



Code2Circuit2 Wheel Drive



Kid's Manual



Safety Notes

01

C2C Battery Pack

- **8.4v Rechargeable**
- **Built in overcharge and discharge protection.**
- **Do NOT turn it on while ESP32 is connected to your laptop via USB-C.**
- **White/Black Wires are ONLY for GND**
- **Red/Blue Wires are ONLY for Vin and VM**

Kit Inclusions

Components

- 1x ESP32
- 1x TB6612FNG Motor Driver
- 2x TT Geared Motors & Wheels
- 1x Passive Buzzer
- 1x HC-SR04 Ultrasonic Sensor
- Jumper Wires
- 2x LEDs
- 2x BreadBoards

Parts

- 1x C2C 2WD Chassis V1
- 1x C2C 8v Battery Pack V1
- 1x C2C Ball Caster V1
- 2x C2C Motor Mounts V1
- 1x C2C HCSR04 Ultrasonic Sensor Casing V1



ESP32 PINS

(D34) INPUT --->

(D35) INPUT --->

(D32) I/O --->

(D33) I/O --->

(D25) I/O --->

(D26) I/O --->

(D27) I/O --->

(D14) I/O --->

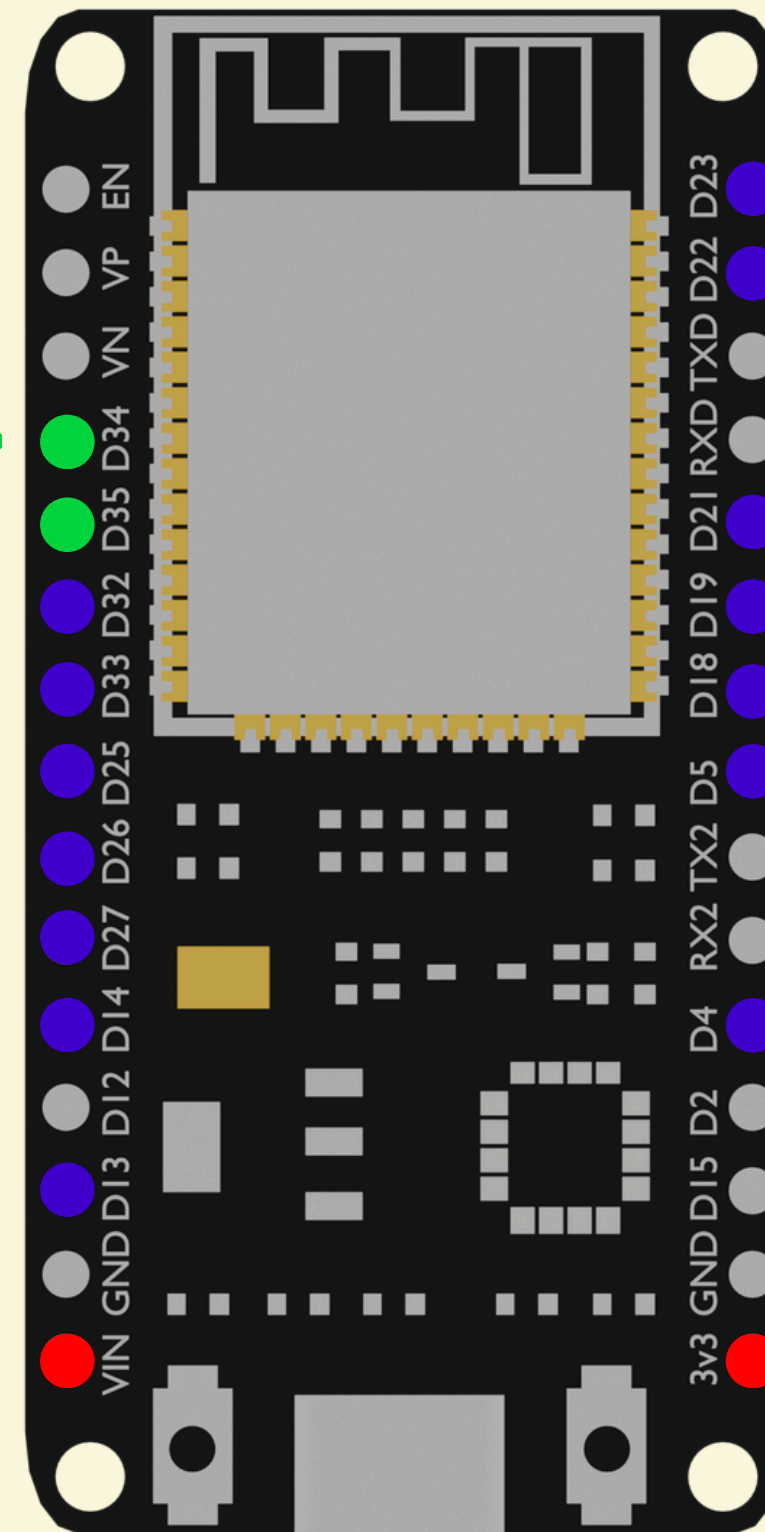
(D13) I/O --->

(GND) Ground --->

(VIN) Power --->

- INPUT: 5-8v

- OUTPUT: 5v



<--- I/O (D23)

<--- I/O (D22)

<--- I/O (D21)

<--- I/O (D19)

<--- I/O (D18)

<--- I/O (D5)

<--- I/O (D4)

<--- (GND) Ground

<--- (3v3) Power OUTPUT

RESET

BOOT

C2C Block Studio

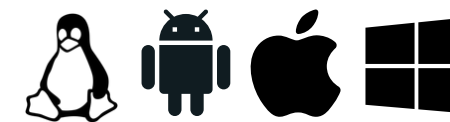
A block-based programming software allowing for instant and wireless upload to C2C Kits.

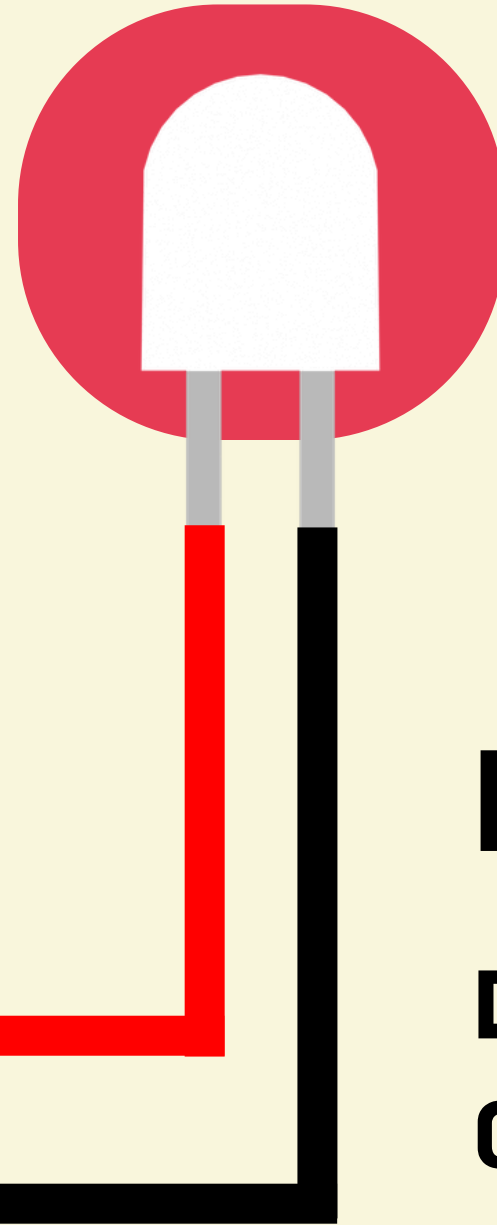
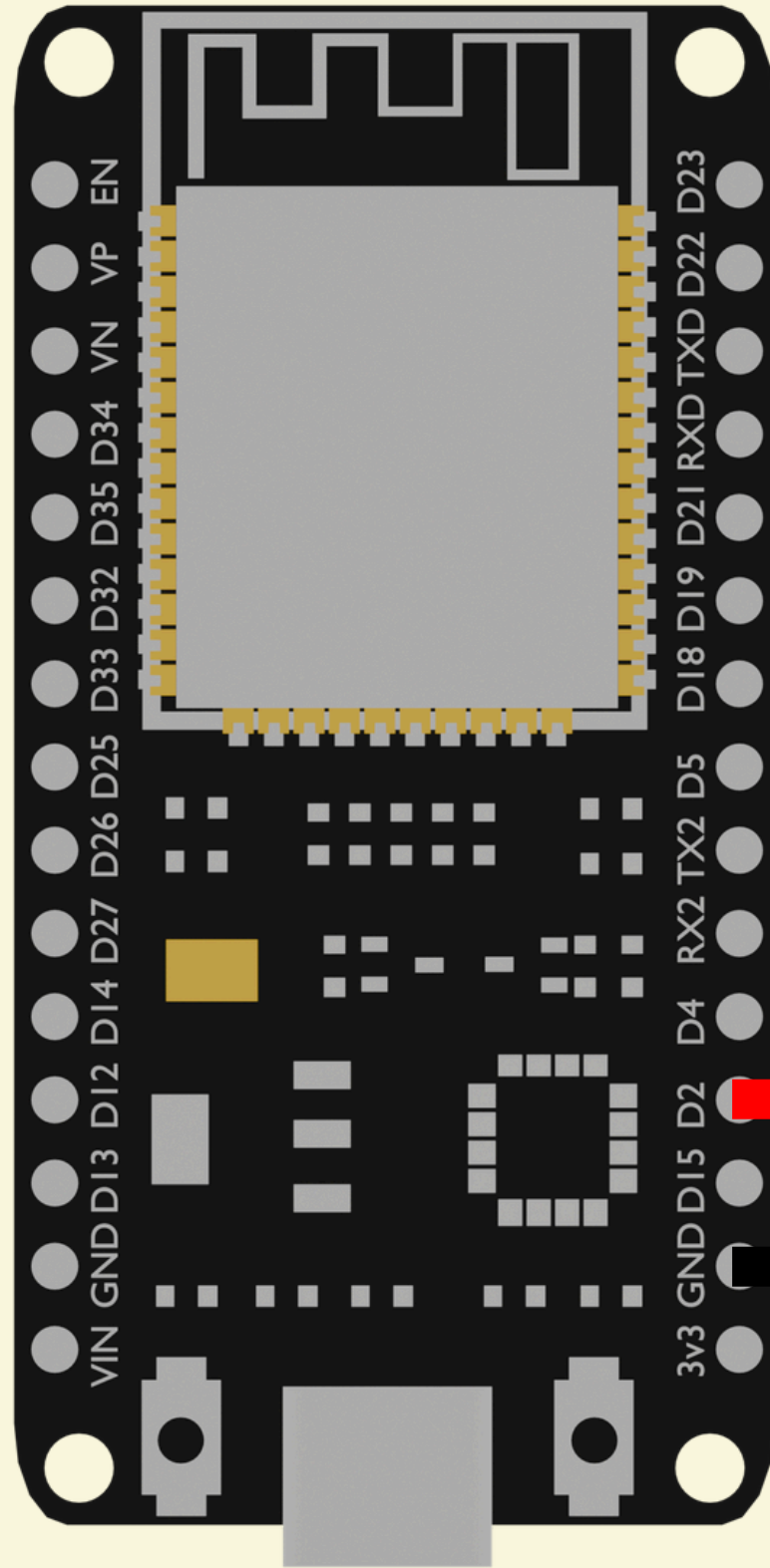
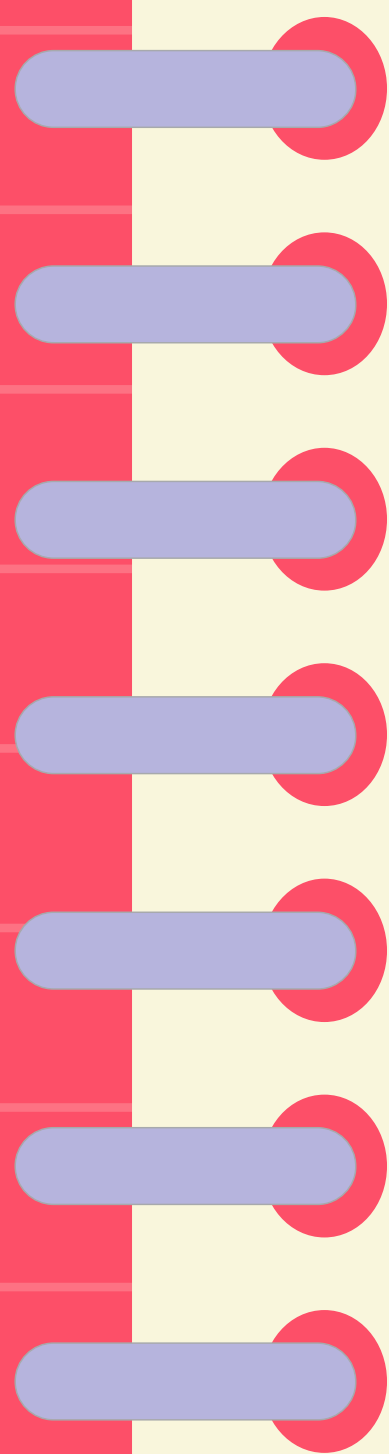
Currently supports multiple sensors, draw-in LCD block with animations, buzzers with different premade tones and much more!

