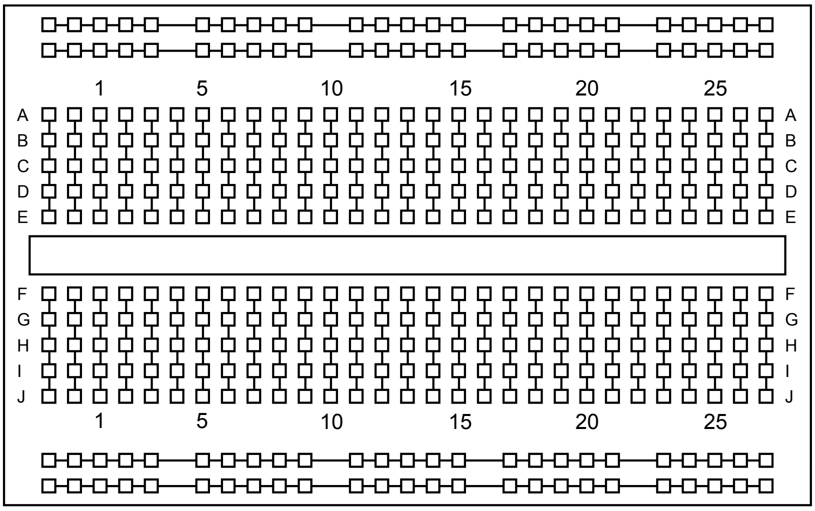
DECISION MAKER

Ask the circuit a question needing a Yes or No answer.

After a few seconds thought an answer will be given.

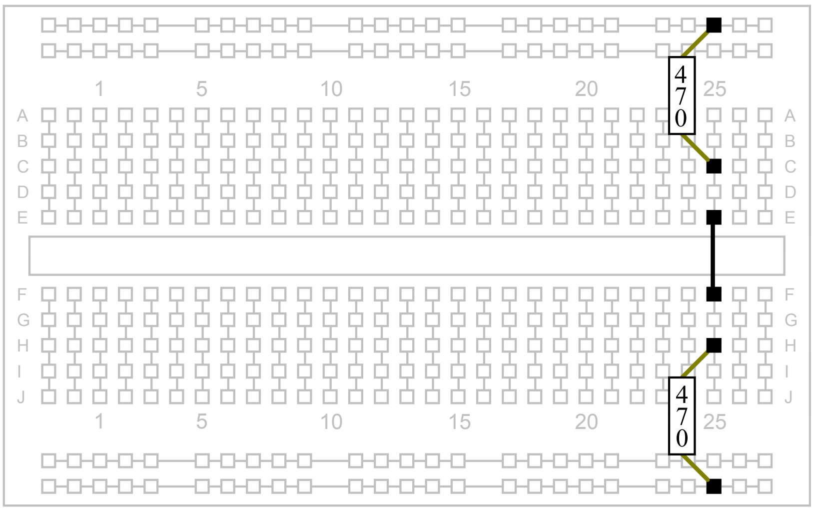
THE DECISION MAKER.

1). The circuit will be built on a protoboard as shown in the diagram below.

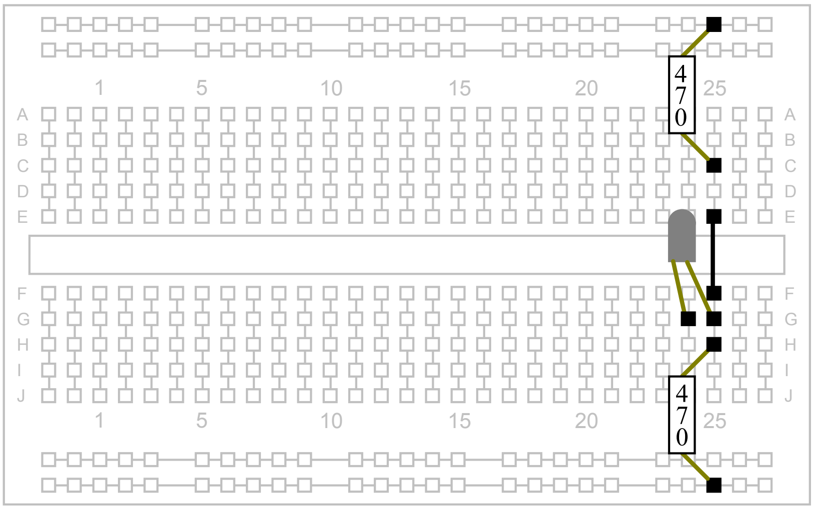


Note how each of the holes are connected.
The very top row will be connected to the positive side of the battery.
The very bottom row will be connected to the negative side of the battery.

