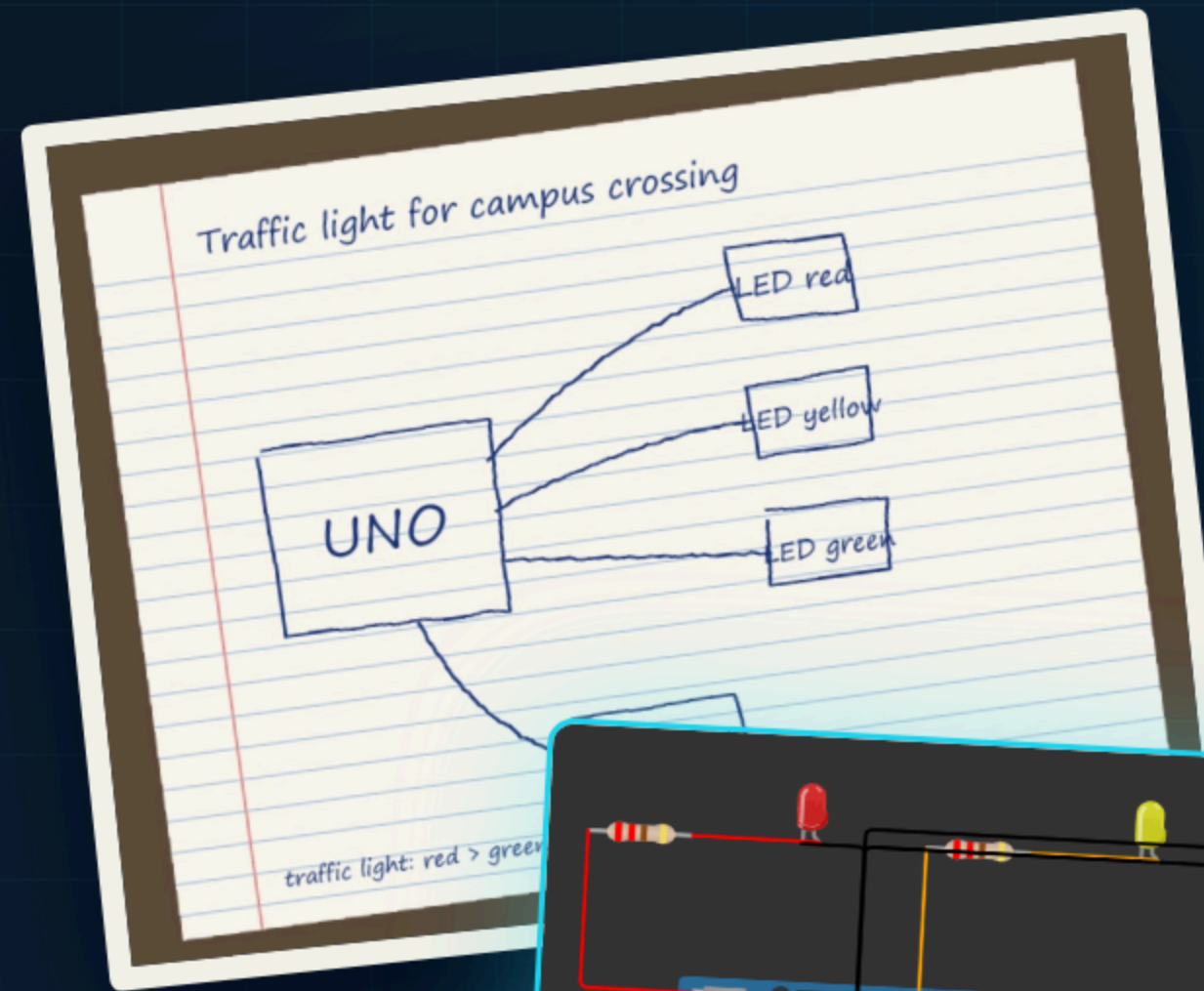


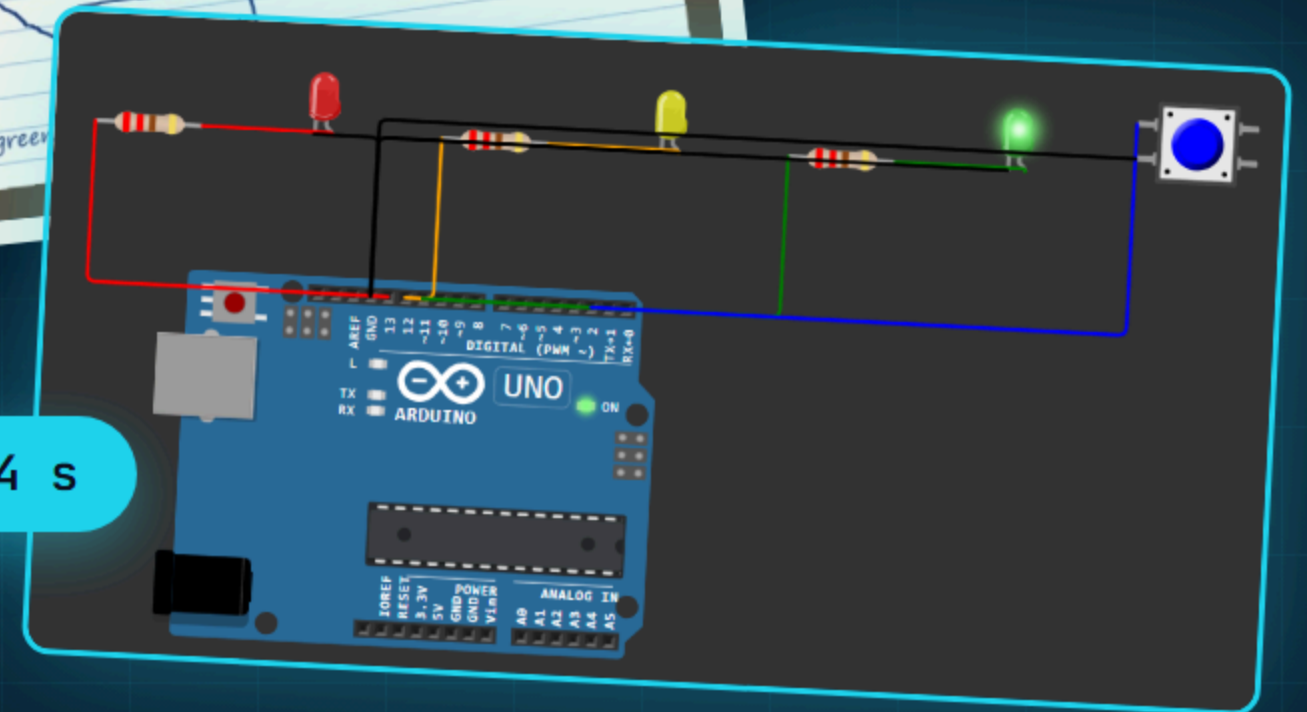
MLH HACK DAY BATAM 2026

Sketch2Sim

Paper sketch in.
Running circuit out.