Updates are underway! we'd love to hear from you, send us an email at, code2circuitc2c@gmail.com



Scan to download!



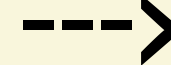


BASIC WIRING

LED

ESP32 → LED

D2/G2  **LONG PIN (ANODE)**

GND  **SHORT PIN (CATHODE)**

BASIC CODING

Setup (run once)

set pin GPIO 2 as OUTPUT

Loop (repeat forever)

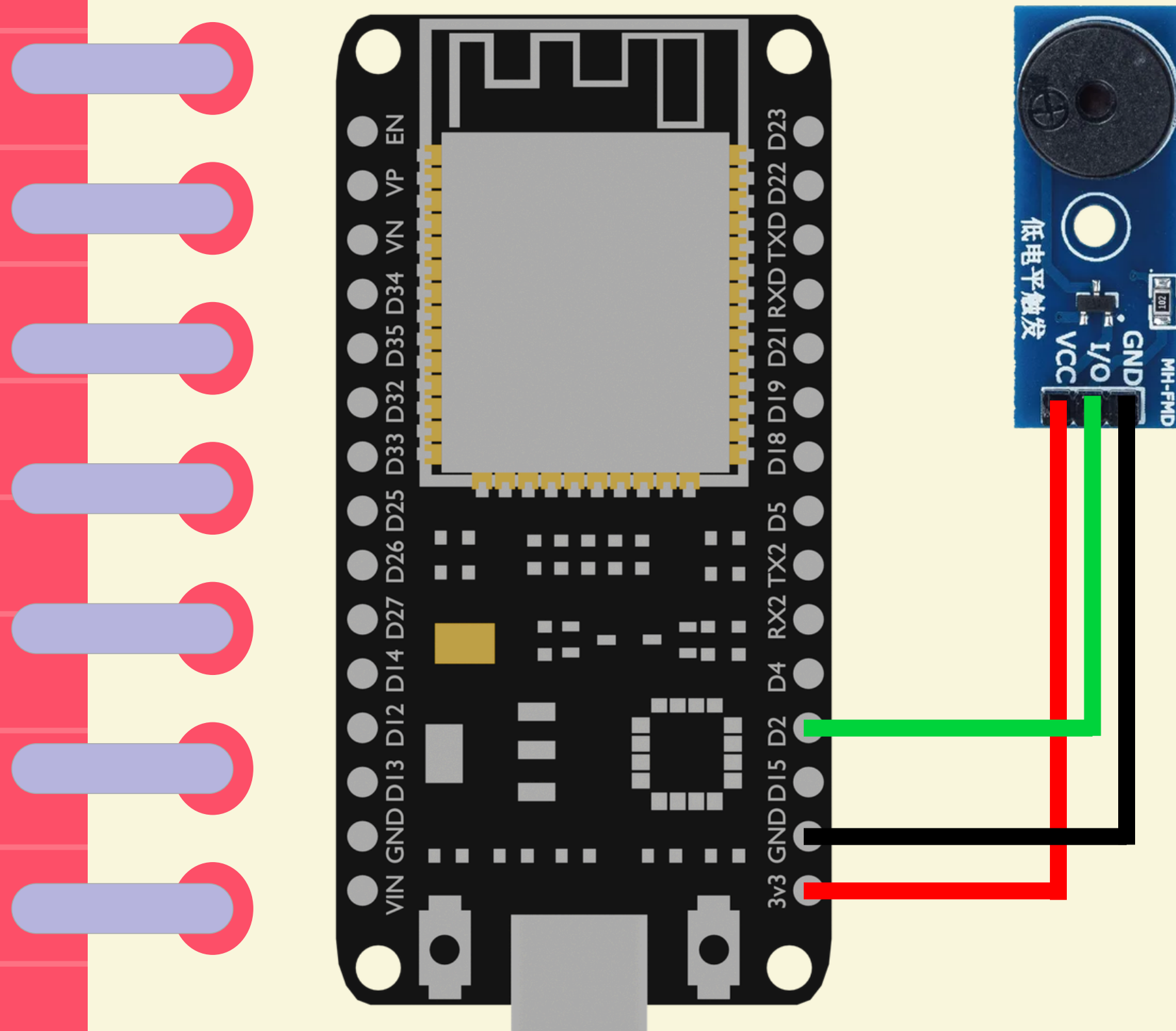
digital write gpio GPIO 2 to HIGH

wait 1000 ms

digital write gpio GPIO 2 to LOW

wait 1000 ms

Let us use the LEDs to blink a signal



BASIC WIRING

BUZZER

ESP32 → Passive Buzzer

3v3	---	VCC
D2/G2	---	i/o
GND	---	GND

BASIC CODING

Let us use the
buzzer to play
tones

Setup (run once)

set pin GPIO 2 as OUTPUT

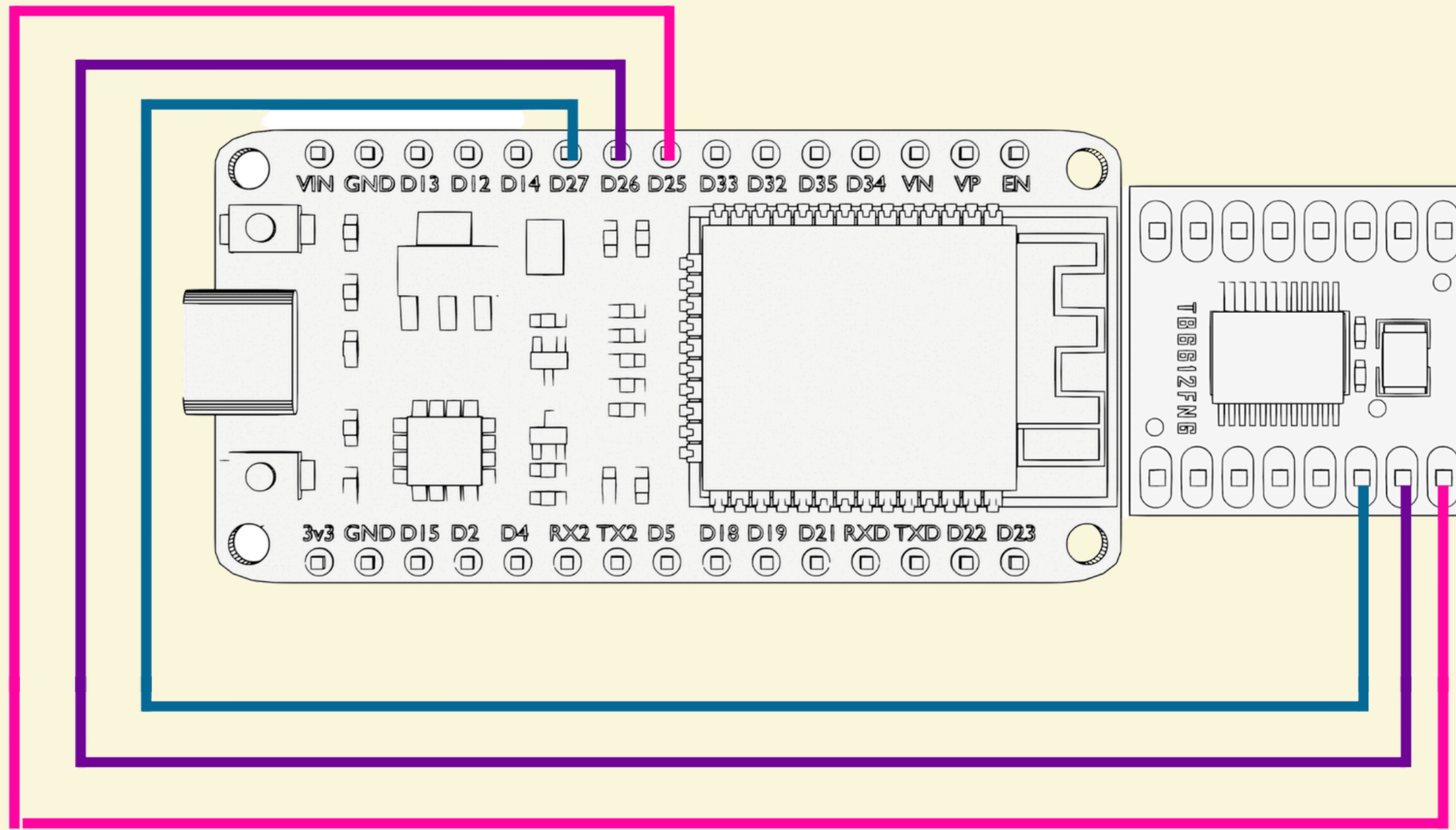
Loop (repeat forever)

