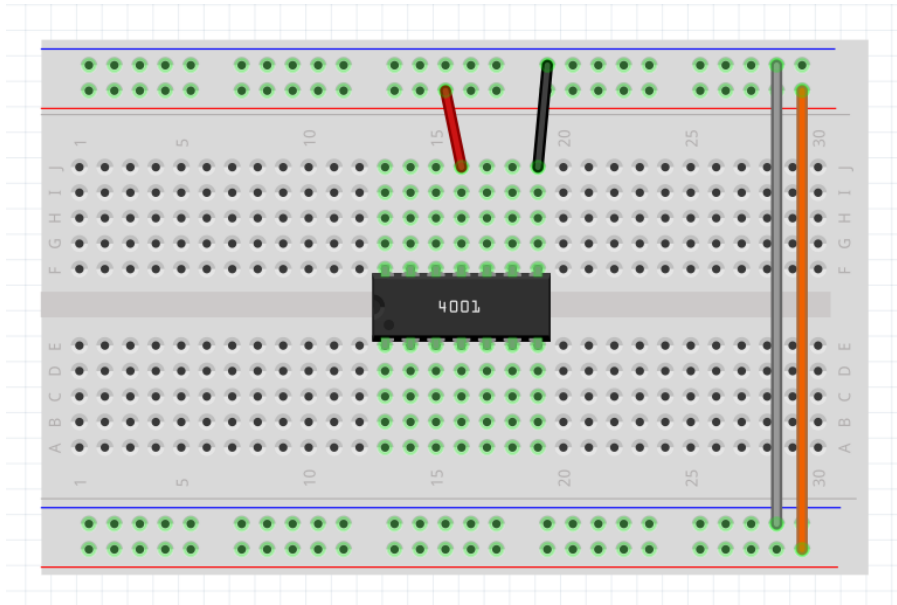


Figure 4.

- Connect IC pin 8 to ground with jumper wire
- Connect IC pin 11 to positive with jumper wire

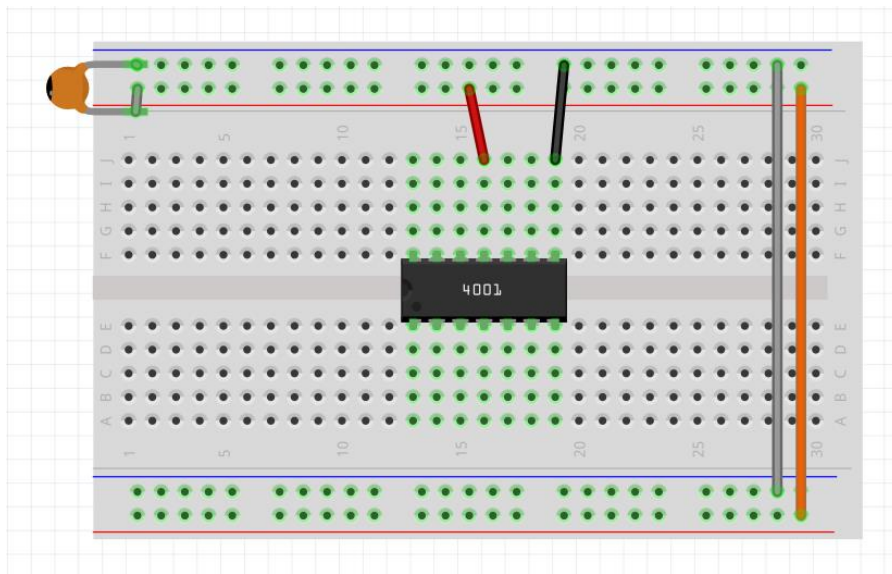


Figure 5.

- Insert a Capacitor from the ground rail to the power rail to 'smooth' the power.

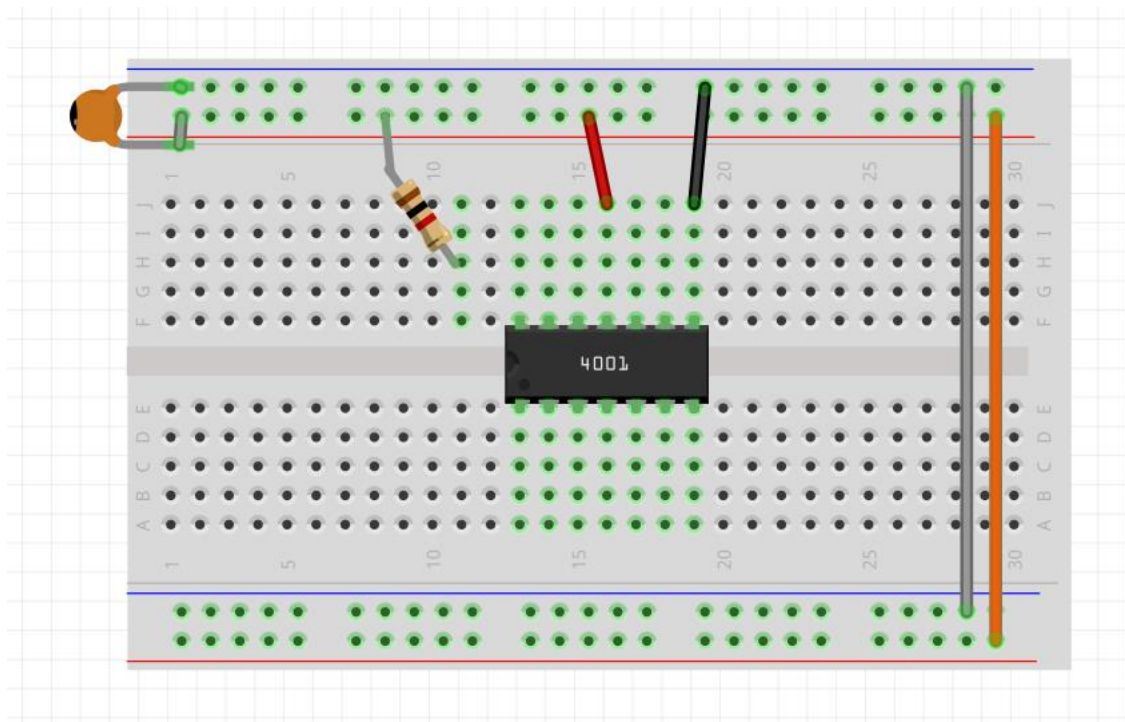


Figure 6.

- Insert 1K resistor from an empty column to the power rail.

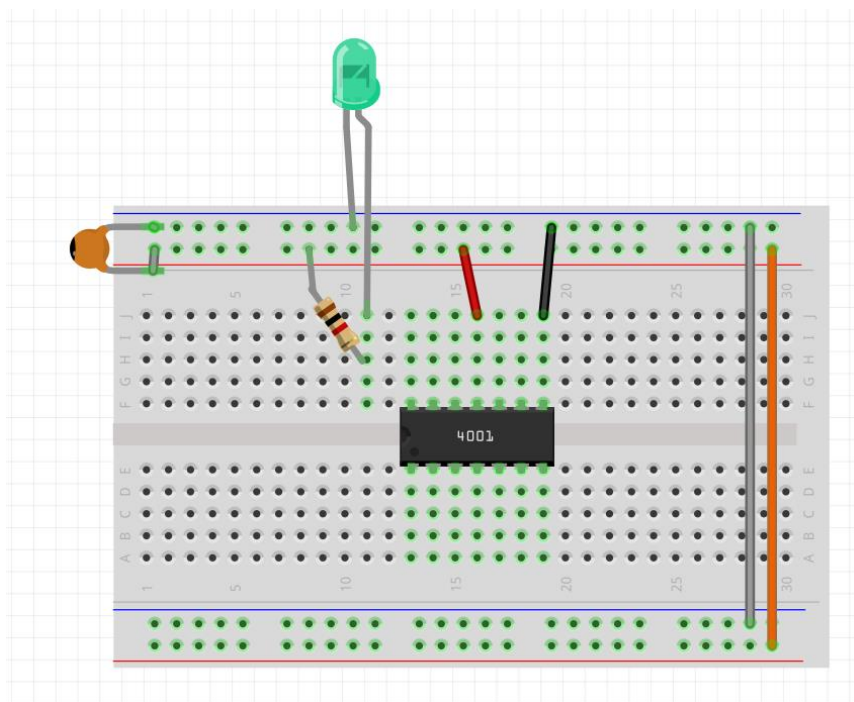


Figure 7.