Gemma 4 • 34 s

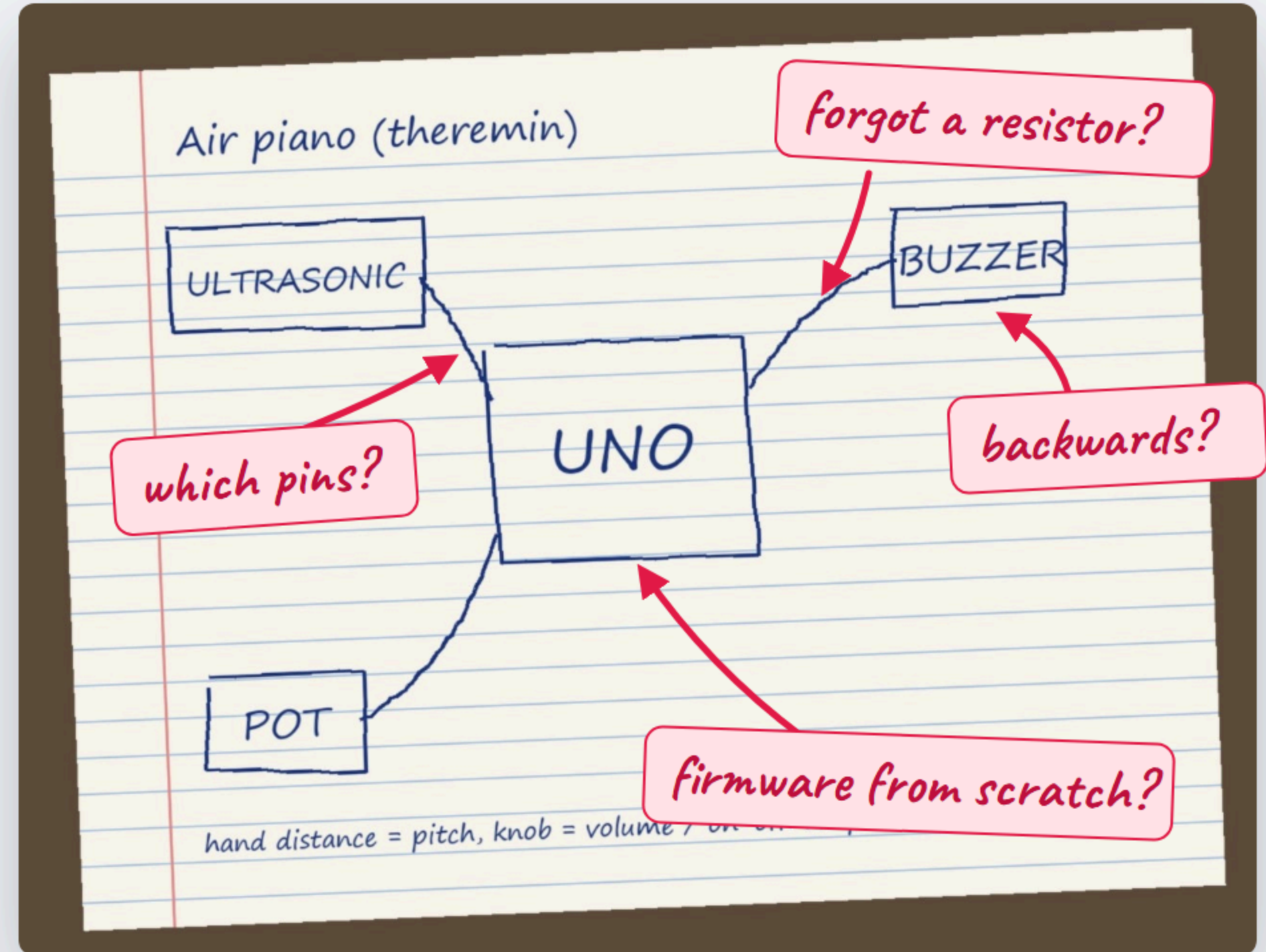


it actually runs!

THE PROBLEM

Every circuit starts as a sketch. Then it stalls.