play tone on pin GPIO 2 freq Note C for 500 ms

Wiring Diagram 1

TB6612FNG Motor Driver to ESP32

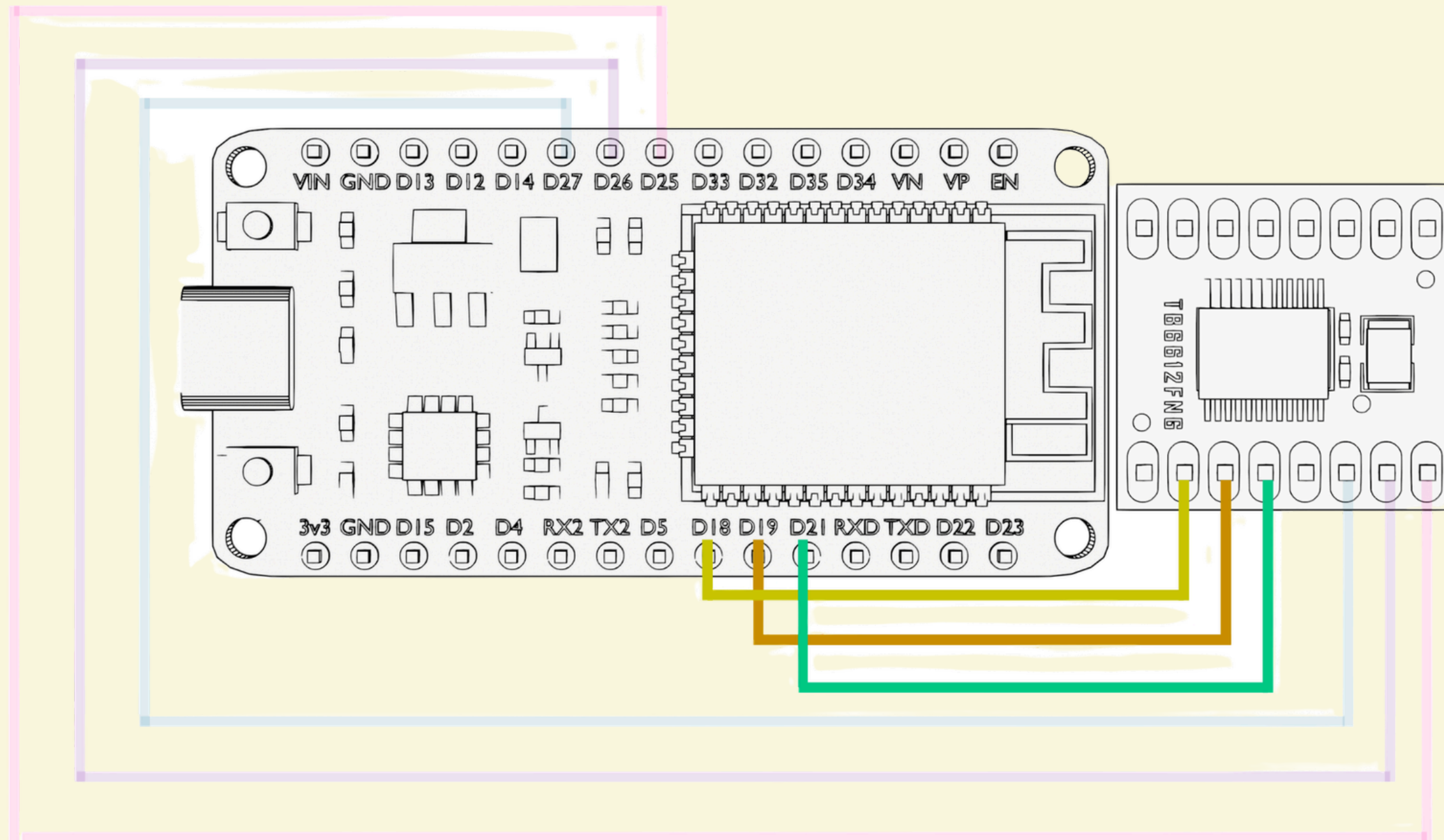
- PWMA - D25 | G25
- AIN 1 - D26 | G26
- AIN 2 - D27 | G27