- Connect the Green LED positive (long leg) to the near side of resistor
- Connect the Green LED negative to the ground rail.

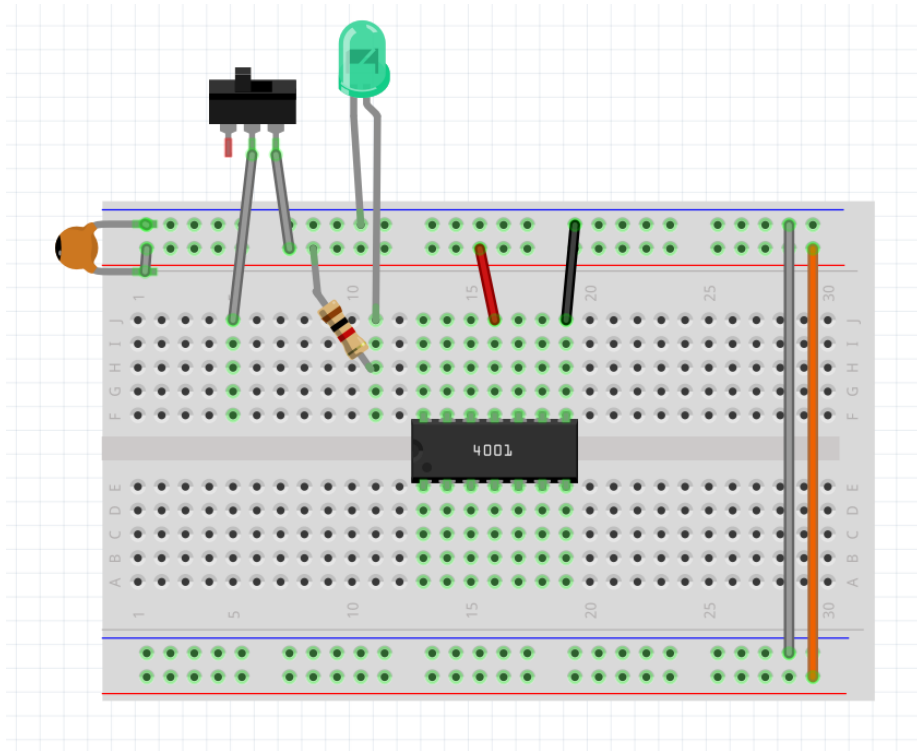


Figure 8.

- Connect switch wires to the power rail and a vacant column.

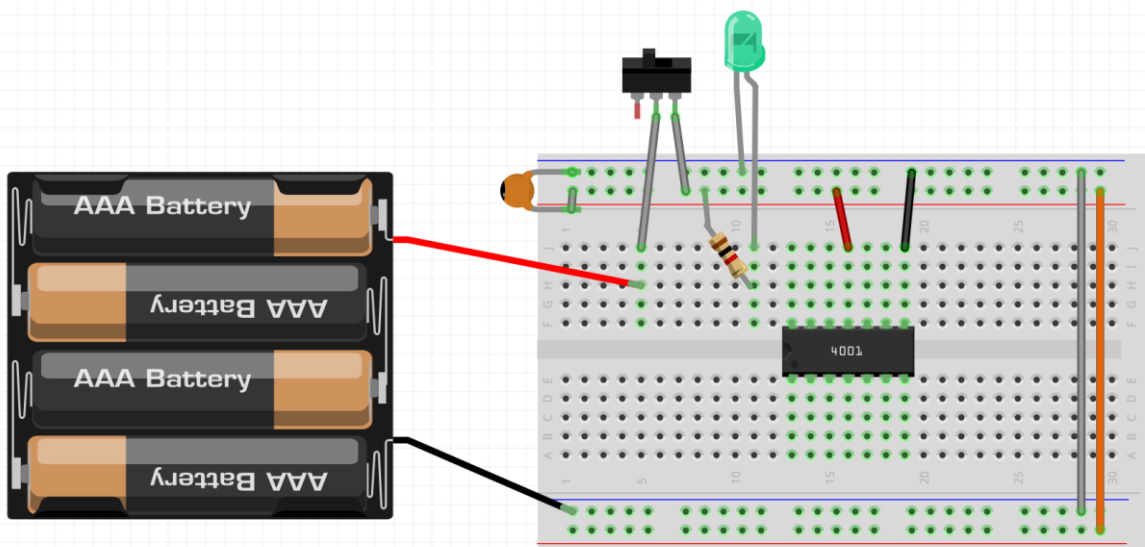


Figure 9.

- Insert batteries in to the battery case and connect battery negative (black) to breadboard ground rail, and the positive (red) to the switch column.

Test: Toggle power switch and the Green LED should turn on and off.

Your build may look similar to photo 1, at this stage.

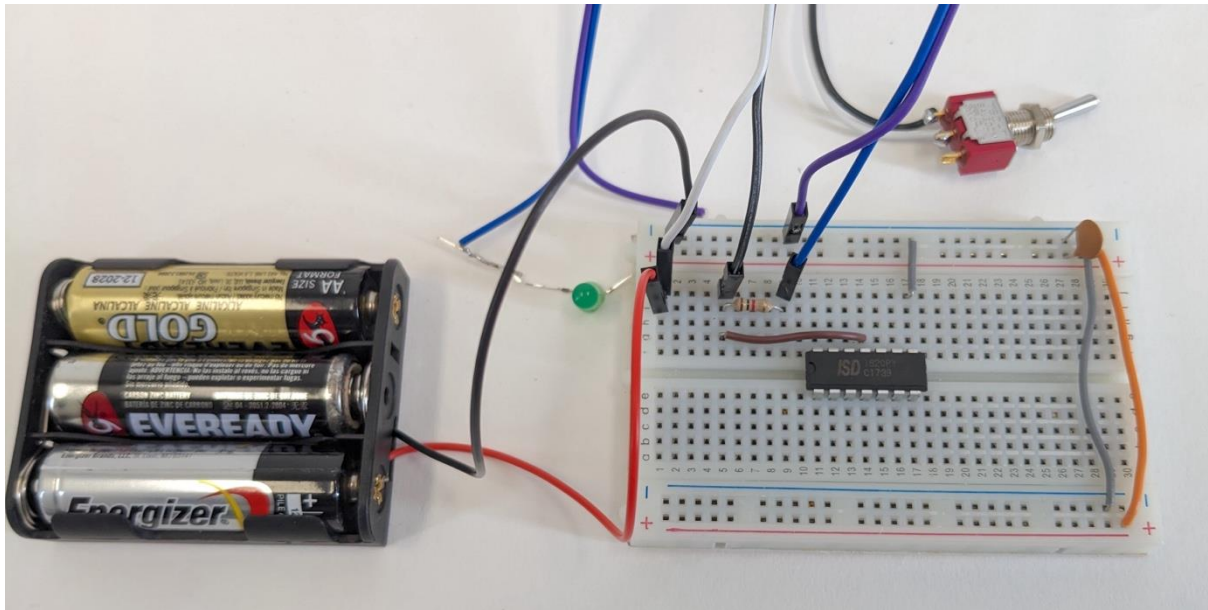


Photo 1.