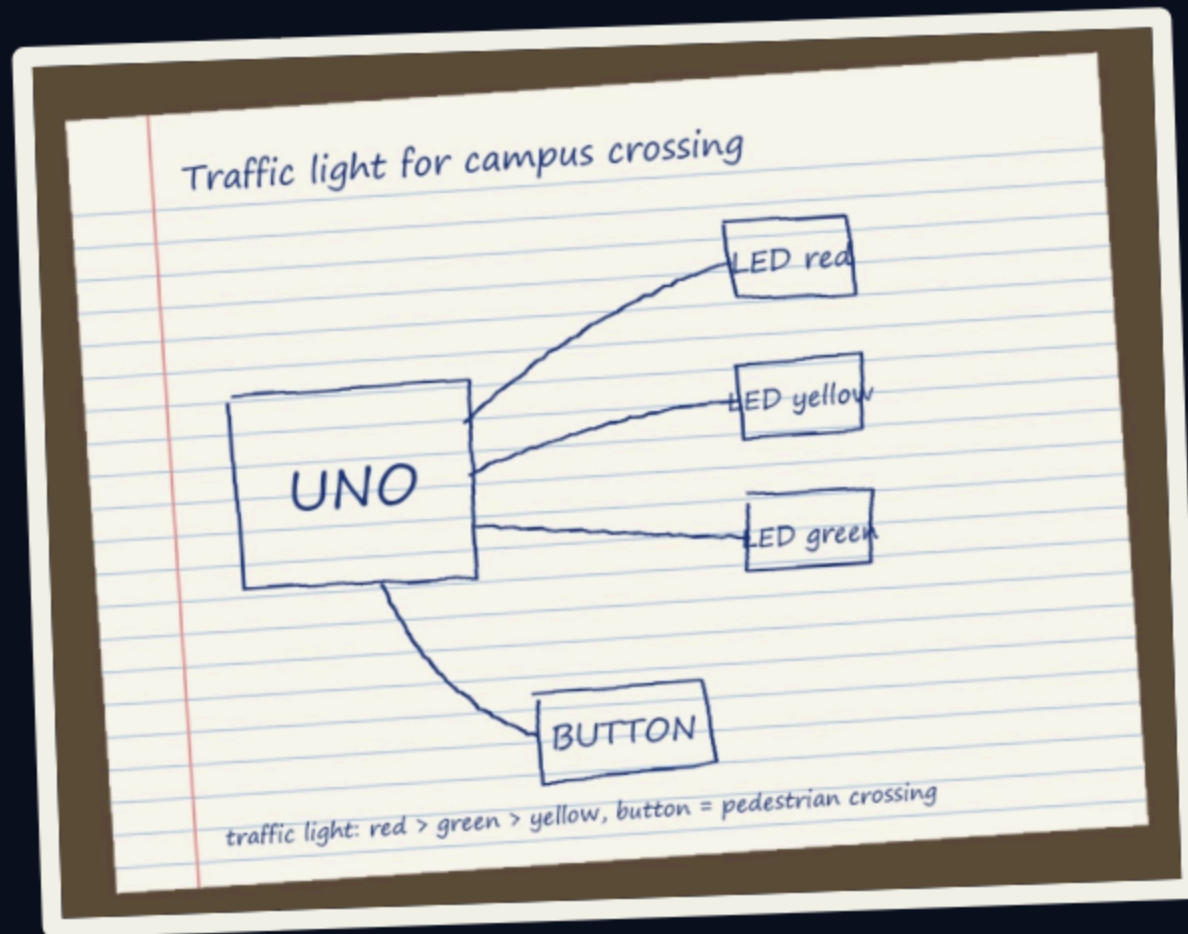
One wrong wire can eat a whole lab session.



A real sketch from today's test set

THE IDEA

The sketch **is** the source code.



IN · a phone photo

Live run, real screenshot



34 s

Traffic light for campus crossing

34.2 s gemma-4-26b-a4b-it

Open Wokwi

Copy diagram.json

Copy sketch.ino

1. paste into the **diagram.json** tab · 2. paste **sketch.ino** · 3. press ▶ · tip: press **F** in Wokwi to fit the view

Circuit

diagram.json

sketch.ino

Notes 2

A pedestrian crossing system where pressing a button triggers a red-green-yellow light sequence.

PARTS (8)

Arduino Uno uno

Red LED led_red

Yellow LED led_yellow

Green LED led_green

220 ohm r_red

220 ohm r_yellow

220 ohm r_green

Pedestrian Button btn1

WIRING (11)

FROM	TO	SIGNAL	WHY THIS PIN
uno : 13	r_red : 1	DIGITAL	Pin 13 drives the red LED.
r_red : 2	led_red : A	DIGITAL	Resistor limits current to red LED.
led_red : C	uno : GND.1	GND	Red LED cathode to ground.
uno : 12	r_yellow : 1	DIGITAL	Pin 12 drives the yellow LED.
r_yellow : 2	led_yellow : A	DIGITAL	Resistor limits current to yellow LED.
led_yellow : C	uno : GND.1	GND	Yellow LED cathode to ground.

OUT · parts, wiring, diagram.json, sketch.ino

HOW IT WORKS

One button. Four steps.