Wiring Diagram 2

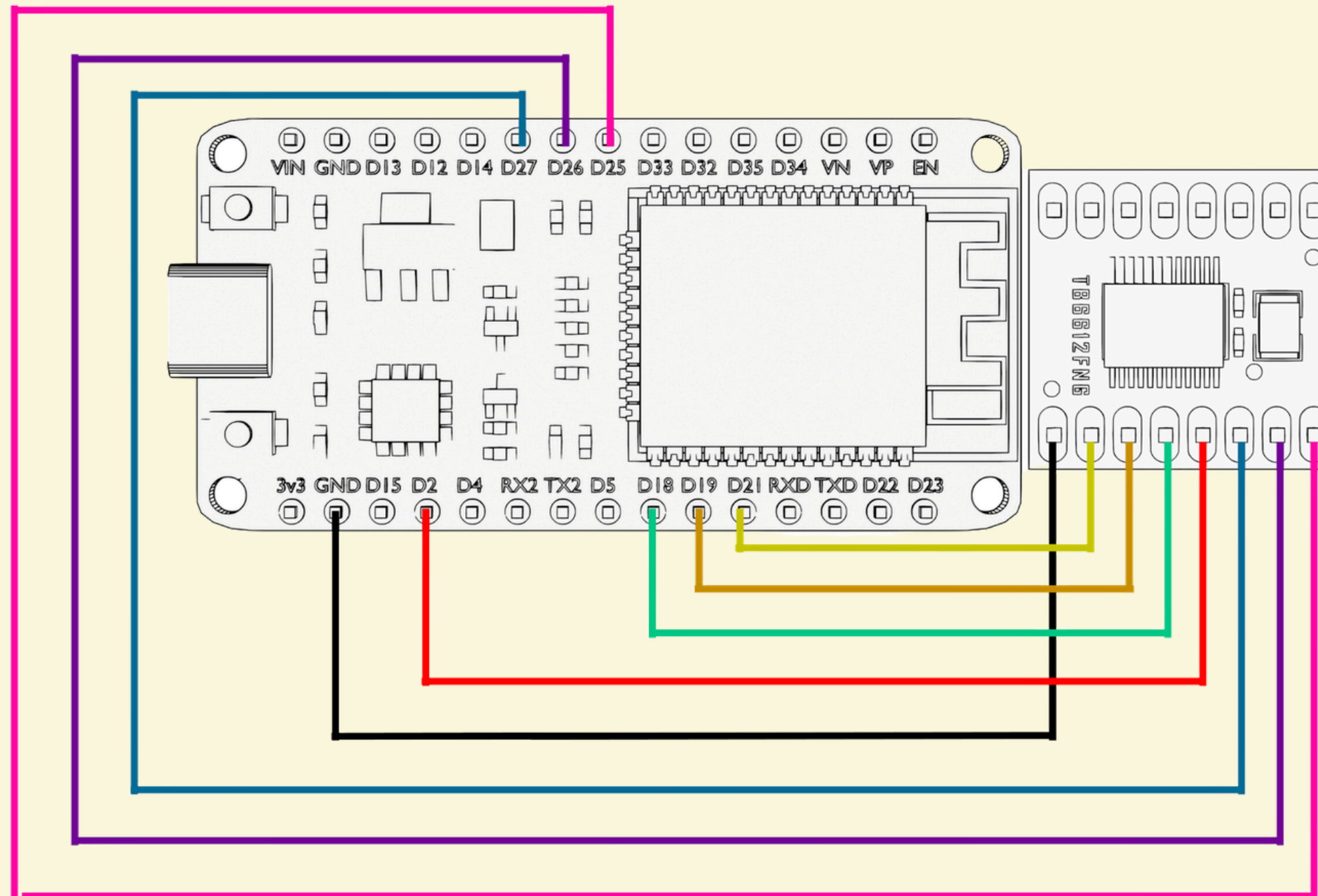
TB6612FNG Motor Driver to ESP32

- PWMB - D18 | G18
- BIN 1 - D21 | G21
- BIN 2 - D19 | G19



Wiring Diagram 3: Review

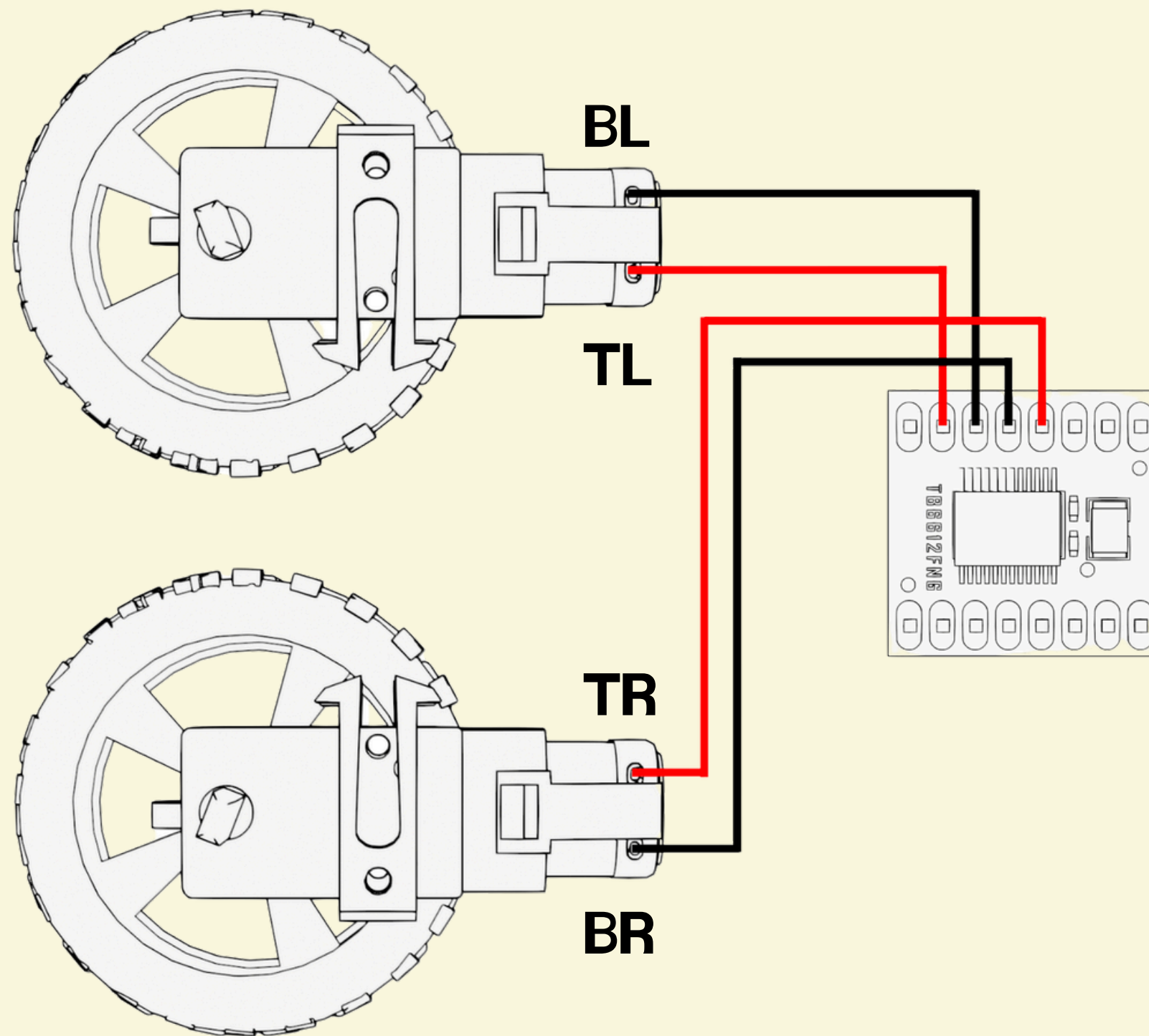
TB6612FNG Motor Driver to ESP32



- PWMB - D18 | G18
- BIN 1 - D21 | G21
- BIN 2 - D19 | G19
- PWMA - D25 | G25
- AIN 1 - D26 | G26
- AIN 2 - D27 | G27
- STBY - D2 | G2
- GND - GND

Wiring Diagram 4: Wheels

Motors to TB6612FNG Motor Driver



● A0 1 - TR

● A0 2 - BR

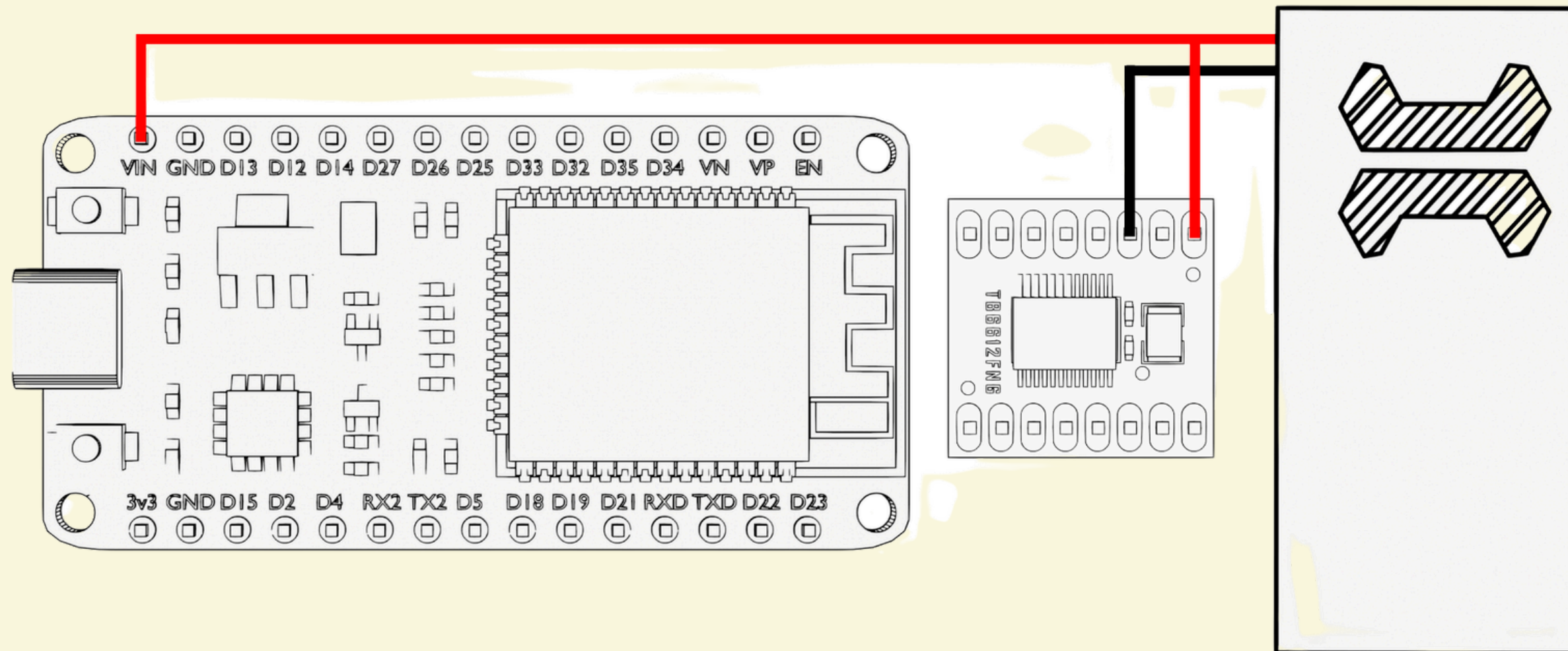
● B0 1 - TL

● B0 2 - BL

Wiring Diagram 5: Power

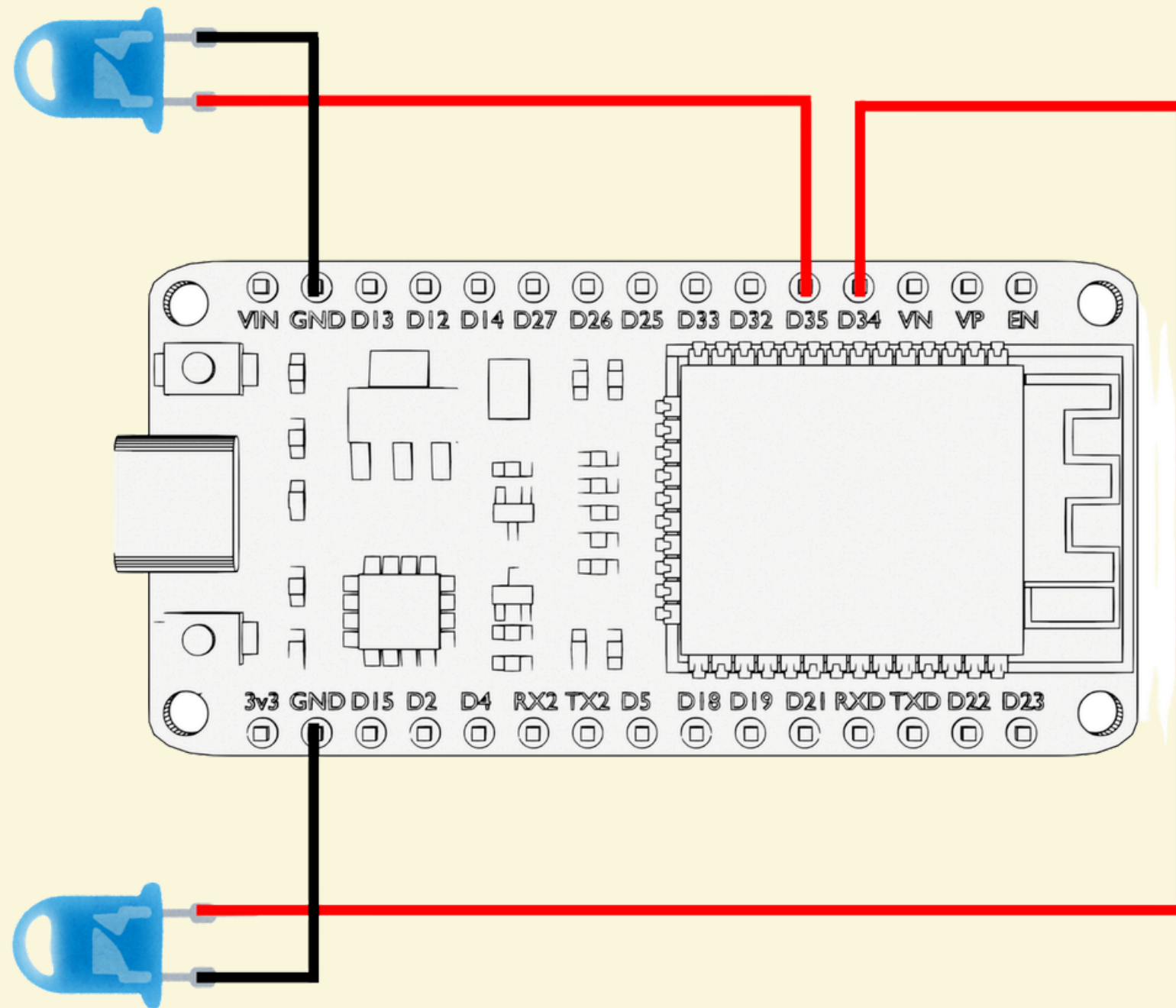
**C2C Battery pack to TB6612FNG
Motor Driver to ESP32**