Stage 2: Record Button

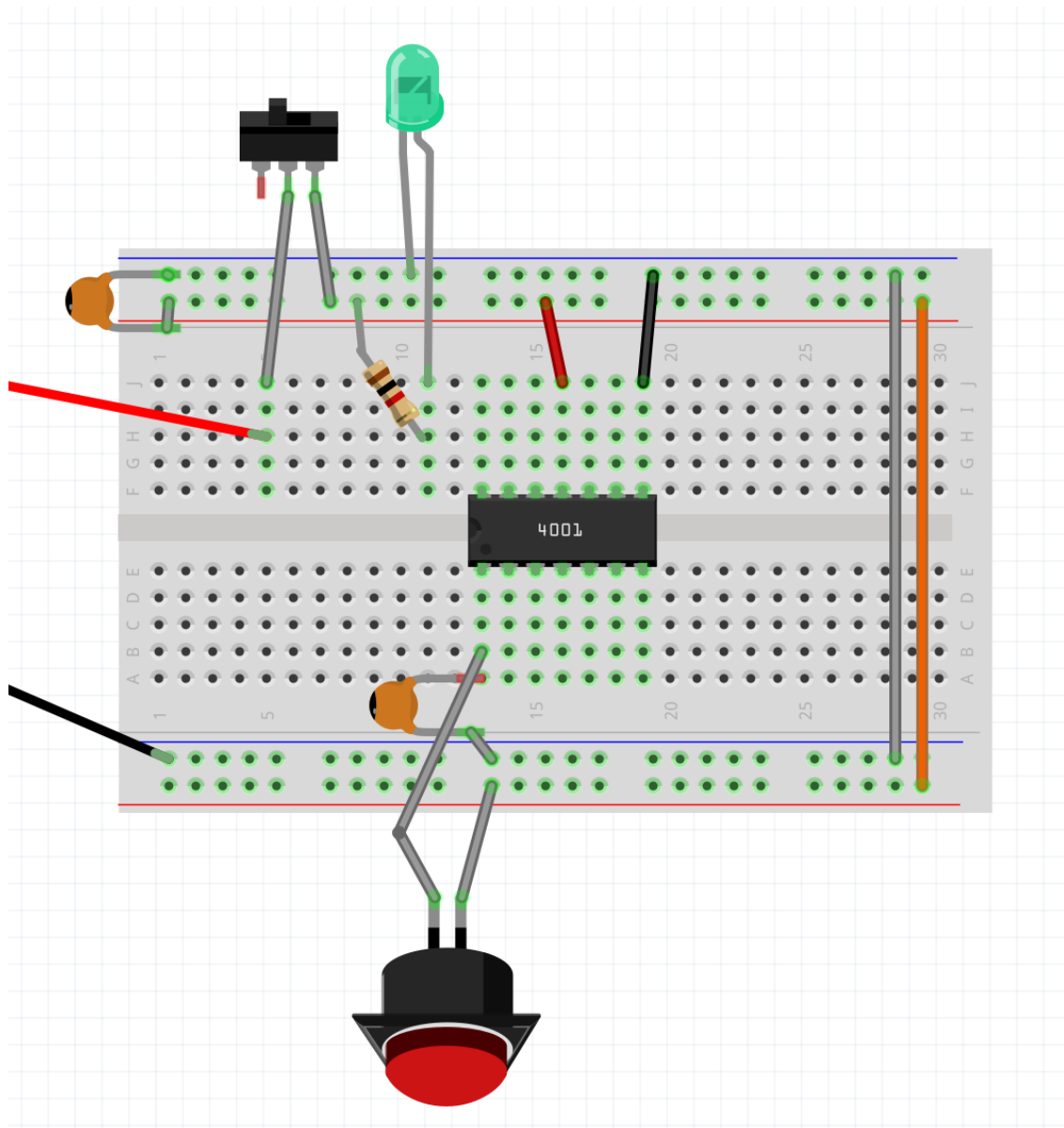


Figure 10.

- Connect a capacitor from IC pin 1 to ground
- Connect Red Button wires to IC Pin 1 and the power rail

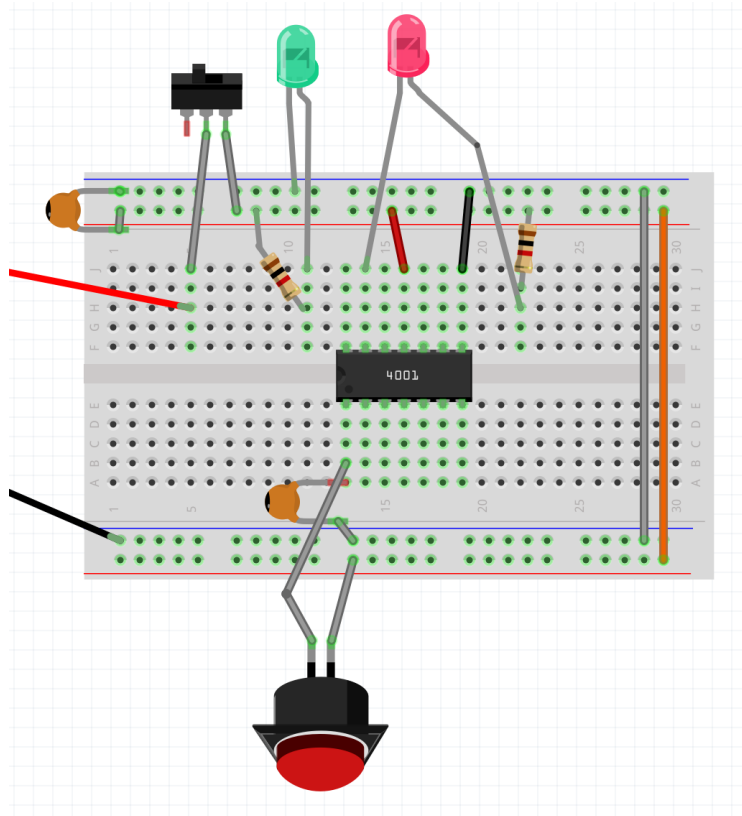


Figure 11.

- Insert 1K resistor from power rail to empty breadboard column
- Connect Red LED positive (long leg) to resistor column and negative to IC Pin 13

Test: Turn power on. Press the Red Button and the Red LED should light up.

Your build may look similar to photo 2, at this stage.

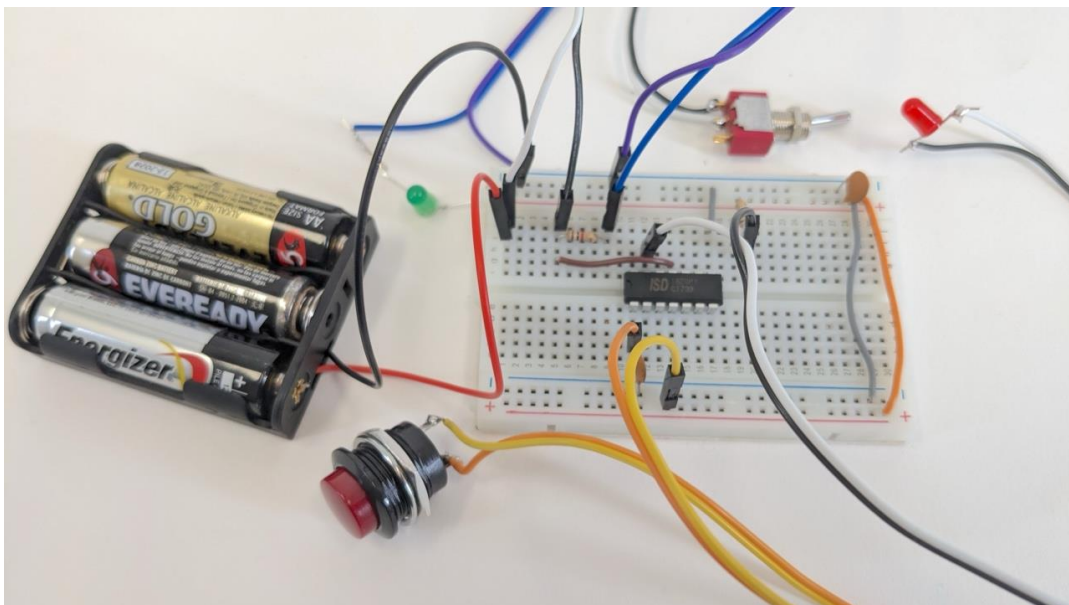


Photo 2.

