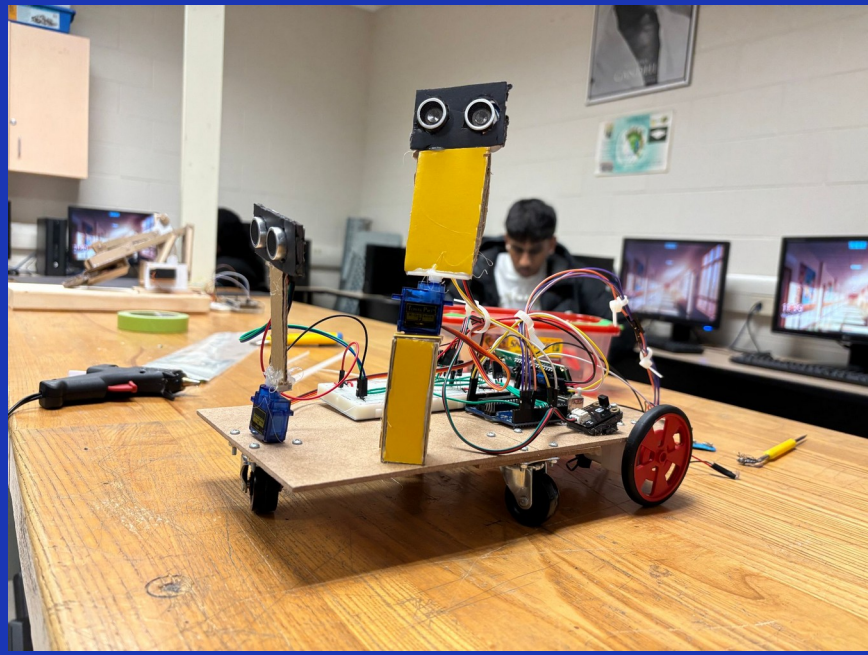
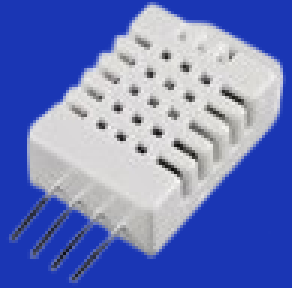
Syed Shayan Mazahir