- Battery pack red/blue -
ESP32 Vin & VM
- Battery pack black/white -
ESP32 GND & GND



Wiring Diagram 6: LED

LED to ESP32



LED 1

● Longer pin - D35 | D35

● GND - GND

LED 2

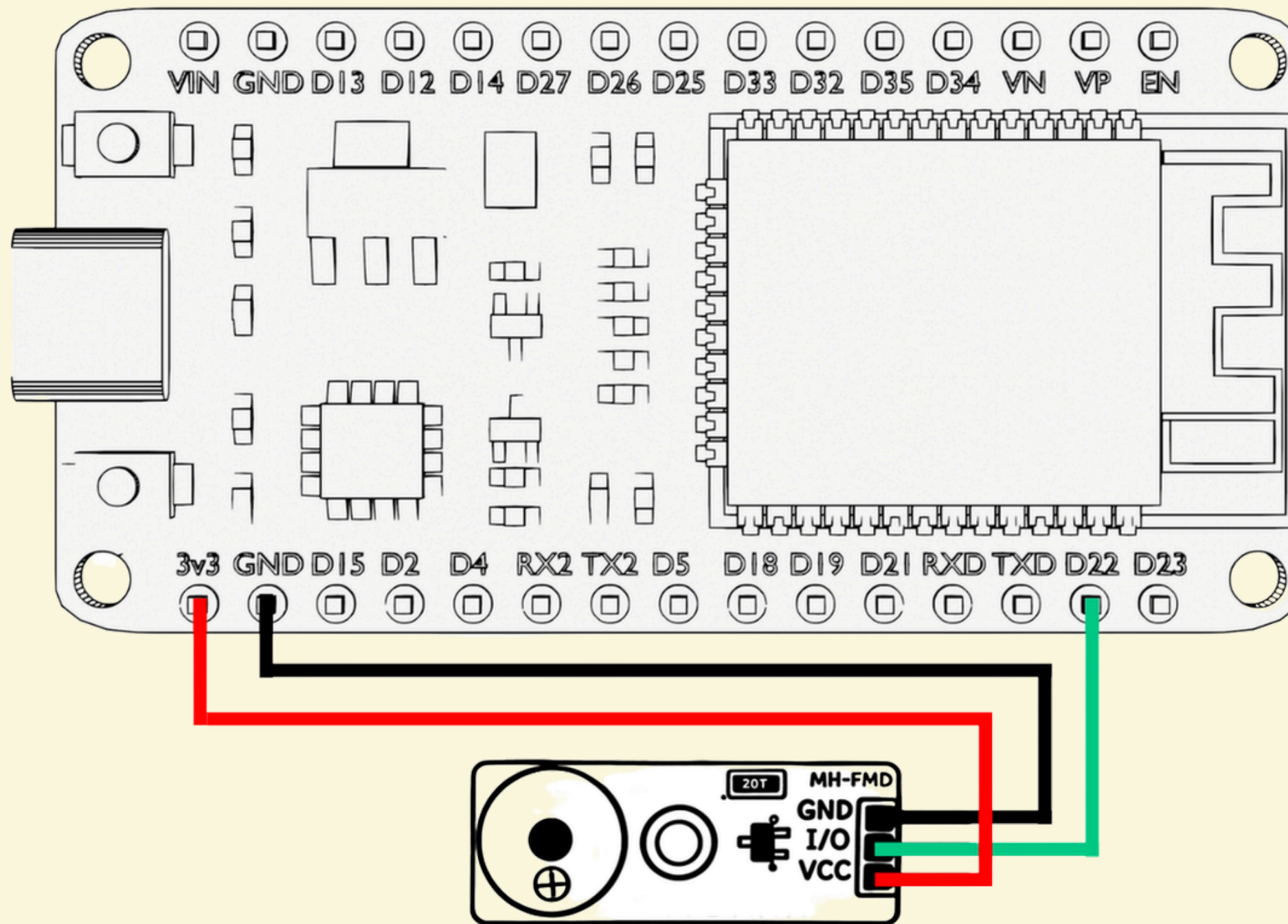
● Longer pin - D34 | D34

● GND - GND

Wiring Diagram 7: Buzzer

Buzzer to ESP32

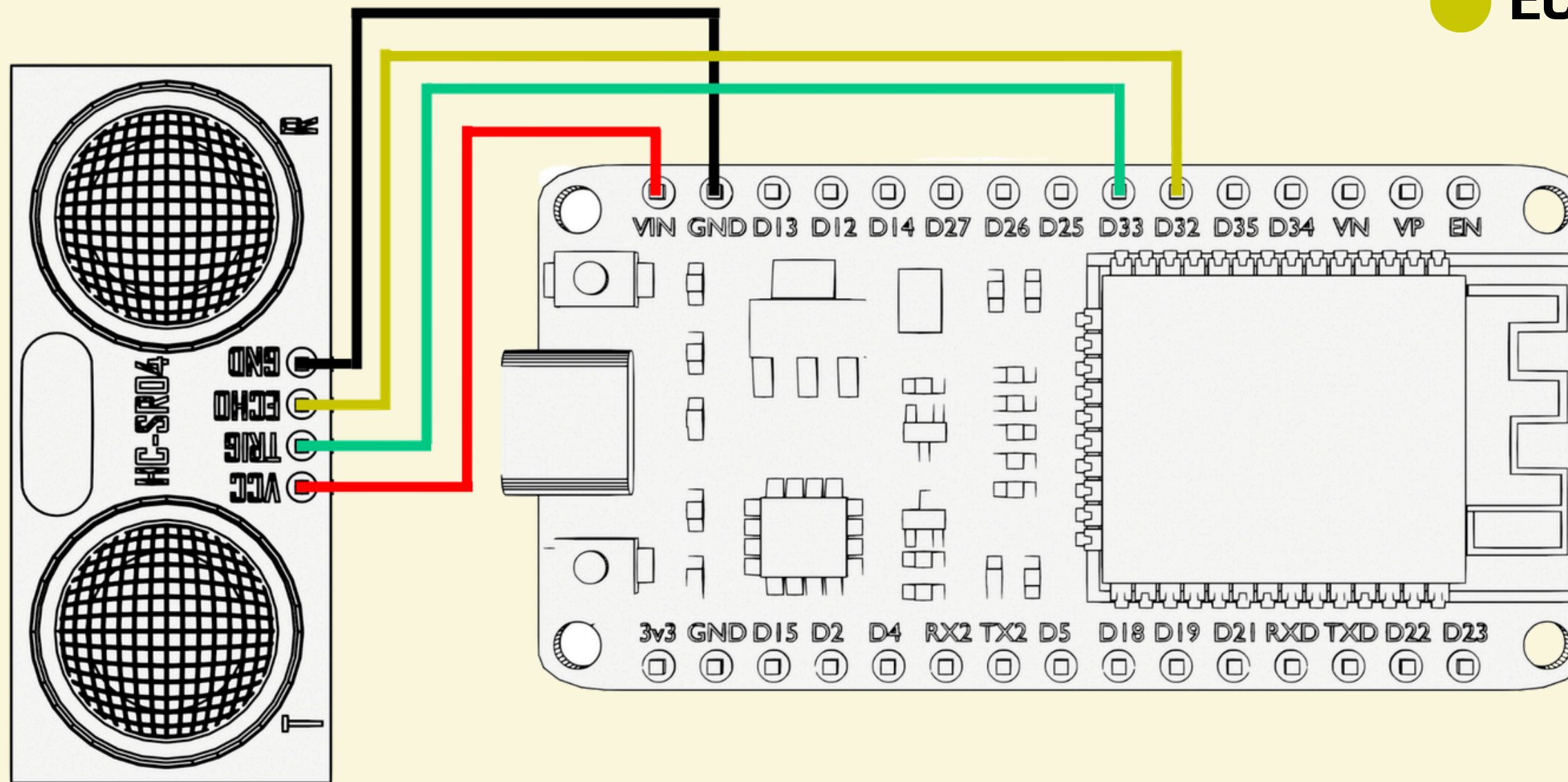
- I/O - D22 | G22
- VCC - 3v3
- GND - GND