Stage 3: Microphone and Speaker

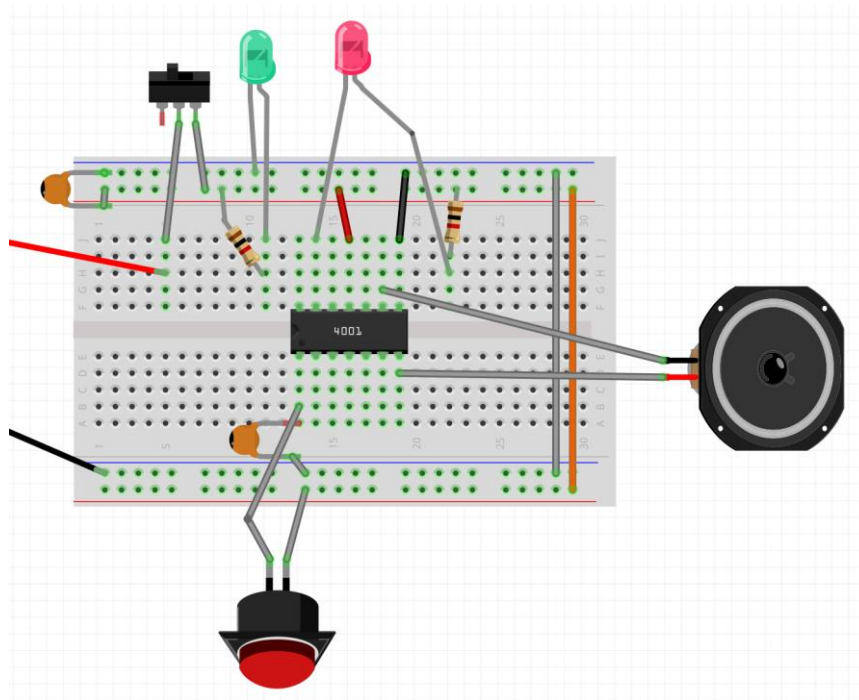


Figure 12.

- Connect the speaker wires to IC pins 7 and 9.

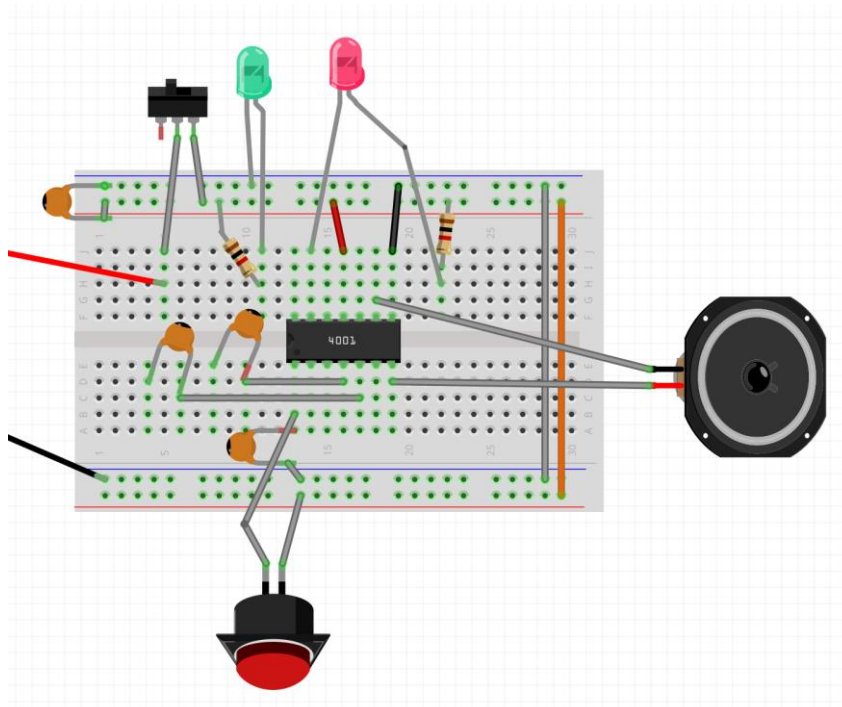


Figure 13.

- Connect two capacitors, one from IC Pin 4 to a vacant column A and the other from IC Pin 5 to a different vacant column B.

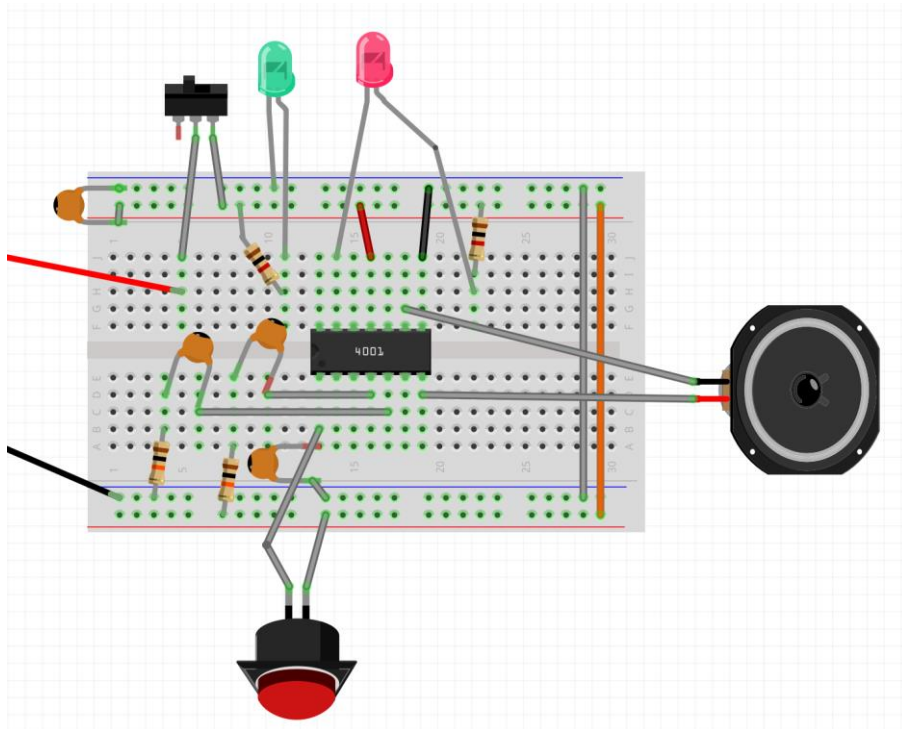


Figure 14.

- Connect two 10K resistors, one from column A to the power rail, the other from column B to ground.