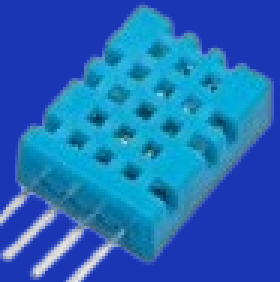
Mr. Beep-A-Lot

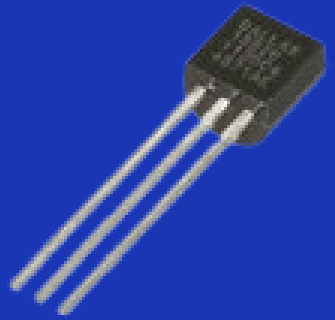
Computer Engineering Final Project



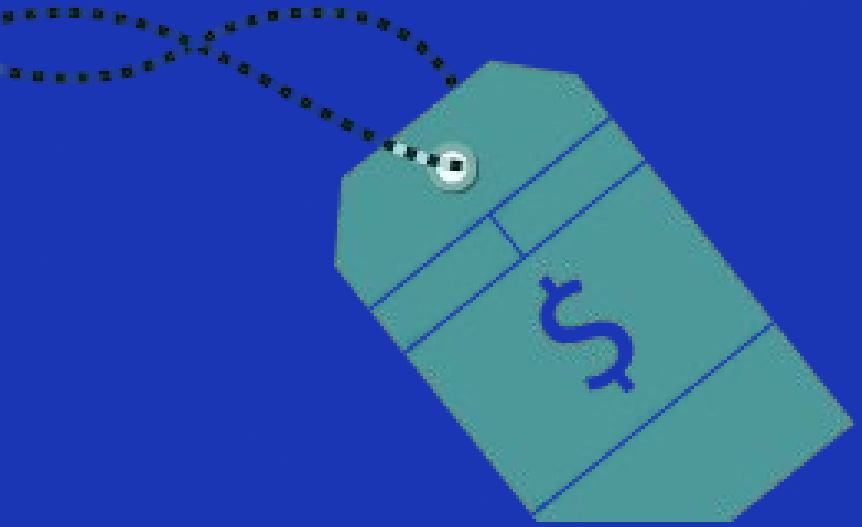
Material List





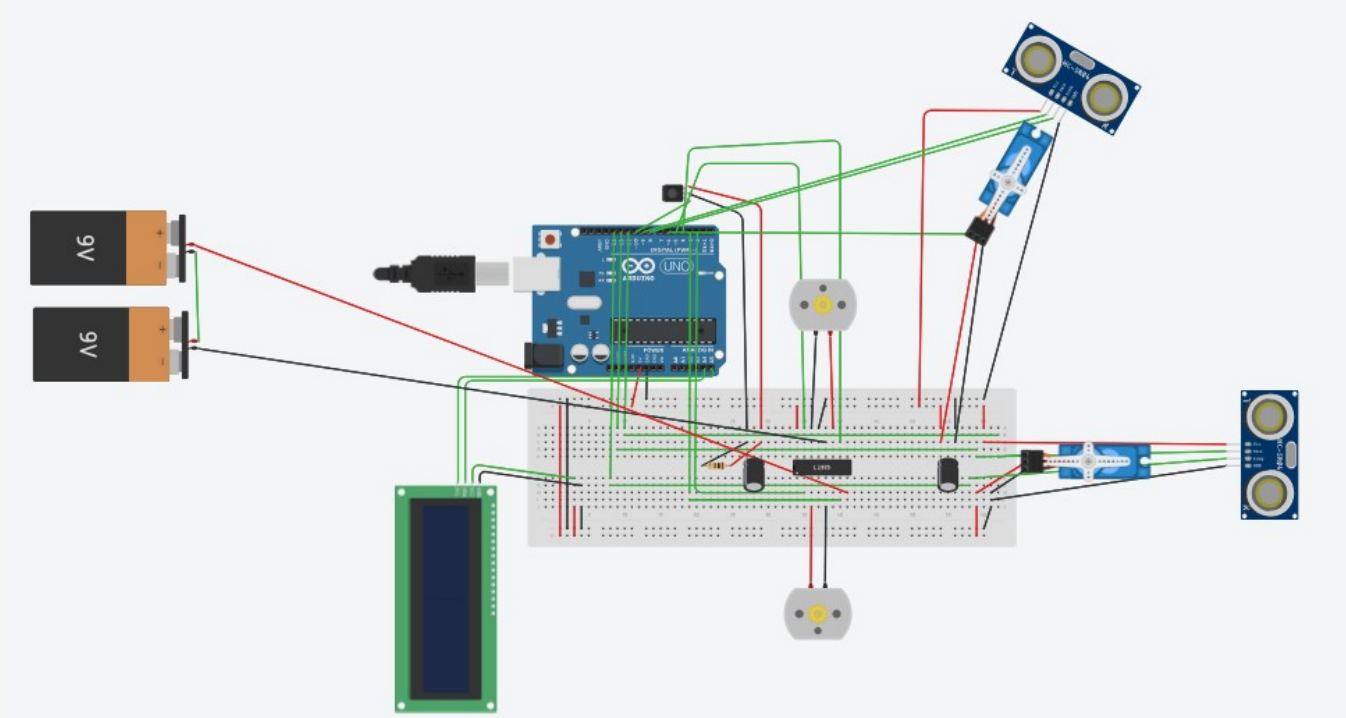


- Ultrasonic sensor x 2
- Arduino Board x 1 (UNO)
- LCD Screen 16x2 x 1
- Breadboard x 1
- Motors x 2
- Wheels x 2
- 360 Rotation wheel x 3
- L298N Motor Driver x 1
- Jumper Wires
- Wires
- Servo Motors x 2
- Capacitors x 2 (100v and 50v)
- Resistor x 2 (100 ohm)
- PPE Battery x 2 (9v)
- PPE Battery Connectors x 2
- IR Remote x 1
- IR Receiver x 1
- Arduino Cable x 1
- Cable Extender dongle x 1
- Screws x 12
- Hot Glue Sticks x 5 maybe 7 (whole class was using it)