Wiring Diagram 8: Sensor

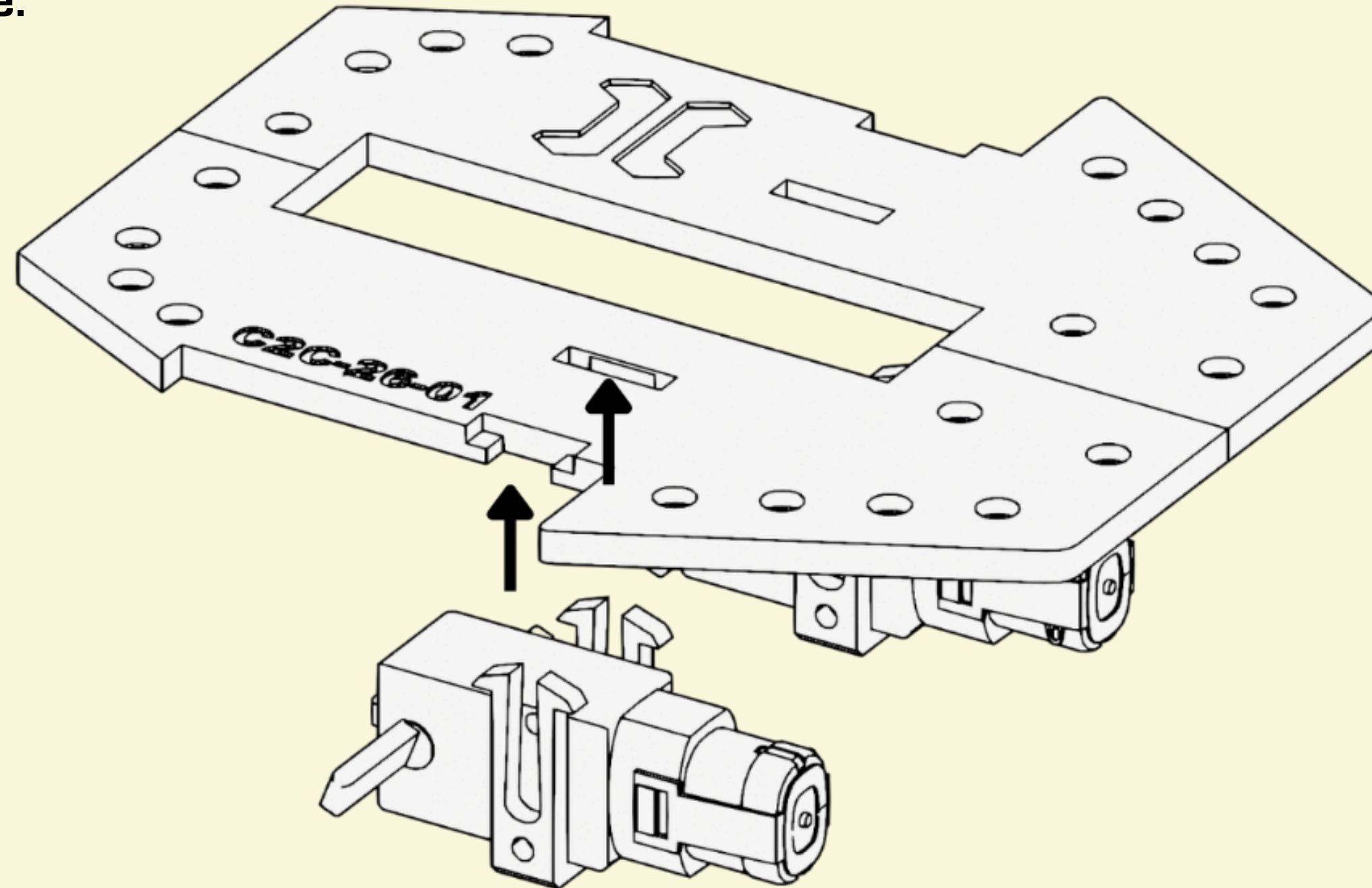
HC-SR04 to ESP32

- VCC - VIN
- GND - GND
- TRIG - D33 | G33
- ECHO - D32 | G32



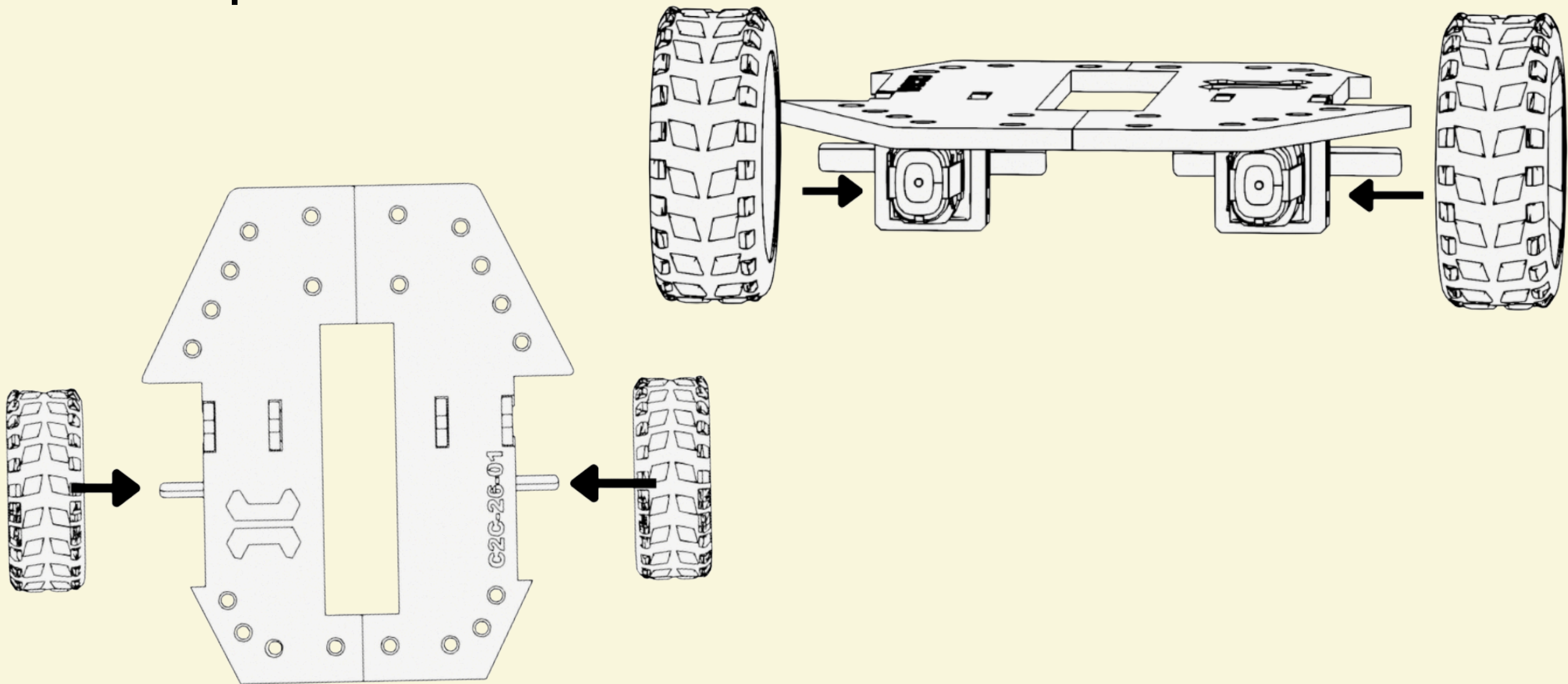
ASSEMBLY

Push the TT Geared Motors upwards from the bottom of the Chassis until the mount locks into place.



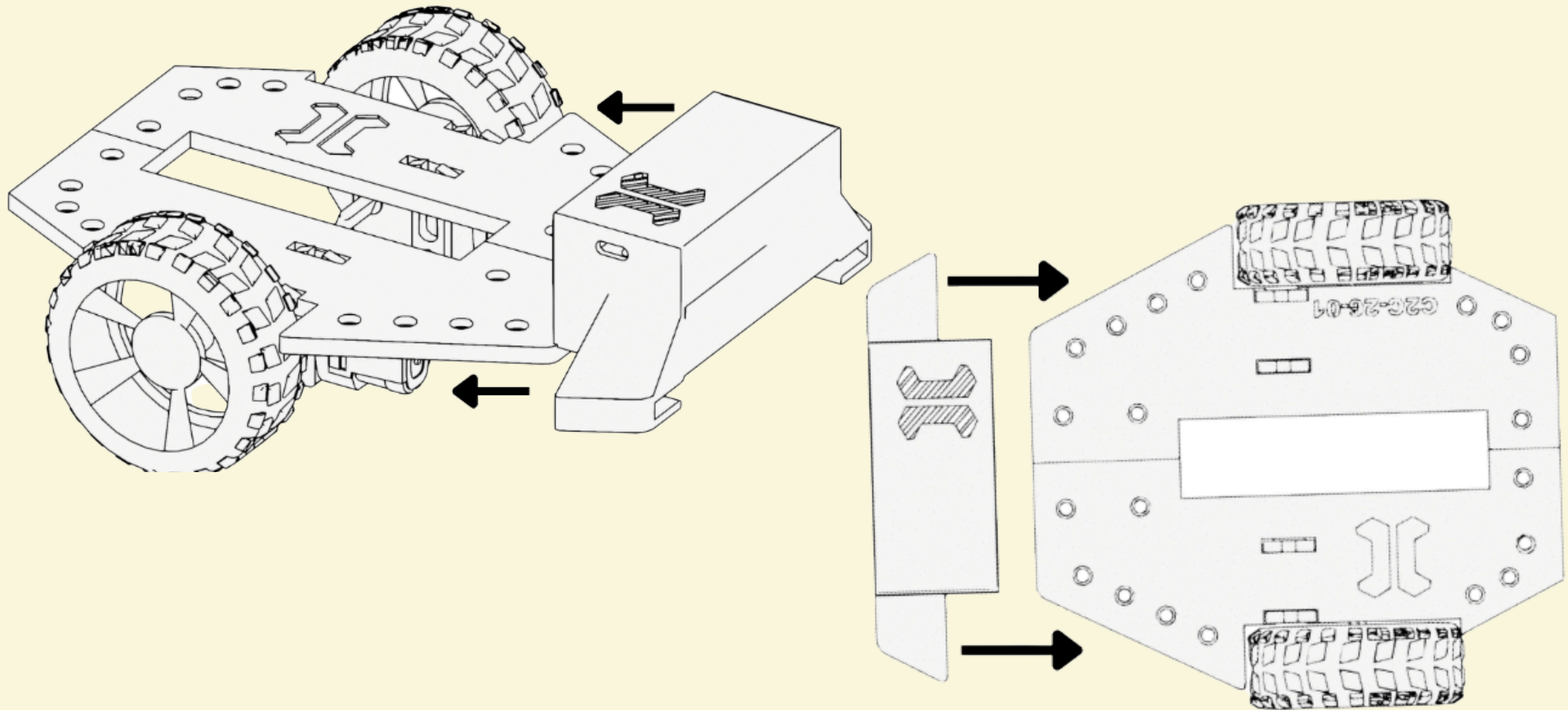
ASSEMBLY

Align the wheel's center hole with the TT Geared Motor axle, then press firmly to secure it in place.