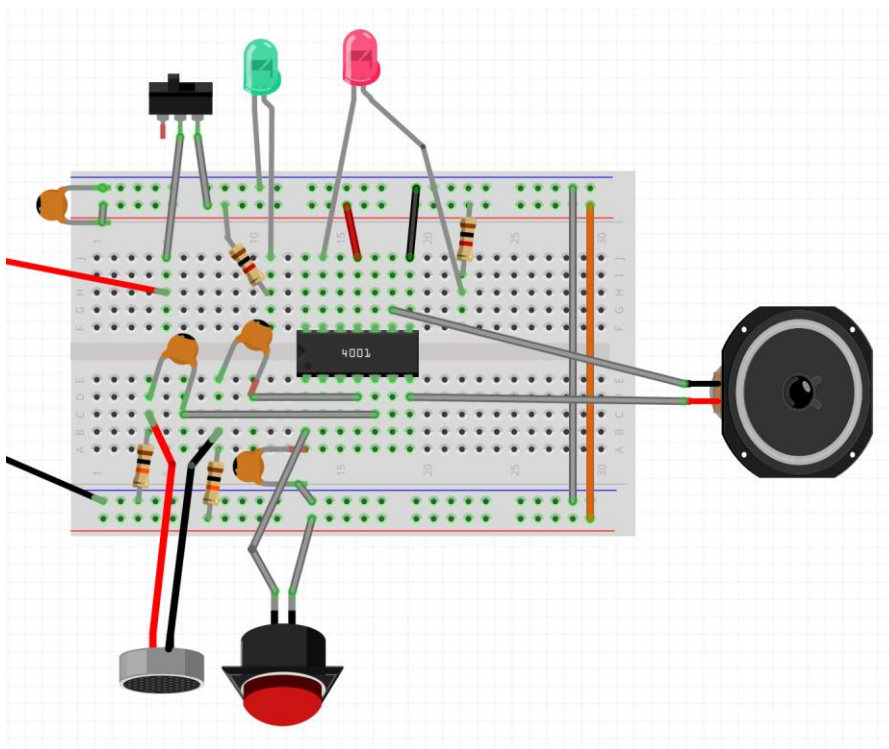


Figure 15.

- Connect the two Microphone wires, one each to column A and B.

Your build may look similar to photo 3, at this stage.

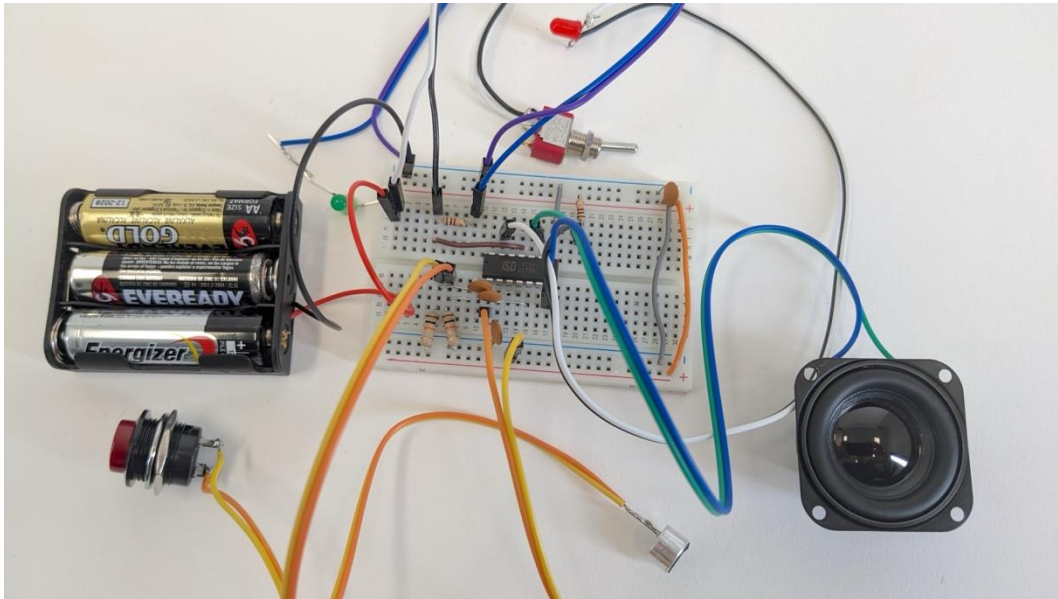


Photo 3.

Stage 4: Playback Buttons and Potentiometer

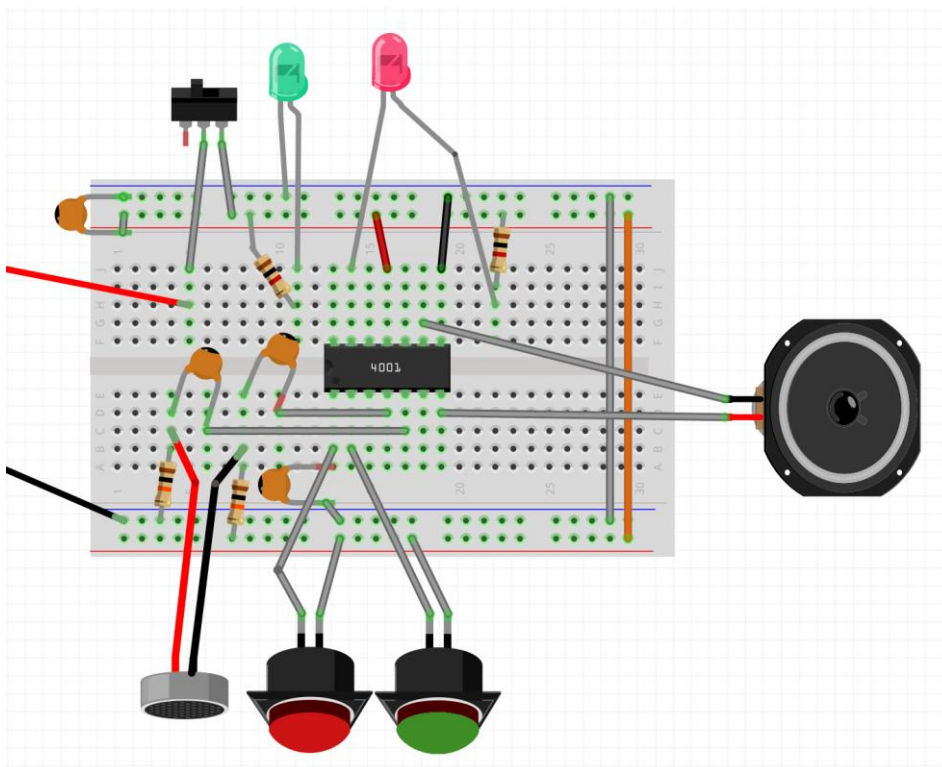


Figure 16.

- Connect the Green Button (Play) wires to IC Pin 2 and the power rail.