01 SKETCH

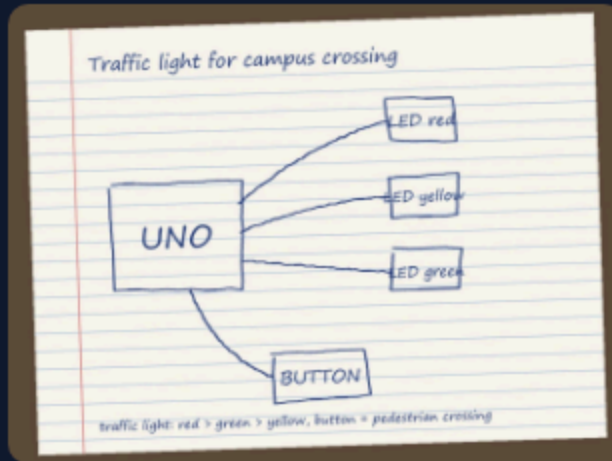


Photo or canvas



02 GEMMA 4

```
{  
  "parts": 8,  
  "wires": 11,  
  "ino": "void..."  
}
```

Answers in JSON



03 VALIDATOR

D13 → 13

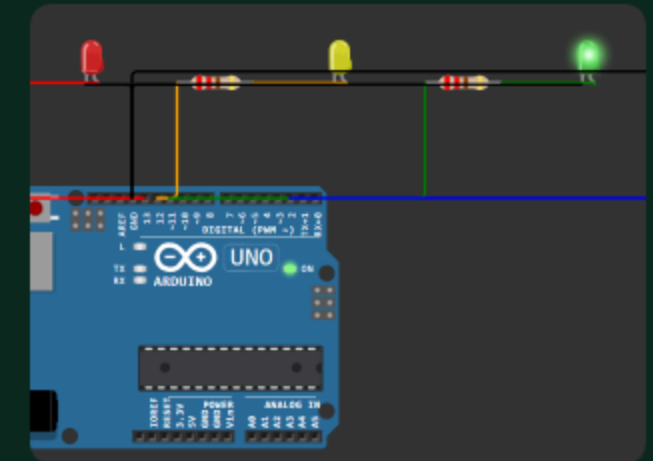
+ 220 Ω resistor

polarity flipped

Checks every wire



04 WOKWI



Paste and play

———— **≈30 s photo to running circuit** ————

THE TRUST LAYER

We don't trust the model blindly.