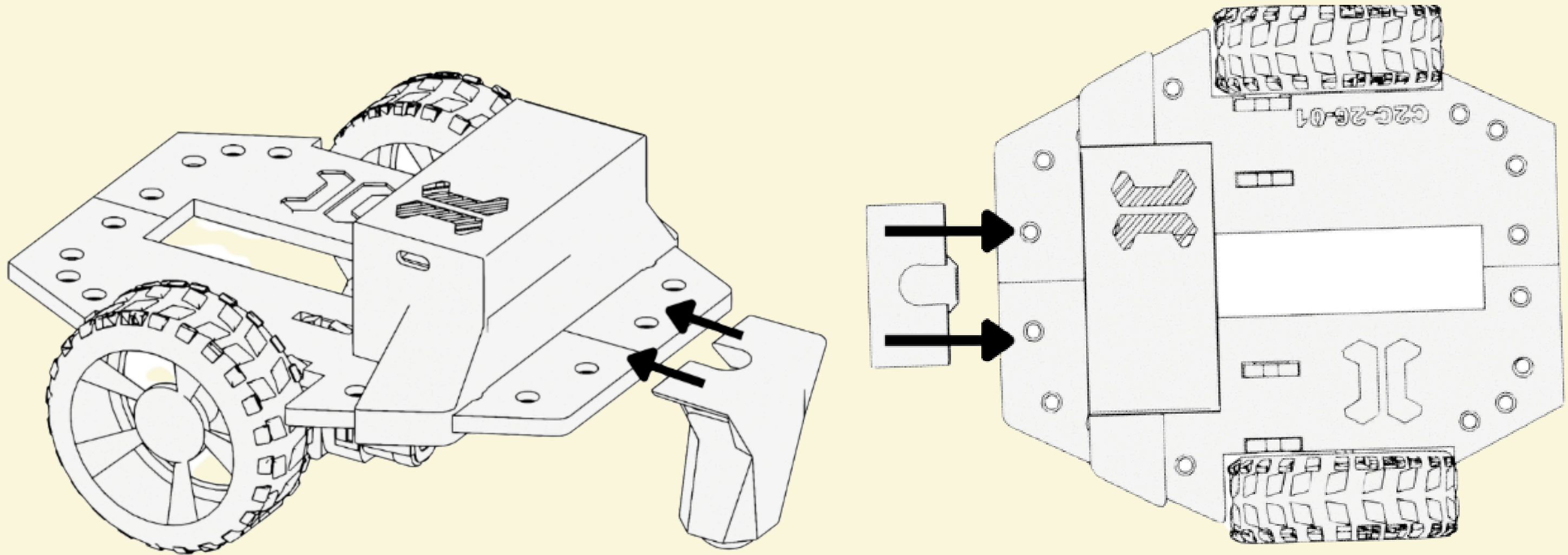
ASSEMBLY

Push the Caster Wheel to the chassis until it locks in place, try moving it side to side to check if it's locked.



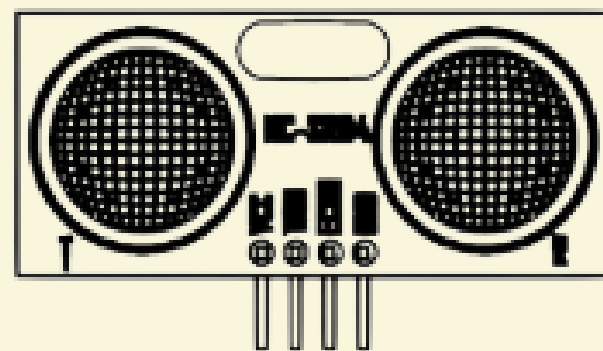
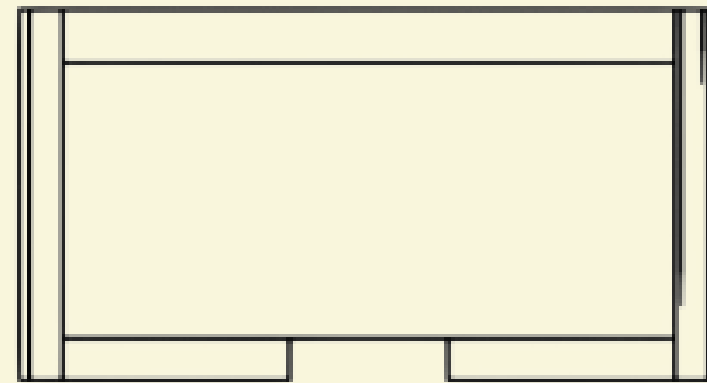
ASSEMBLY

Insert the Battery Pack into the chassis base, applying firm pressure until the mounts click securely into position.

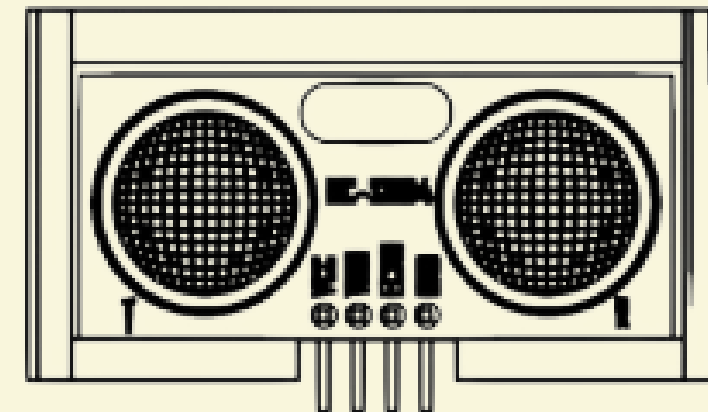


ASSEMBLY

Place the HC-SR04 Ultrasonic Sensor inside the casing.

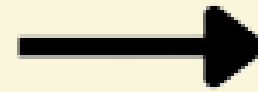
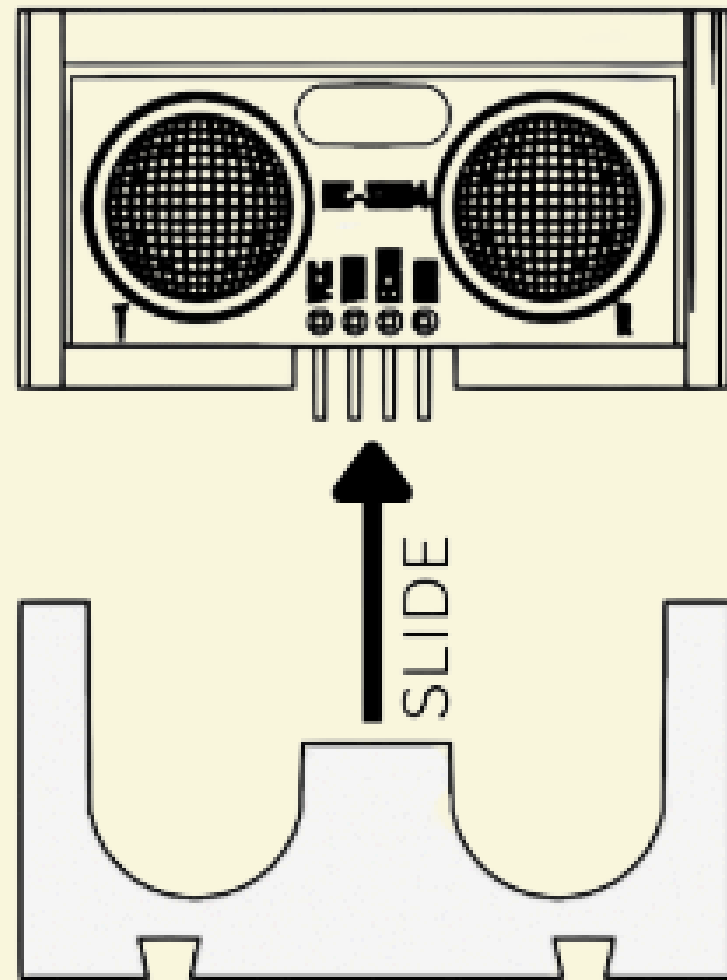


AFTER

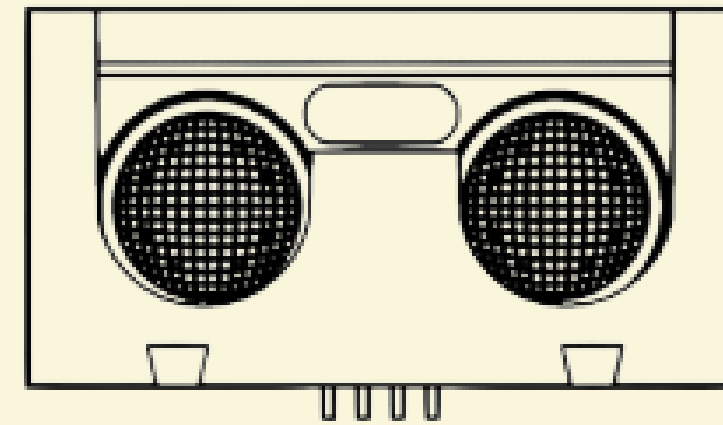


ASSEMBLY

Align and slide the dovetail bezel of the faceplate with the dovetail slot on the base casing.