- Ultrasonic sensor x 2 ($0.20 - $0.60 AliBaba)
- Arduino Board x 1 (UNO) ($0.19 - $3.99 AliBaba)
- LCD Screen 16x2 x 1 ($0.80 - $1.20 AliBaba)
- Breadboard x 1 ($0.40 - $0.45 AliBaba)
- Motors x 2 ($0.13 - $0.40 AliBaba)
- Wheels x 2 ($0.13- $0.40 AliBaba)
- 360 Rotation wheel x 3 ($0.35 - $1.85 AliBaba)
- L298N Motor Driver x 1 ($0.12 - $3.76 AliBaba)
- Jumper Wires ($0.05 - $1.50 AliBaba)
- Wires (websites says per feet/inch/cm/m, but avg is: $0.35)
- Servo Motors x 2 ($0.59 - $0.70 AliBaba)
- Capacitors x 2 (100v and 50v) (wasn’t able to find any capacitors)
- Resistor x 2 (100 ohm) (Pack: $0.01 AliBaba)
- PPE Battery x 2 (9v) ($0.01 - $0.60 AliBaba)
- PPE Battery Connectors x 2 (Wasn’t able to find any **SURPRISINGLY**)
- IR Remote x 1 ($0.60 ELECROW)
- IR Receiver x 1 ($3.90 DFRobot)
- Arduino Cable x 1 ($1.90 DFRobot)
- Cable Extender dongle x 1 ($8.40 Amazon)
- Screws x 12 (Wasn’t able to find the exact one; again **SURPRISINGLY)**
- Hot Glue Sticks x 5 maybe 7 (whole class was using it) ($1 Local Dolarama)

Schematic



Project Timeline

18 Nov - 24 Nov

Setting up

- Cut the base
- Start hunting for parts

24 Nov - 30 Nov

Getting Ready

- Start modifying the V1 of the plan
- Start testing out the boards (UNO, Mega, GeekCreit)
- Decide on how to replicate the shields

30 Nov - 8 Dec

Start Making

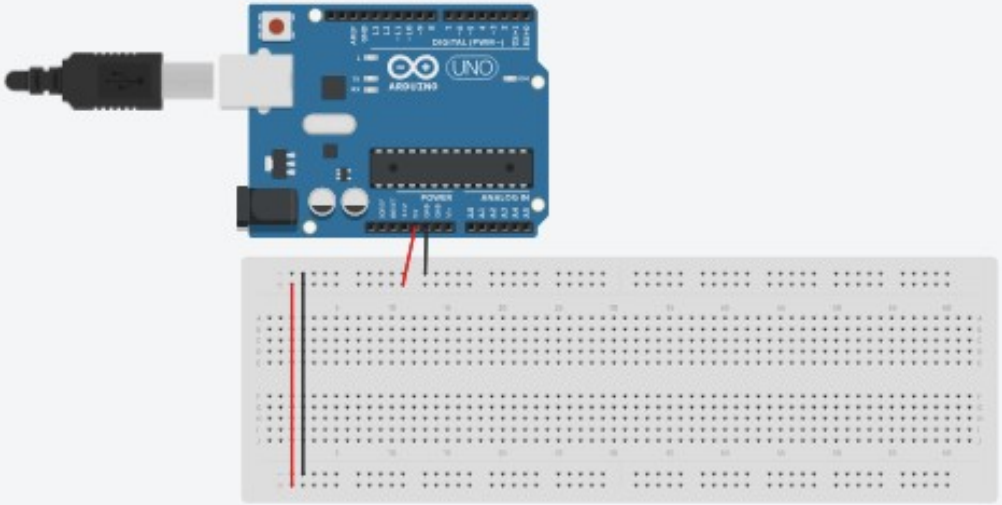
- Start wiring the sensors, breadboard, Arduino
- Set up the position for each of the components