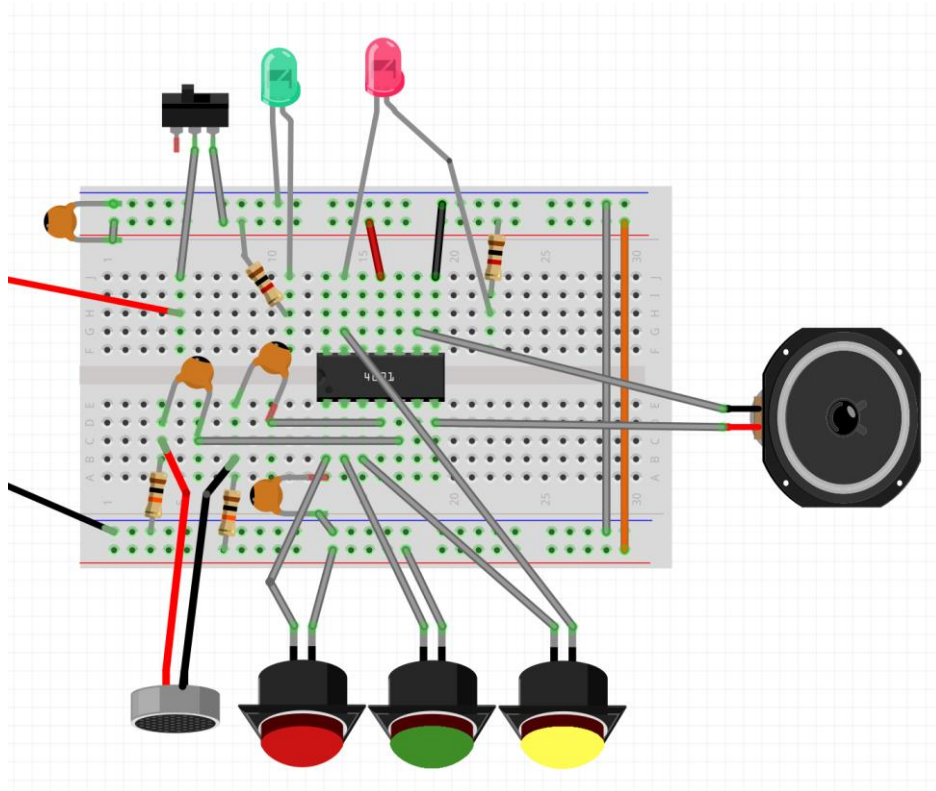


Figure 17.

- Connect the Yellow Button (Loop) wires to IC Pin 3 and IC Pin 13.

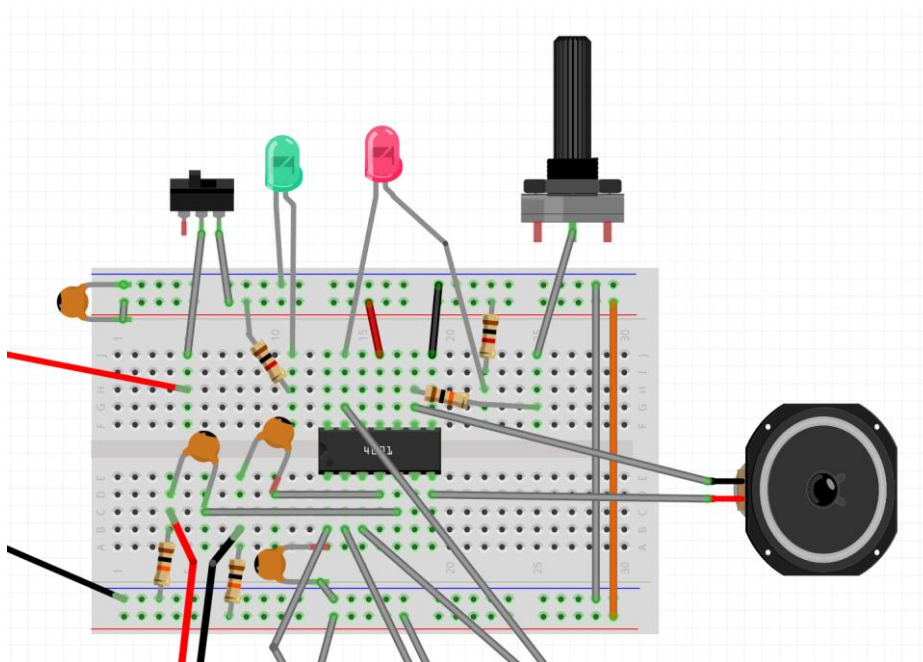


Figure 18.

- Connect a 10K resistor from IC Pin 10 to a vacant breadboard column.
- Connect the centre wire of the potentiometer to the same column.

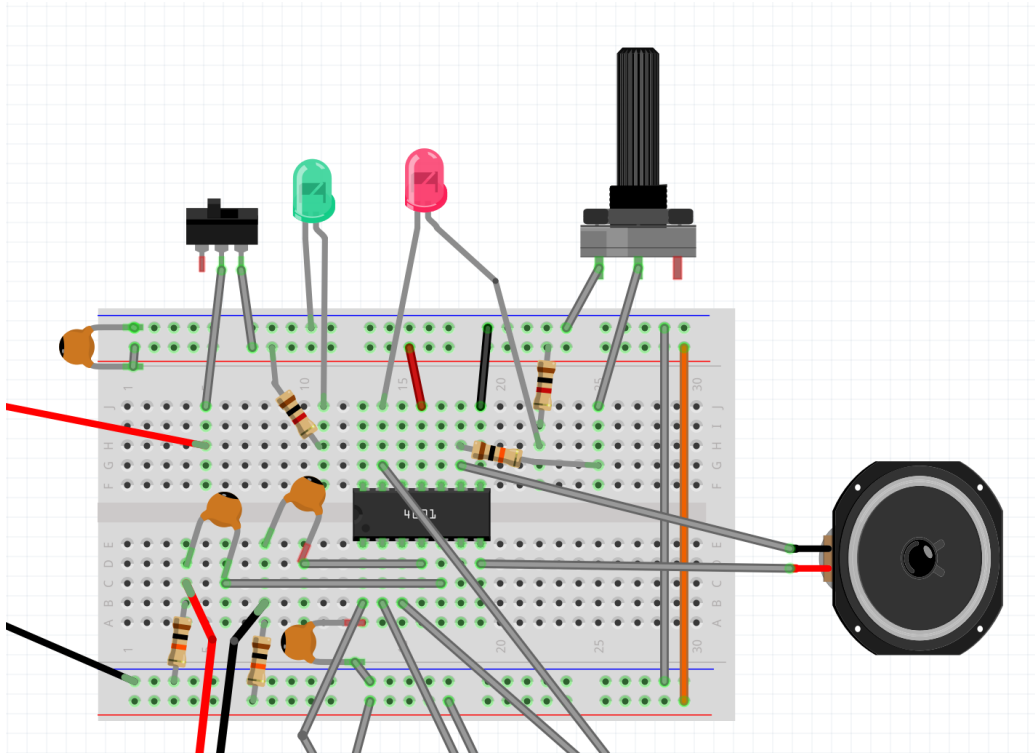


Figure 19.

- Connect the right wire of the potentiometer to ground.

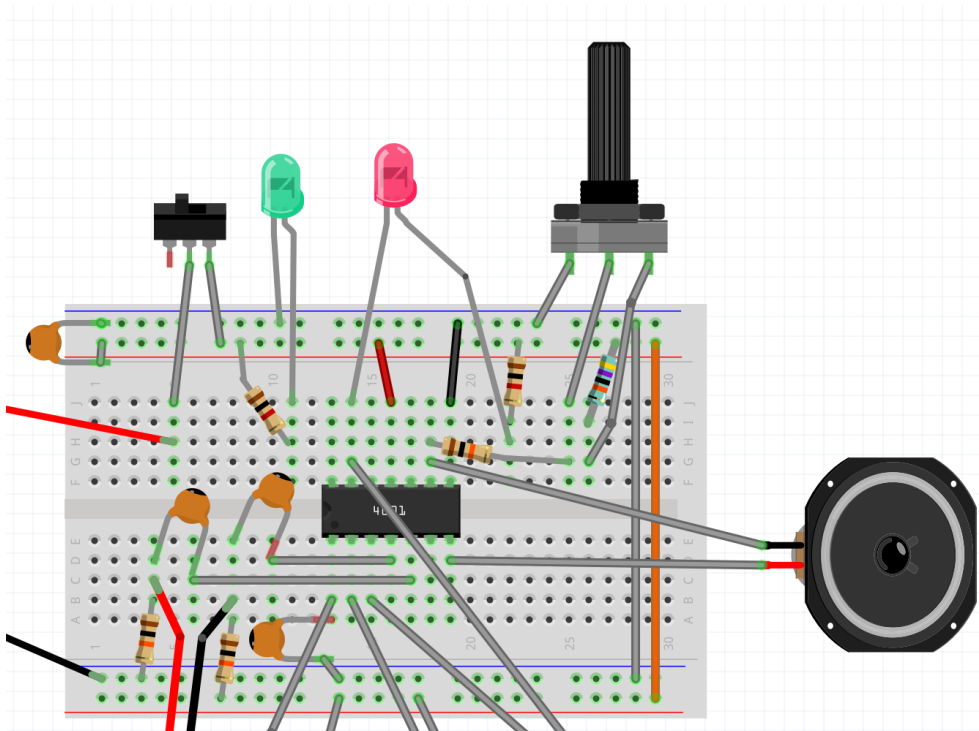


Figure 20.