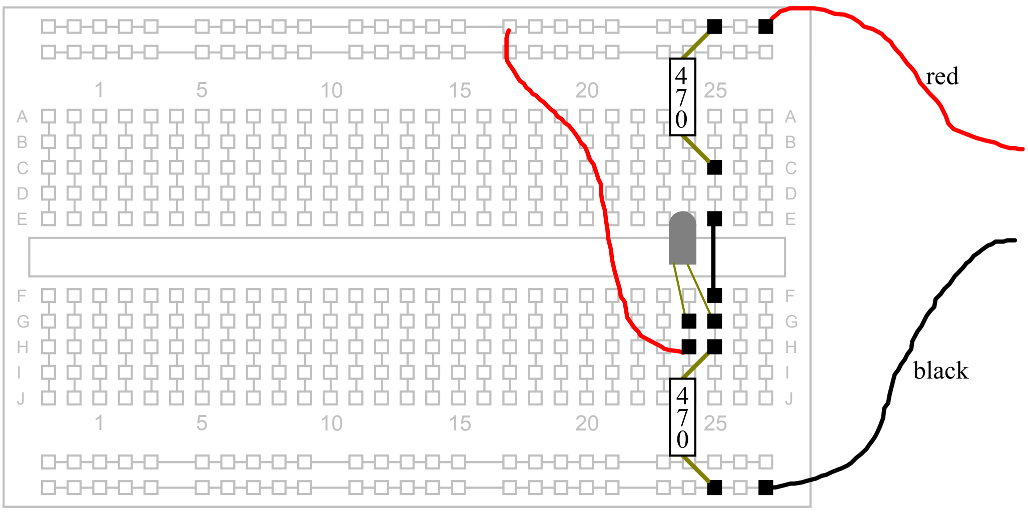
2). Take two 470 ohm (Ω) resistors. (Yellow, Violet, Brown, Gold) and put them into the protoboard as in the diagram below.
Also add a piece of wire to join together the resistors (as shown below).



3). Connect the LED into the circuit as shown below. The flat side should point away from the resistors.



4). This section now needs to be tested. Connect the red lead of the battery connector to the top row and the black lead to the bottom row.
Then connect a long wire to the hole next to the LED and to the positive row.



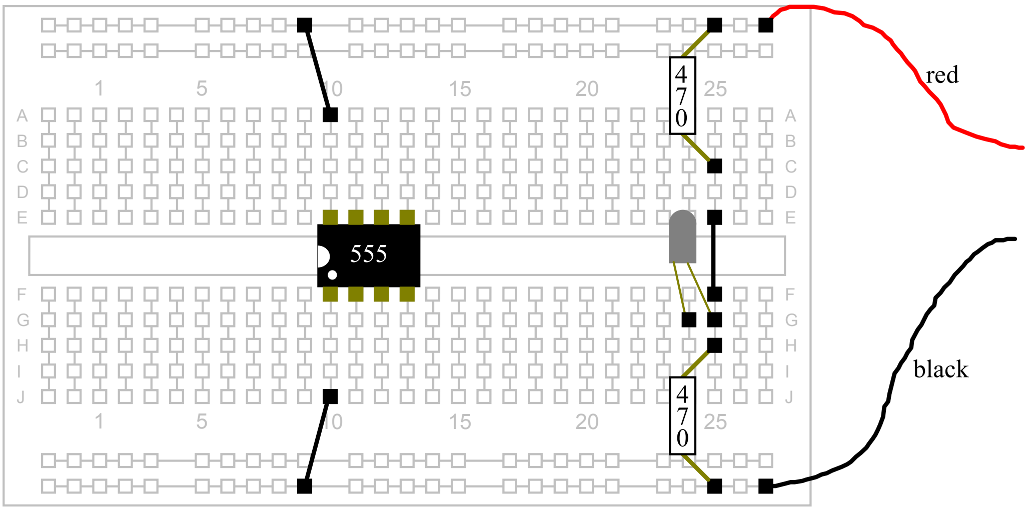
Connect the battery.

What happens?...