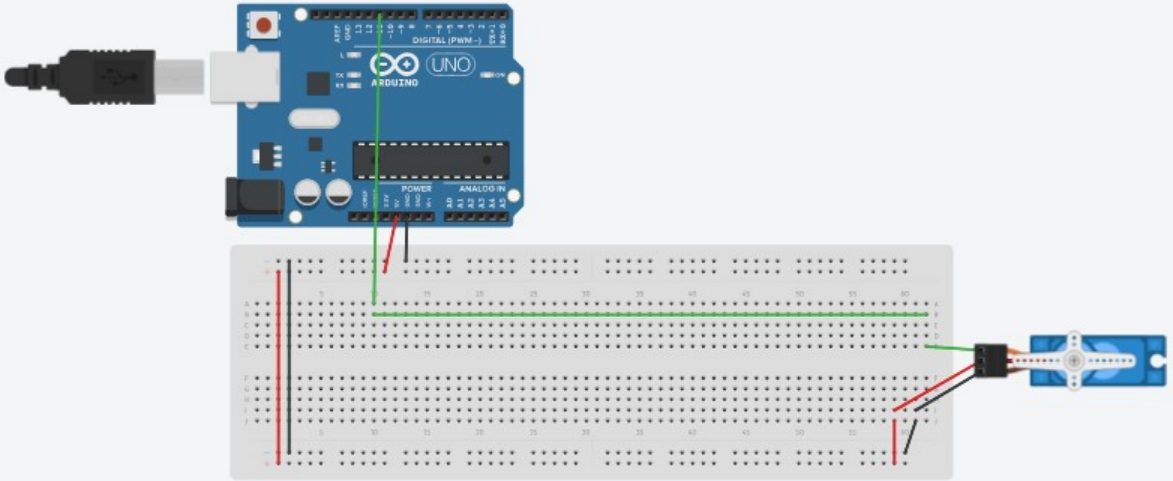
8 Dec - 16 Dec

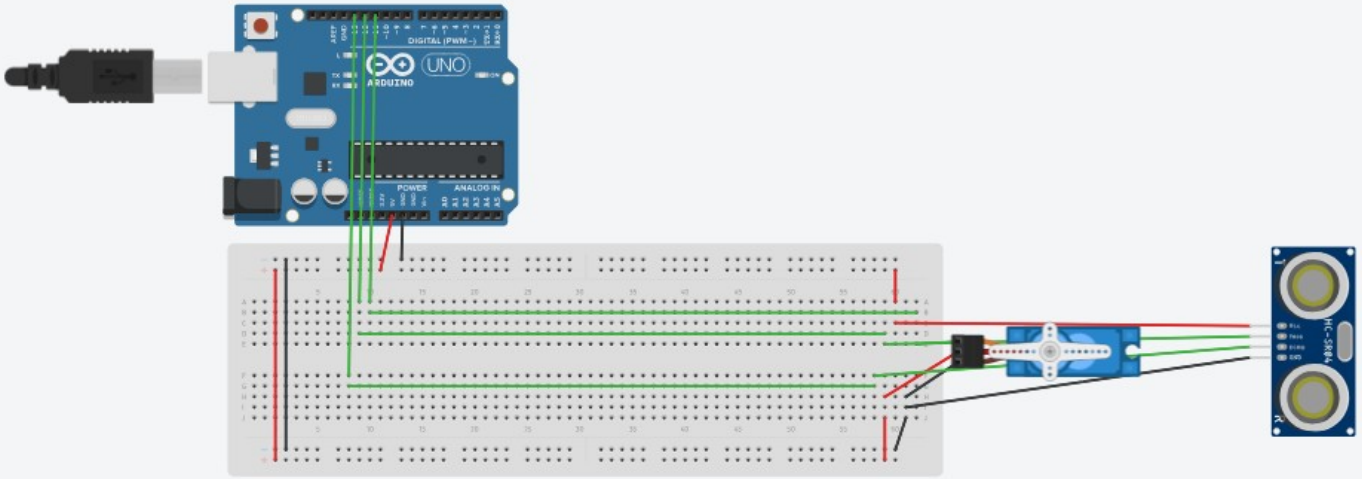
Debugging

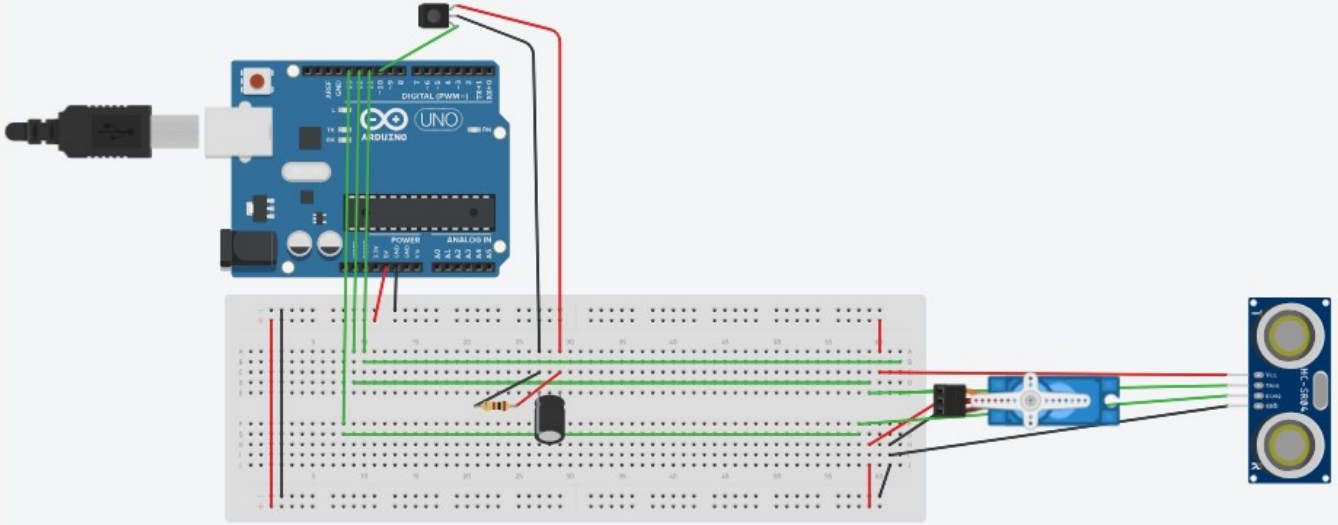
- Fix noise transmission
- Fix power surge
- Fix motors
- Finalize drivers
- Finalize power supply
- Join things together