- Connect the 470K resistor from a vacant breadboard column to the power rail.
- Connect the left wire of the potentiometer to that column.

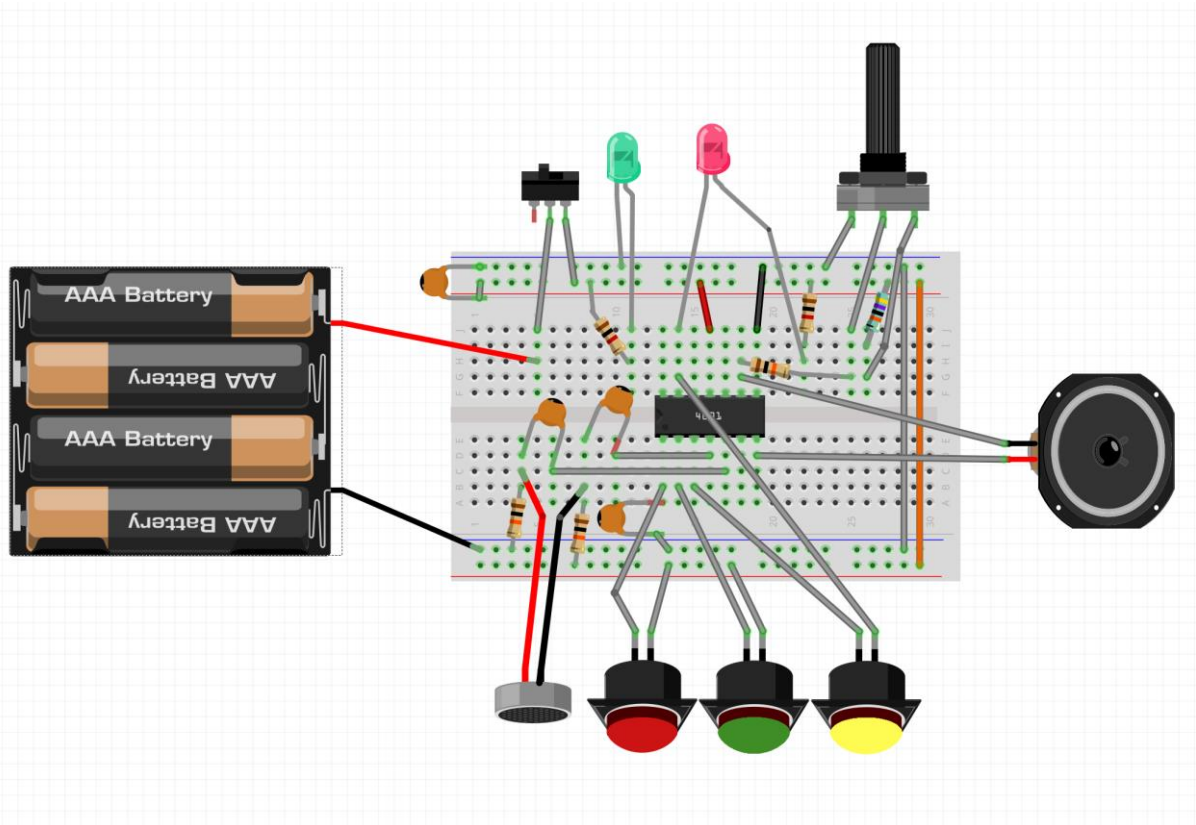
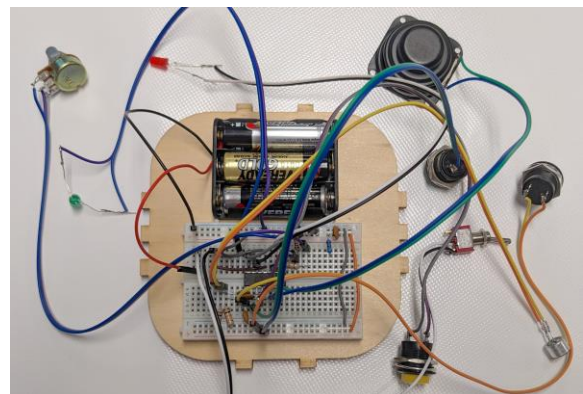
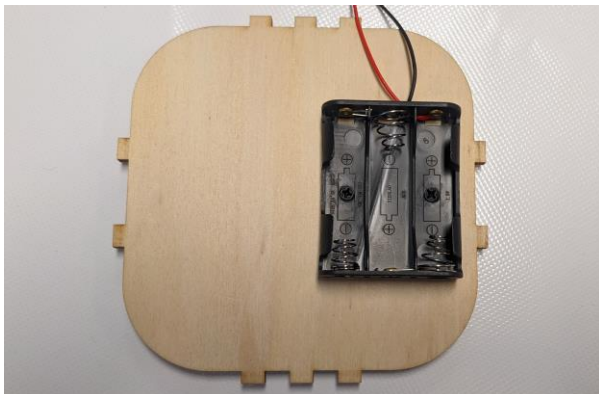


Figure 21.

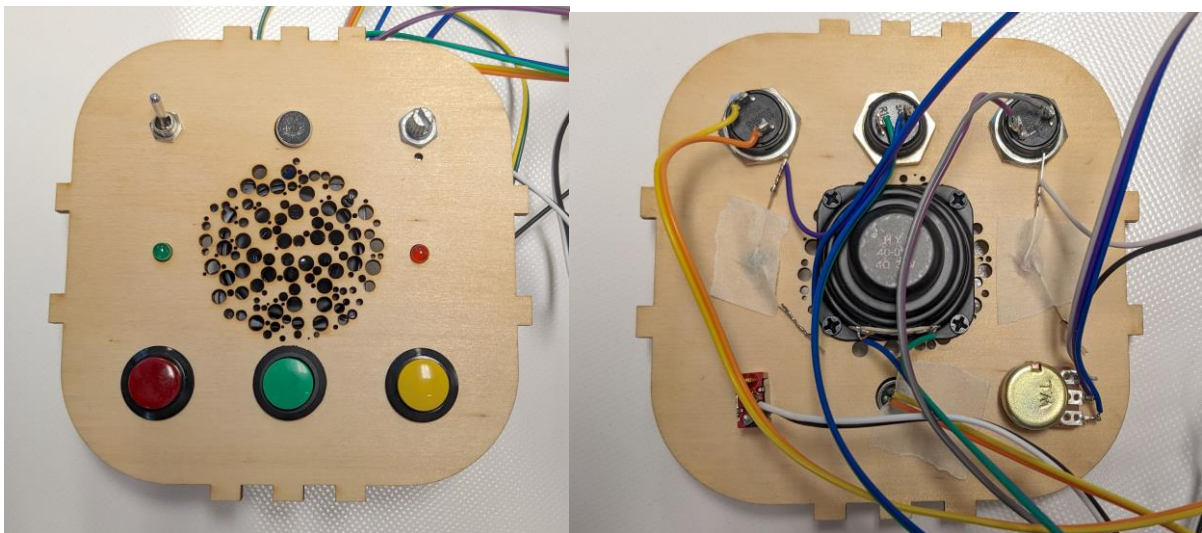
Test: Turn on power. Move the potentiometer to the middle of its range. Press and hold the Record (Red) button and make a noise into the microphone. Then press the Play (Green) or hold the Loop (Yellow) button – you should hear the recording played back.