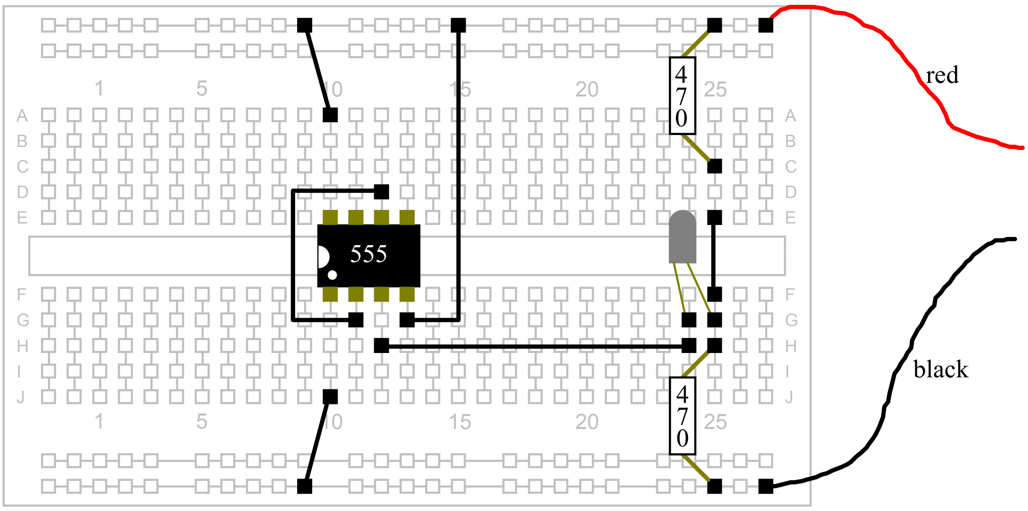
Now take the wire out of the top row and connect it to the bottom row.

What happens now?...

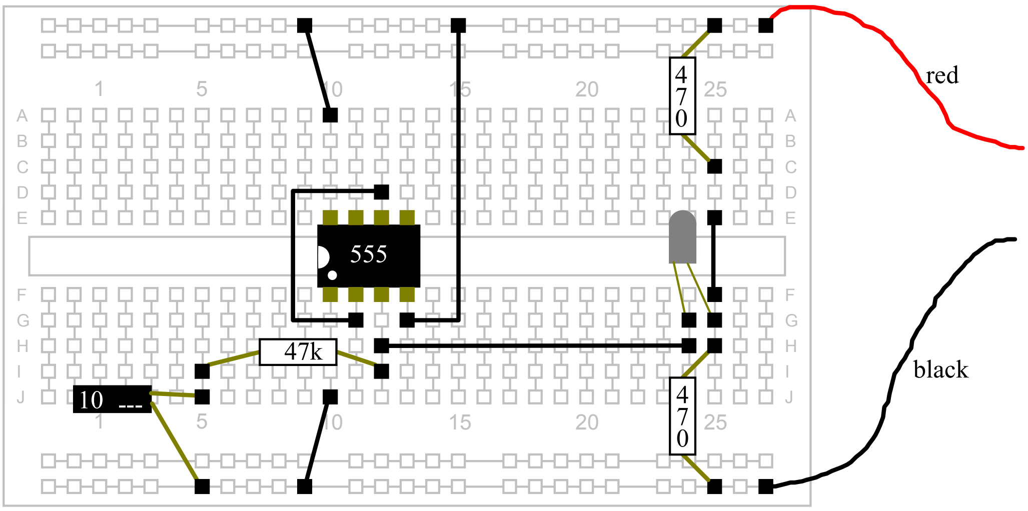
5). Disconnect the long wire and the battery.
Insert the Integrated Circuit into the circuit board as shown below.
MAKE SURE IT IS THE CORRECT WAY ROUND!!!!!
Connect a wire from pin 1 to the negative row and a wire from pin 8 to the positive row.