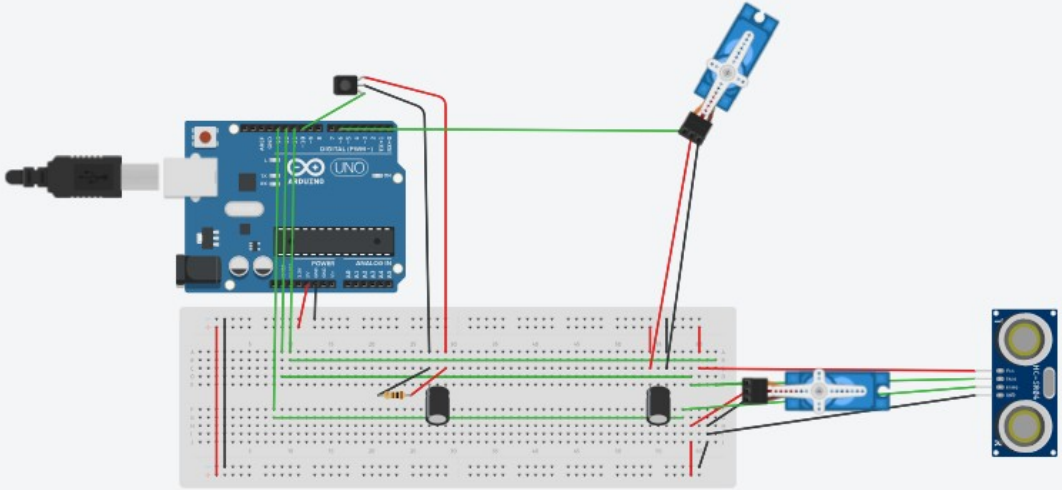
Step-by-Step building

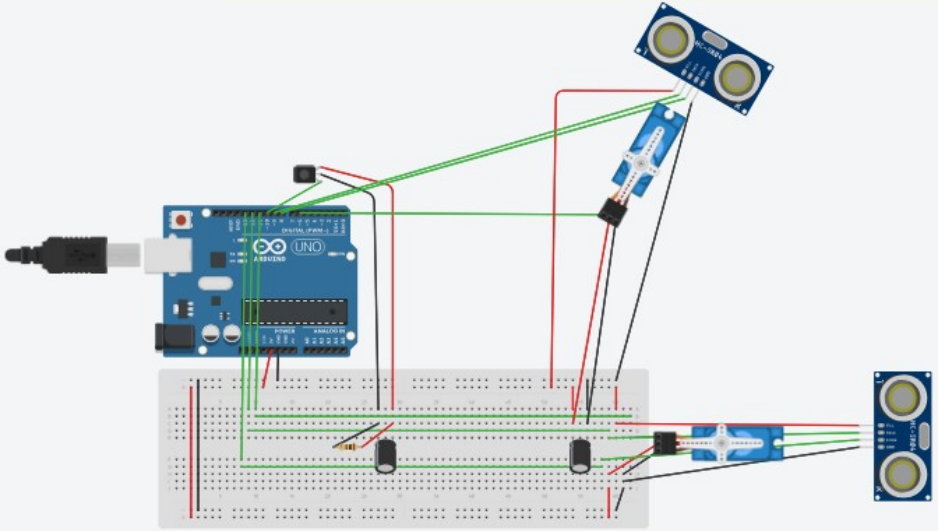

DIGITAL (PWM~)
UNO
ARDUINO
POWER
ANALOG IN

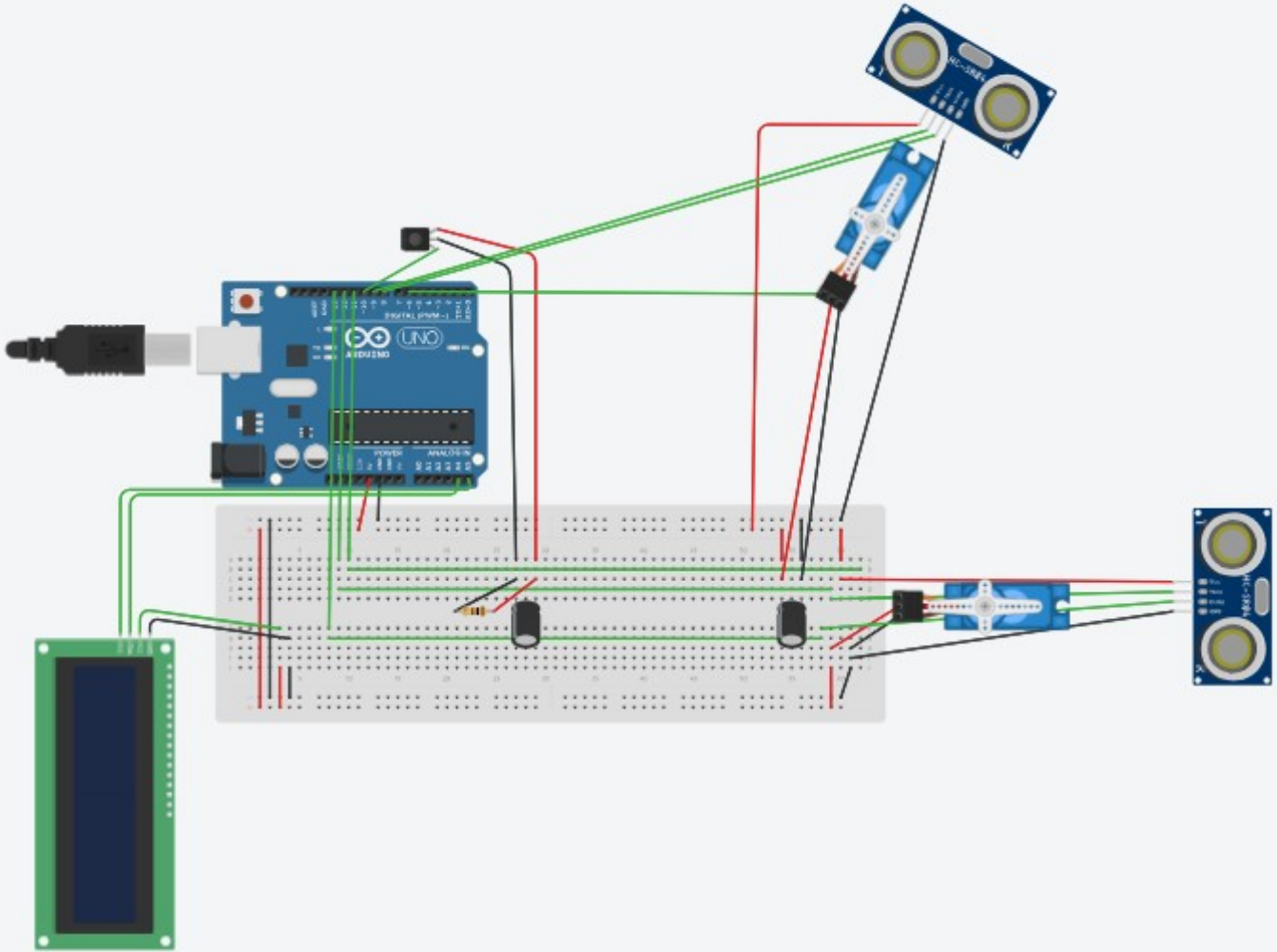

DIGITAL (PWM~)
UNO
ARDUINO
POWER
ANALOG IN

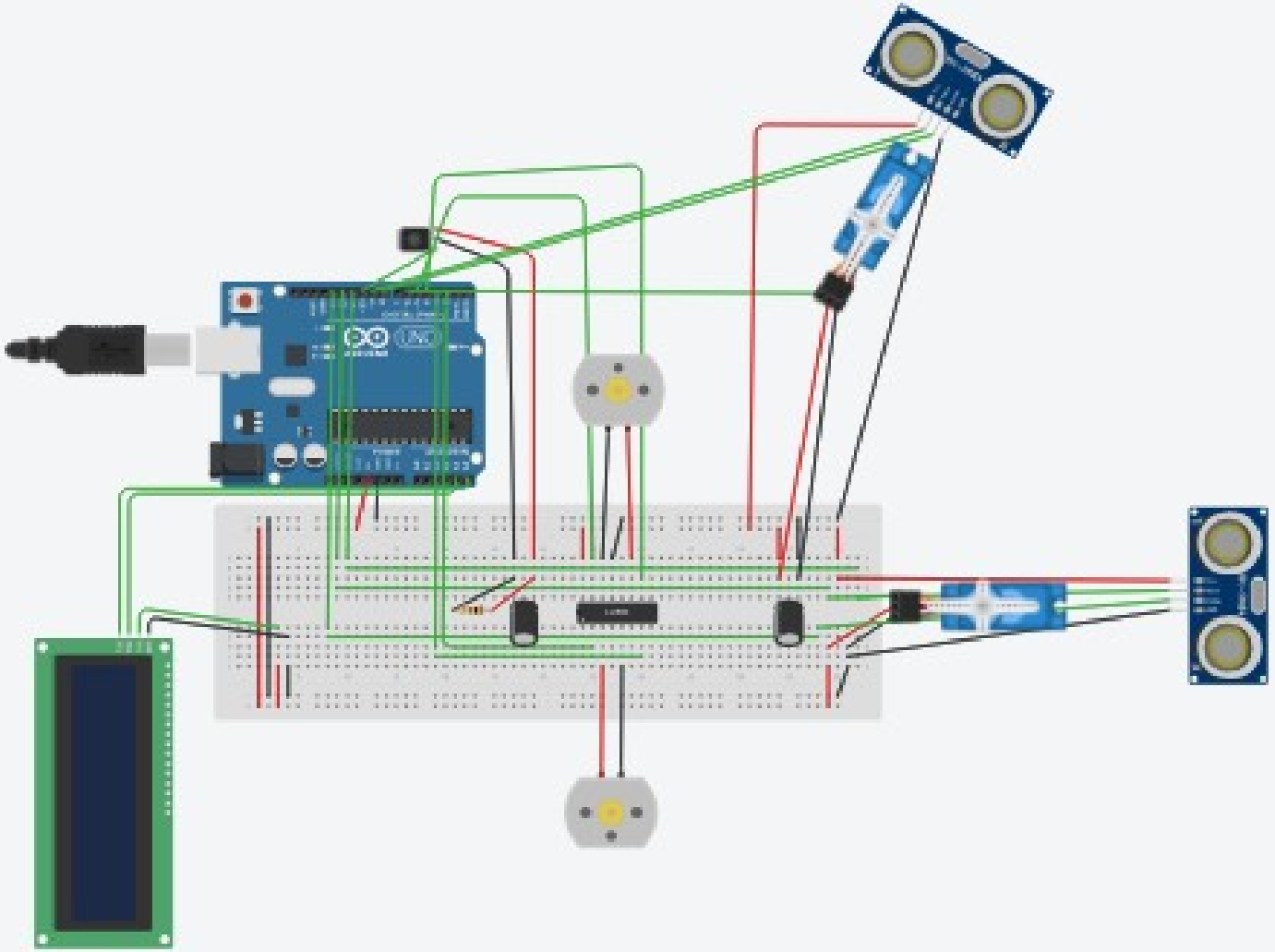