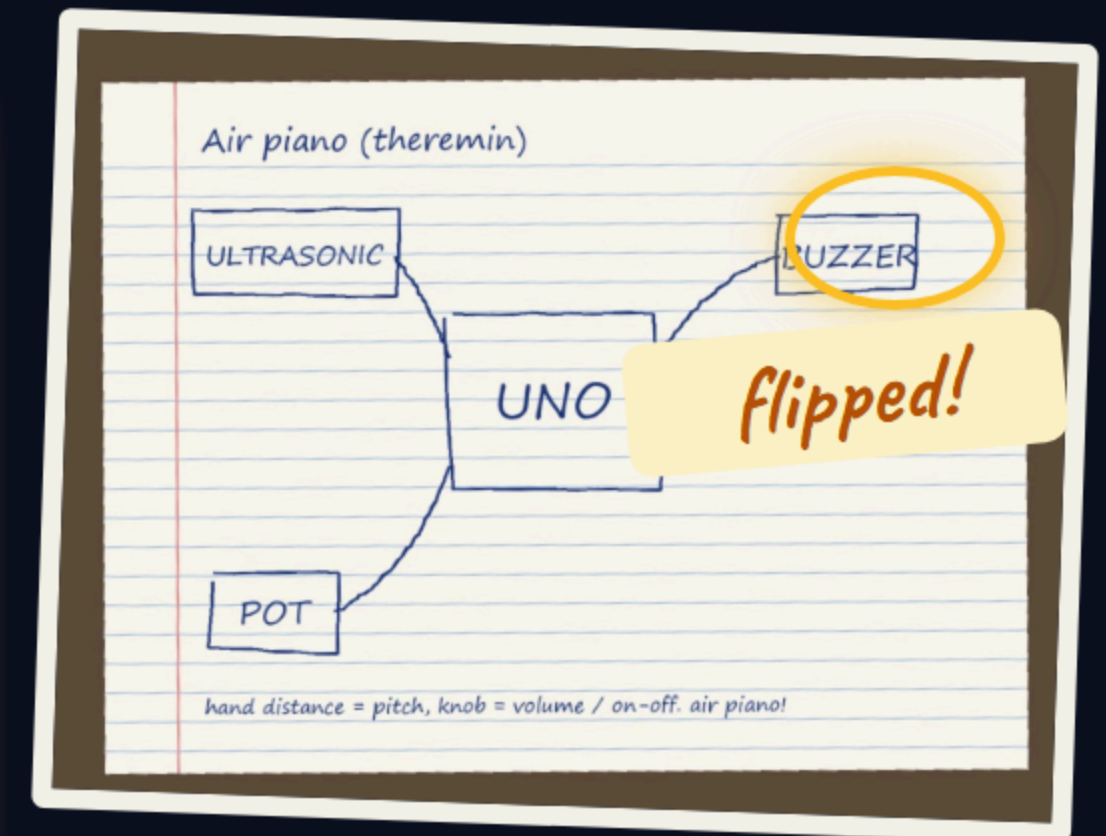
AUTO-FIXED BY VALIDATOR

~~uno:D13~~ → ~~uno:13~~ pin name

~~no-resistor~~ → + 220Ω resistor

~~buzzer+/-~~ → flipped caught live

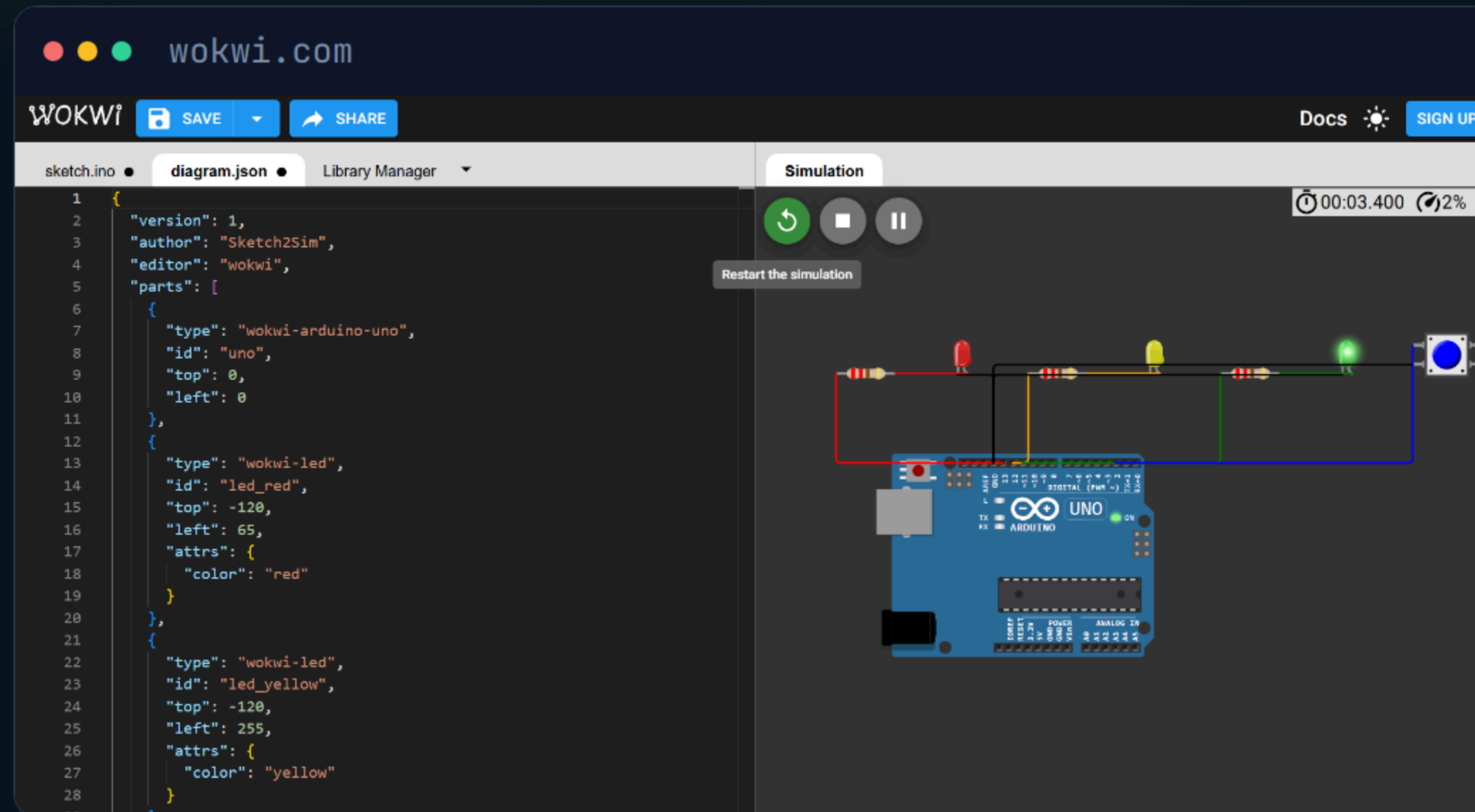
~~uno:7~~ → ~~uno:~9~~ PWM pin



On this sketch Gemma put the buzzer in backwards. The validator caught it.

PROOF

It runs in a real simulator.



5 / 5

sketches run in Wokwi

≈30 s

photo to circuit