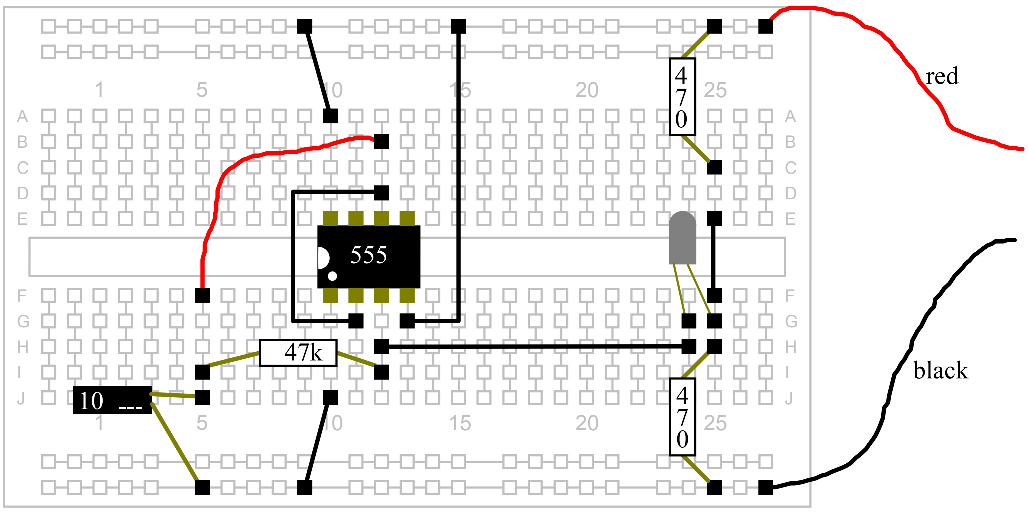
6). Connect a wire from pin 4 of the IC to the positive row.
Connect a wire from pin 3 of the IC to the LED.
Connect a wire from pin 2 of the IC to of the IC pin 6.



7). to Connect a 47000 ohm (47kΩ) resistor (Yellow, Violet, Orange, Gold) from pin 3 of the IC column 5.
Connect a 10 microFarad (μF) capacitor from column 5 to the negative row.
MAKE SURE THAT IT IS CONNECTED THE CORRECT WAY ROUND!!



8). Connect a temporary wire from column 5 to pin 6 of the IC.



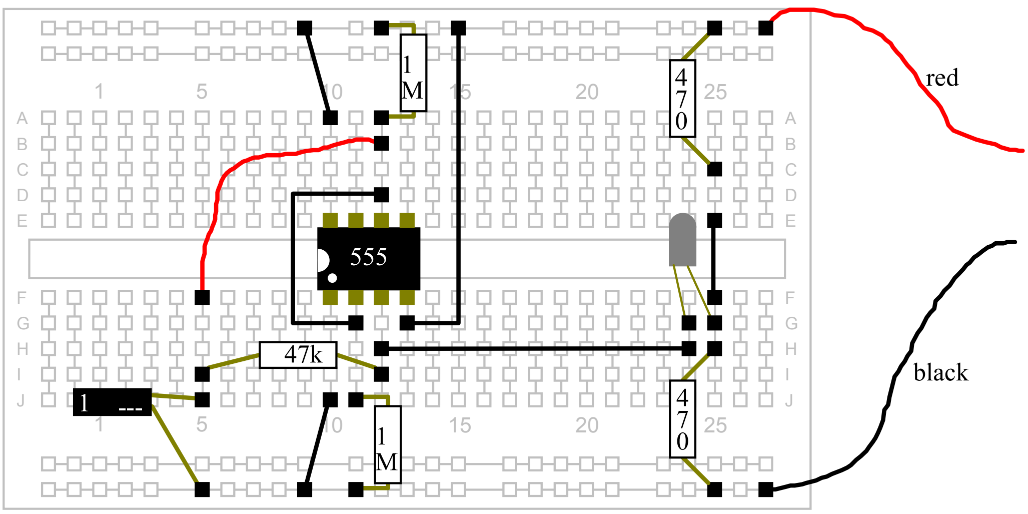
Connect the battery to the circuit.

What happens?..

Replace the 10μF capacitor with a 1μF capacitor.