Stage 5: Connect components to the Back and Front Panels

- Screw the battery case to the baseplate of the enclosure. Re-insert the batteries.
- Peel off the protector from the bottom of the breadboard and stick the breadboard to the enclosure baseplate, next to the battery case.

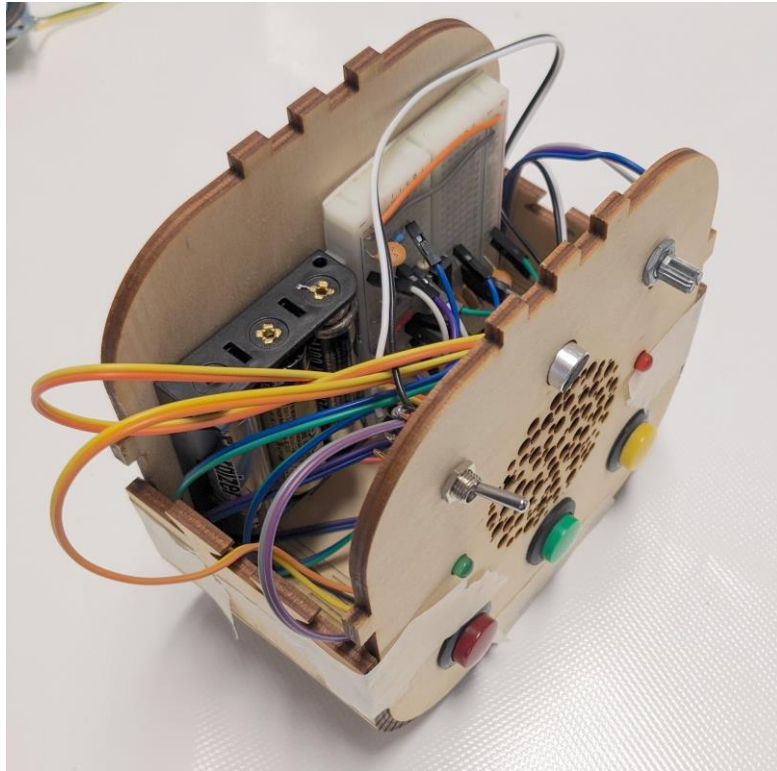


- Unscrew the nuts and washers from the three buttons.
- Attach speaker, microphone, LEDs, buttons and switch to the top panel. Glue or tape LEDs and microphone in place.
- You will need to disconnect and reconnect the wires from the breadboard to put them through the holes in the face plate – remember where the wires were plugged in so you can reconnect them back into the same location.
- Hot glue the Dupont pins to the breadboard and the microphone and LEDs to the inside of the top plate to prevent them dislodging as the instrument is moved around.

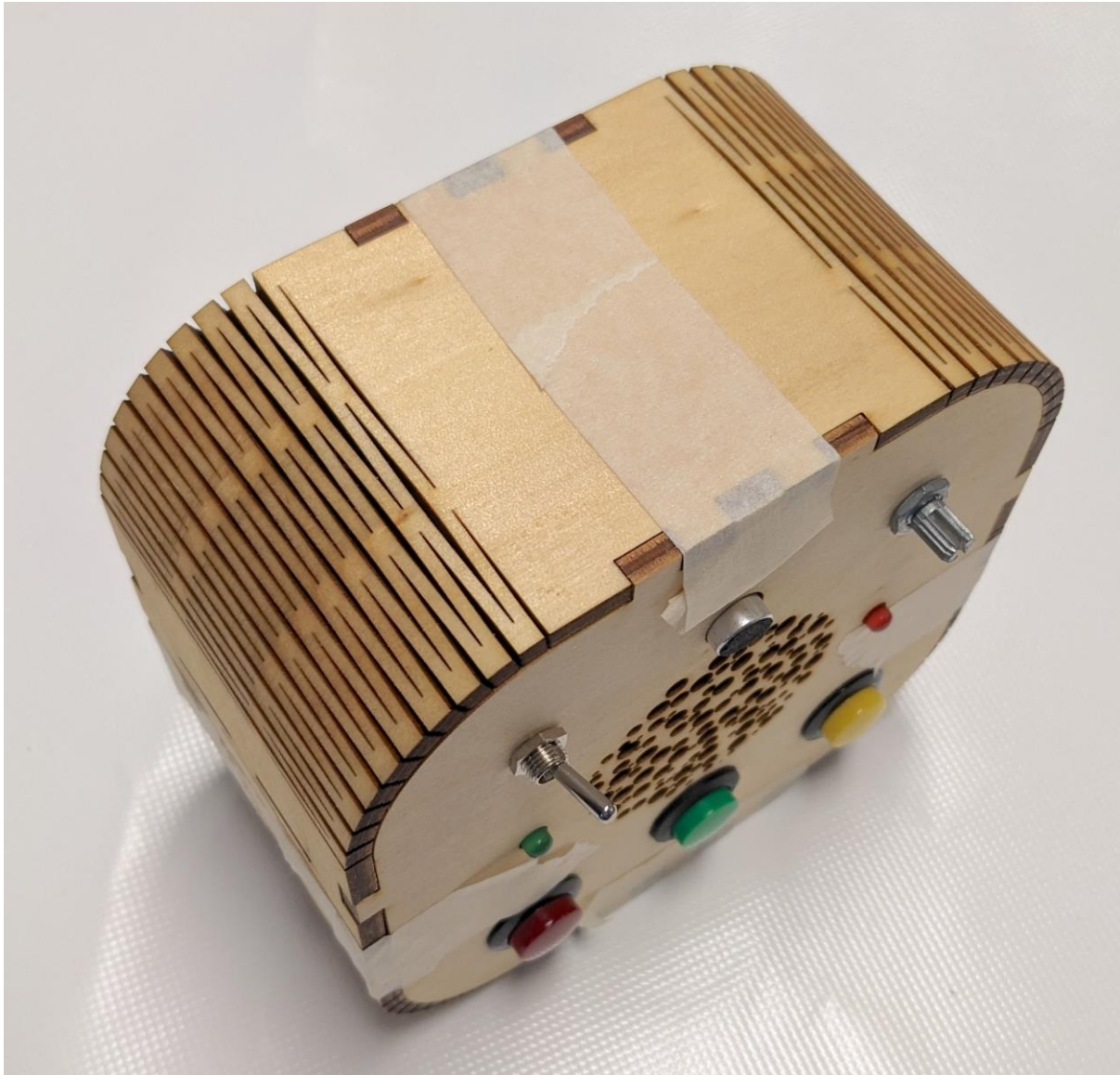


Stage 6: Assemble the Enclosure

- Lay an enclosure side edge flat on the table and position the back and sides in place. Temporarily secure with masking tape or elastic bands to hold in place.
- Wrap one side of the living hinge up the side and secure in place, carefully ensuring the cables are tucked in neatly. Temporarily secure with masking tape or elastic bands to hold in place. Then do the same for the other side.



- Attach the second side, starting by position the centre and temporary securing.
- Wrap each side around and gently stretch the side joins into place. Note that there is a correct way to position the second side so the join types match up.



- Add the pot cap to the pitch control.
- Remove the temporary fastenings (tape or rubber bands). The box should hold together without gluing if handled gently. It is necessary to open one side of the enclosure, at least, to change batteries, but the other side could be glued for more strength.