UNO
ARDUINO
DIGITAL (PWM~)
POWER
ANALOG IN
HC-SR04

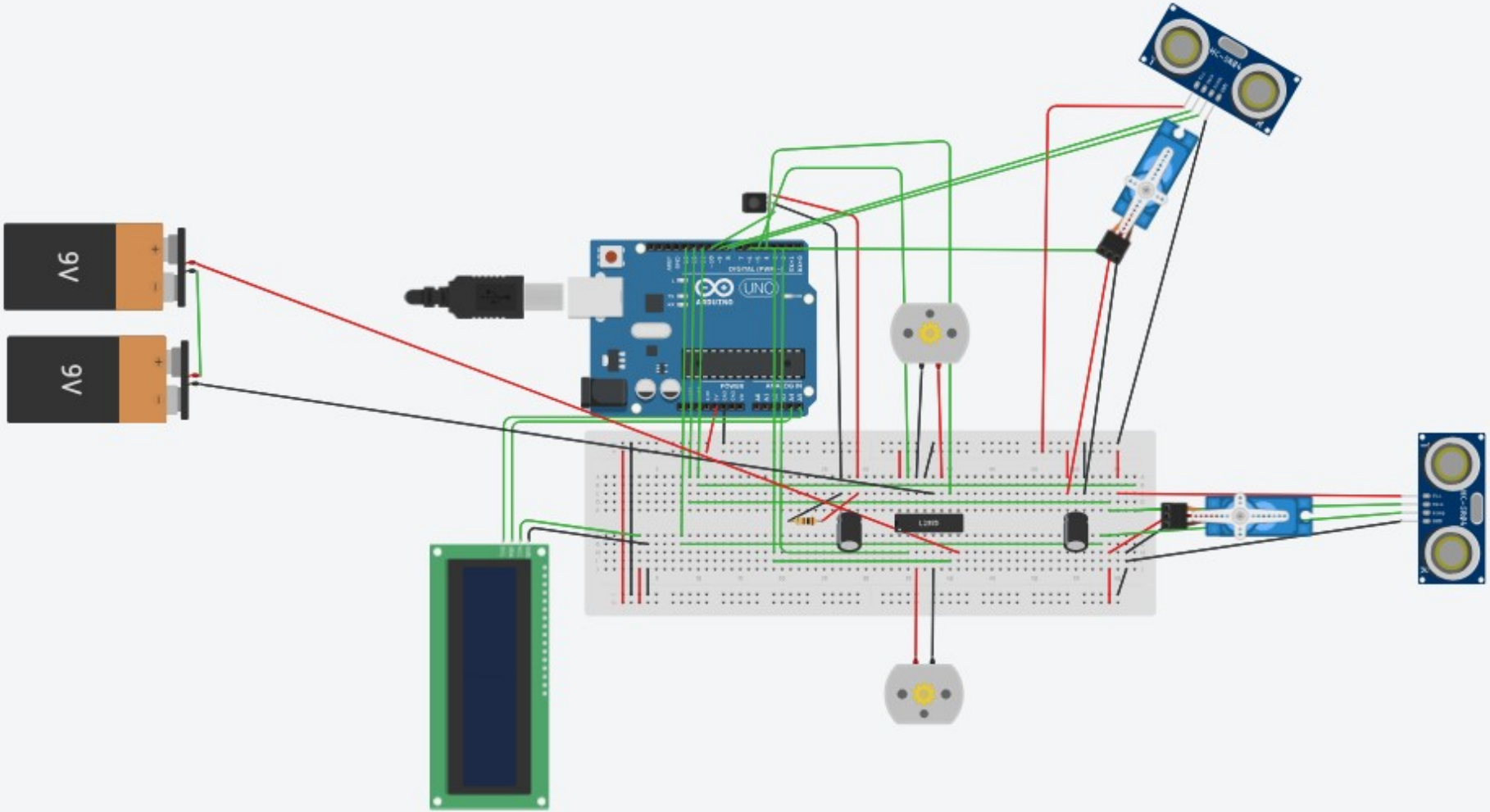

UNO
ARDUINO
DIGITAL (PWM~)
POWER
ANALOG IN
HC-SR04










9V
9V
UNO
ARDUINO
L293D

Conclusion – Reflection. What is the most valuable lesson you learned from this experience? If you could, would you build this again or choose another project. Why or why not?

- The docs are no help
- There are 2 different kind or motors
- Parallel and Series Circuits in action
- You can make anything; literally anything
- Wiring GND to VCC and VCC to GND will fry your circuit
- Having different components is fun until you get a power surge
- Capacitors are life savers
- How to prevent “noise”

- I would for sure build this project again; and maybe try to make the project as near to the real design I had in mind.