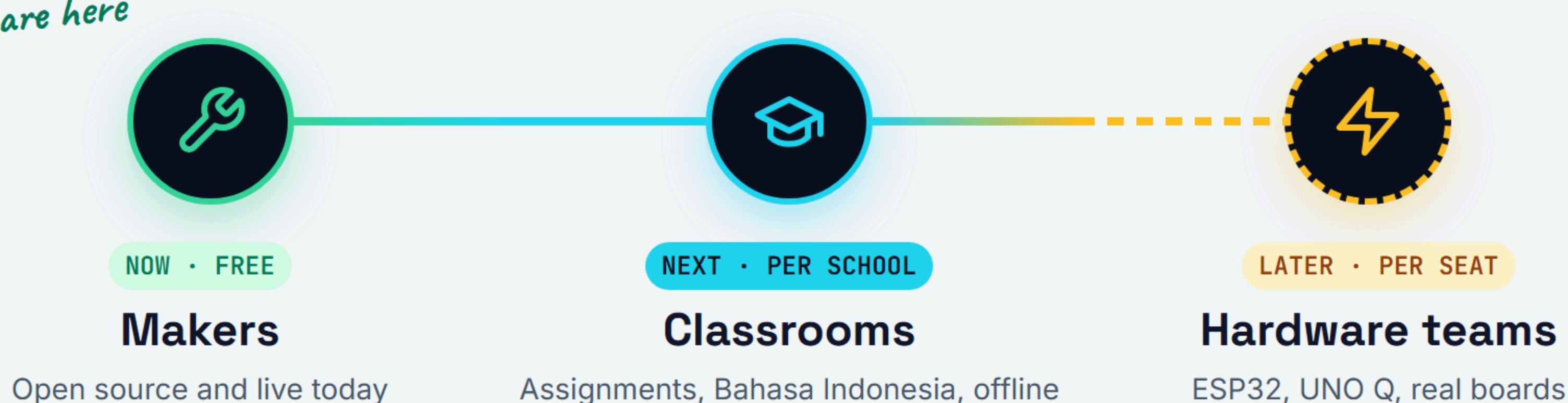
0

manual edits

WHERE IT GOES

Open core. Built for classrooms.

we are here



First pilots: **vocational labs in Batam**, where this was built.

Proposed model • pricing set with the first classroom pilots

Draw it. Run it.

`glatinone.github.io/sketch2sim`
`github.com/glatinone/sketch2sim`

Looking for **classroom pilots, hardware partners** and **contributors**.