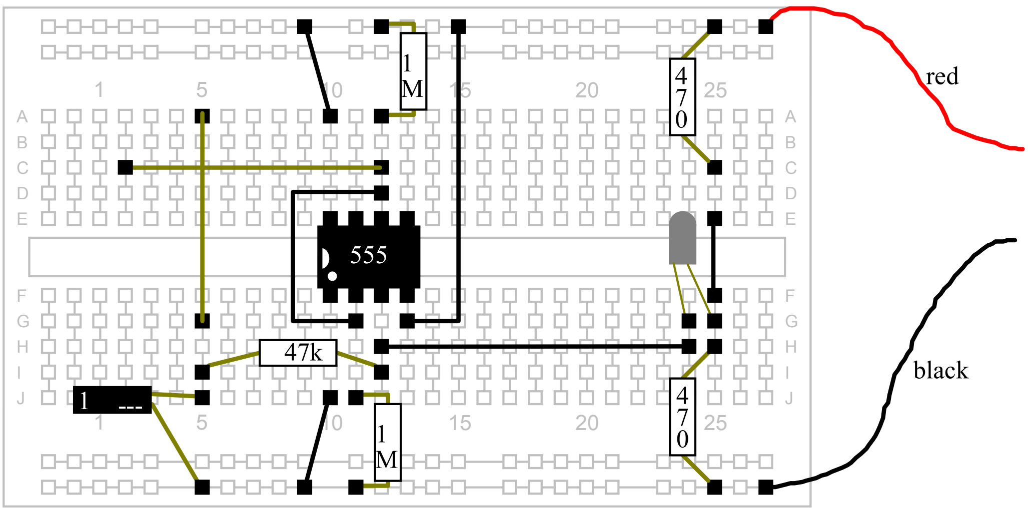
What happens?..

9). Connect two 1,000,000 ohm (1MΩ) resistors (Brown, Black, Green, Gold) to the circuit as shown in the diagram below.



Connect the battery and check that it still works.

10). Remove the temporary wire from column 5 to pin 6 of the IC.
Add two pieces of bared wire to the circuit to make a switch.



Reconnect the battery and the LED should glow either Red or Green.
Push down where the bared wires cross and the LED should change colour.

To use the circuit to make a decision, allocate Red to YES and Green to NO.
To make a decision press the bared wires, close your eyes and then release the bared wires.
When you open your eyes the circuit will have reached a decision for you!

TESTING

To check how random your decision maker is, test it 30 times and record its decision.

	RED	GREEN
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
TOTAL		

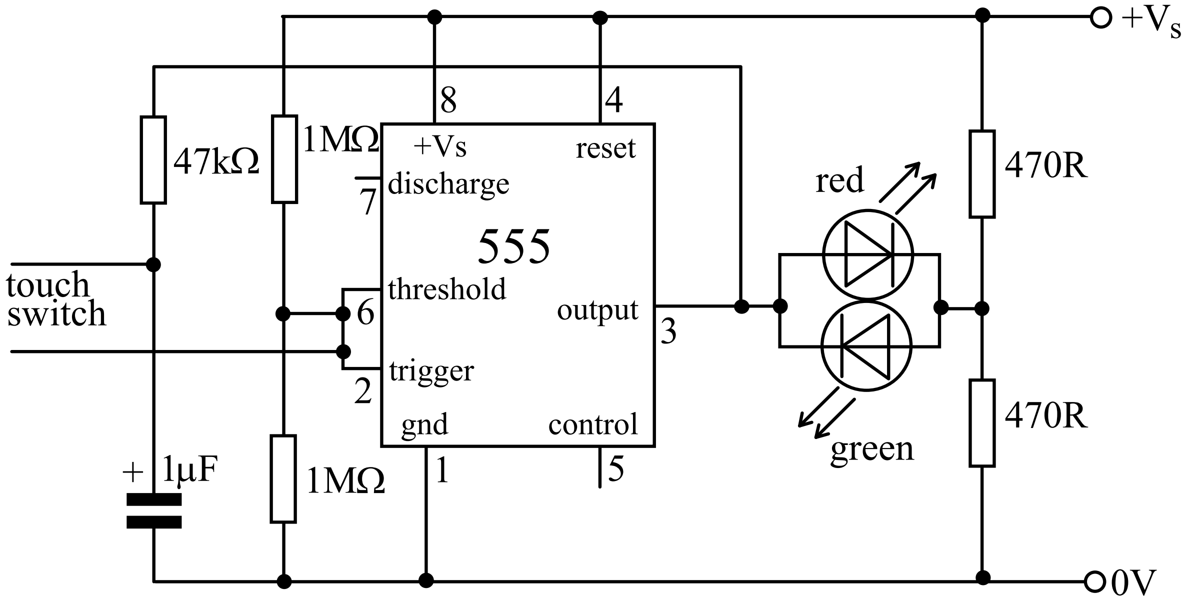
How random is the decision maker?

....

....

....

Circuit Diagram.



Label as many components as you can on the circuit diagram