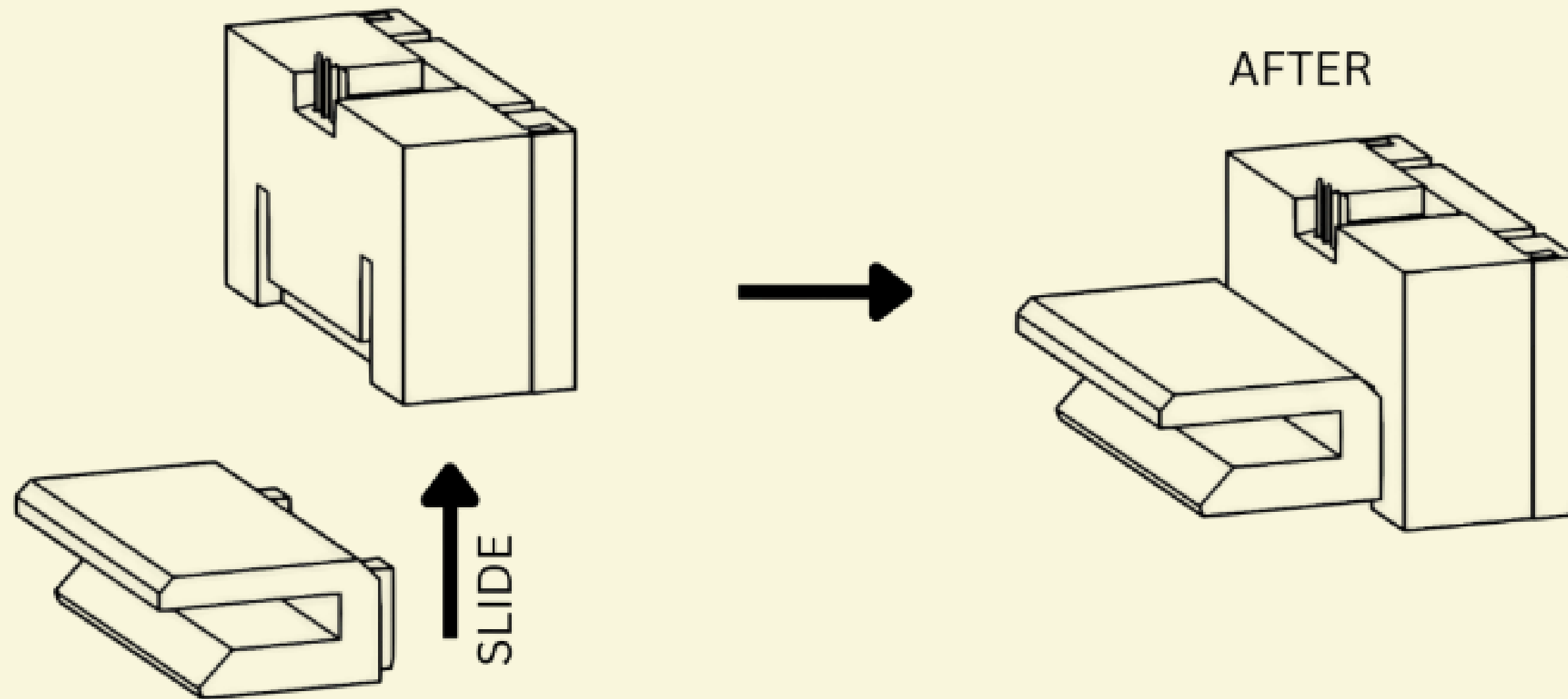


AFTER



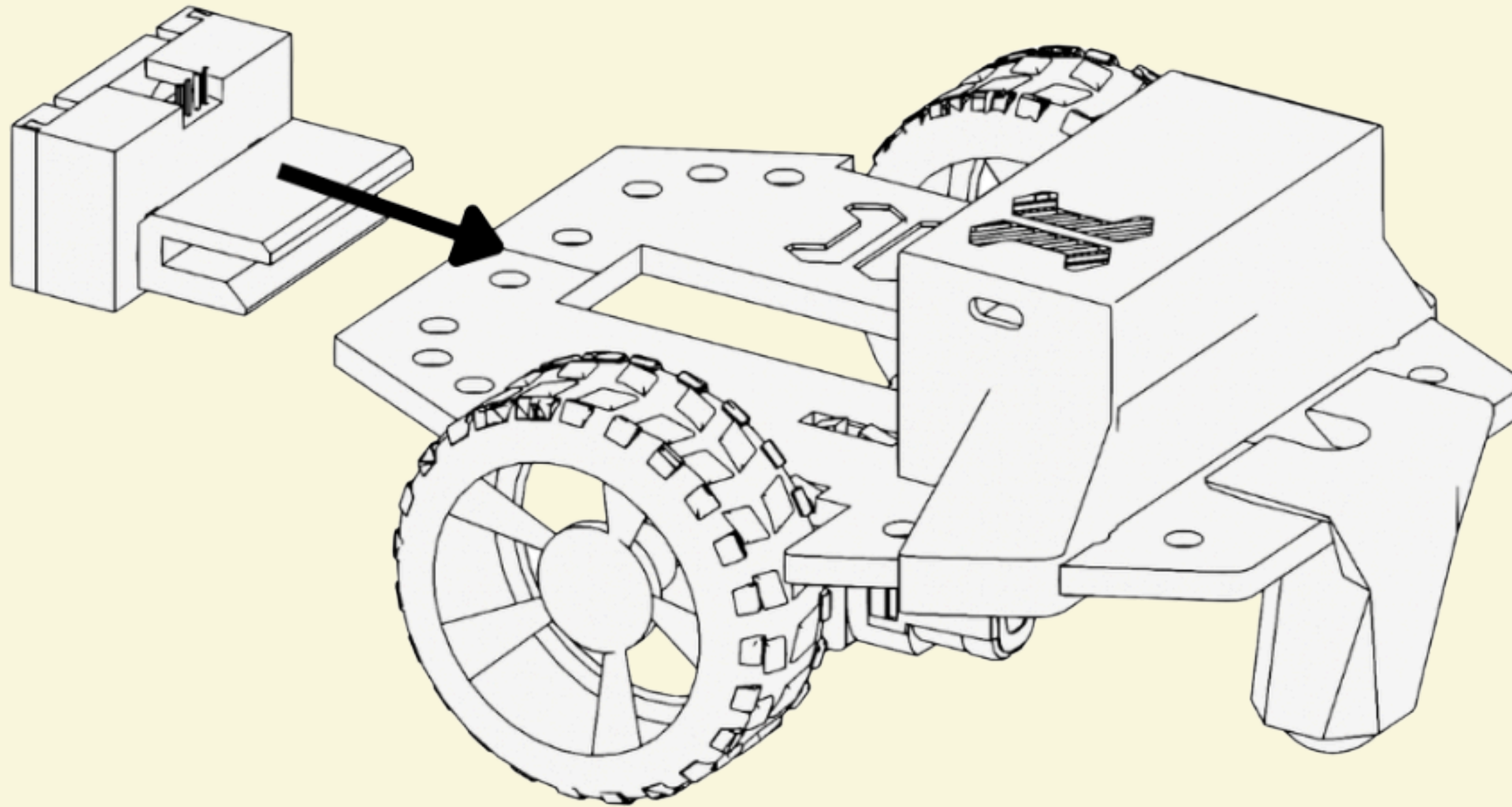
ASSEMBLY

Align and slide the dovetail bezel of the casing mount with the dovetail slot on the ultrasonic casing.

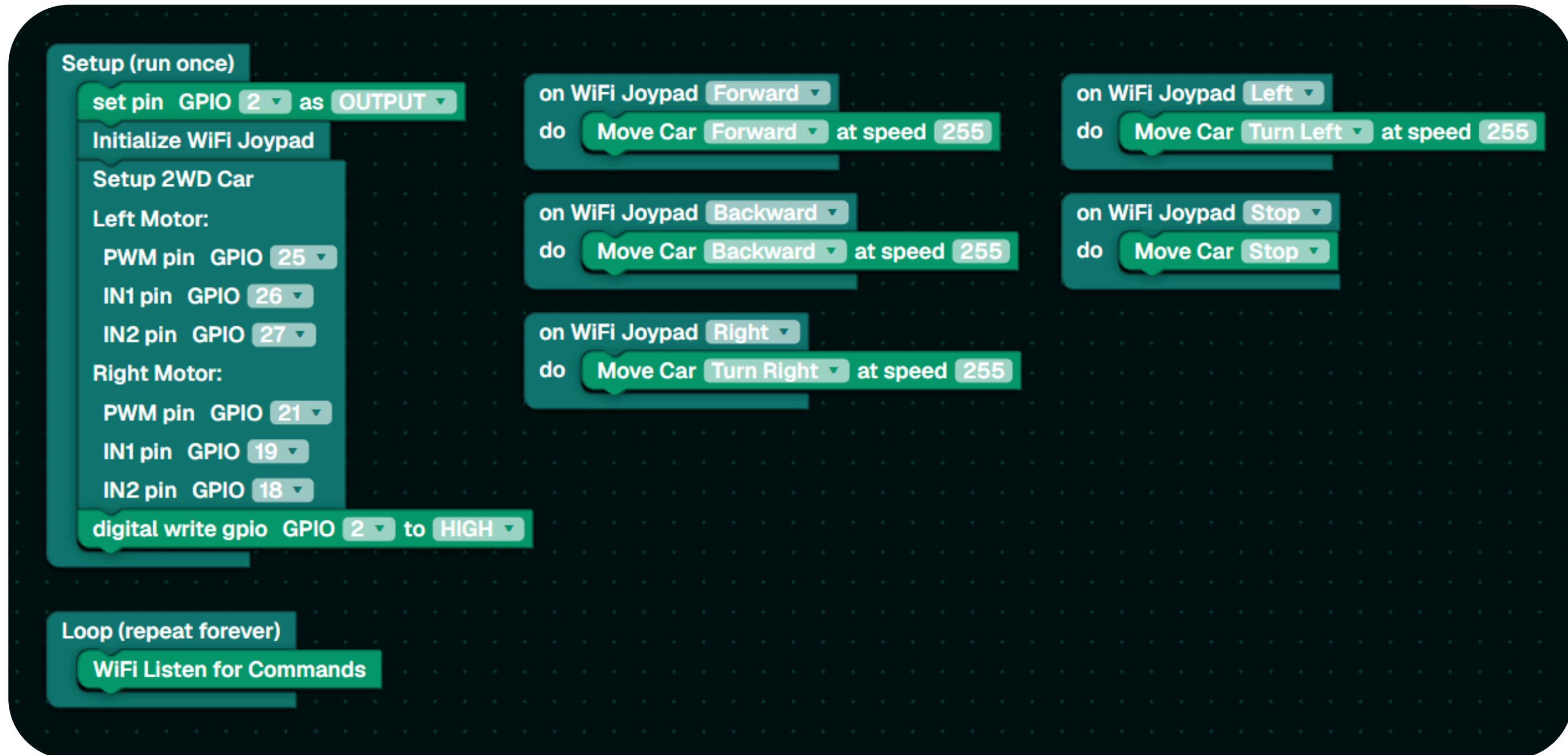


ASSEMBLY

Push the casing to the chassis until it locks in place.



Coding - Remote Control



The image shows a Scratch code editor with a dark green background and a grid of dots. The code is organized into three main sections: Setup (run once), a series of event-driven actions (on WiFi Joypad), and a Loop (repeat forever).

Setup (run once)

- set pin GPIO 2 as OUTPUT
- Initialize WiFi Joypad
- Setup 2WD Car
 - Left Motor:
 - PWM pin GPIO 25
 - IN1 pin GPIO 26
 - IN2 pin GPIO 27
 - Right Motor:
 - PWM pin GPIO 21
 - IN1 pin GPIO 19
 - IN2 pin GPIO 18
- digital write gpio GPIO 2 to HIGH

on WiFi Joypad Forward

- do Move Car Forward at speed 255

on WiFi Joypad Backward

- do Move Car Backward at speed 255

on WiFi Joypad Right

- do Move Car Turn Right at speed 255

on WiFi Joypad Left

- do Move Car Turn Left at speed 255

on WiFi Joypad Stop

- do Move Car Stop

Loop (repeat forever)

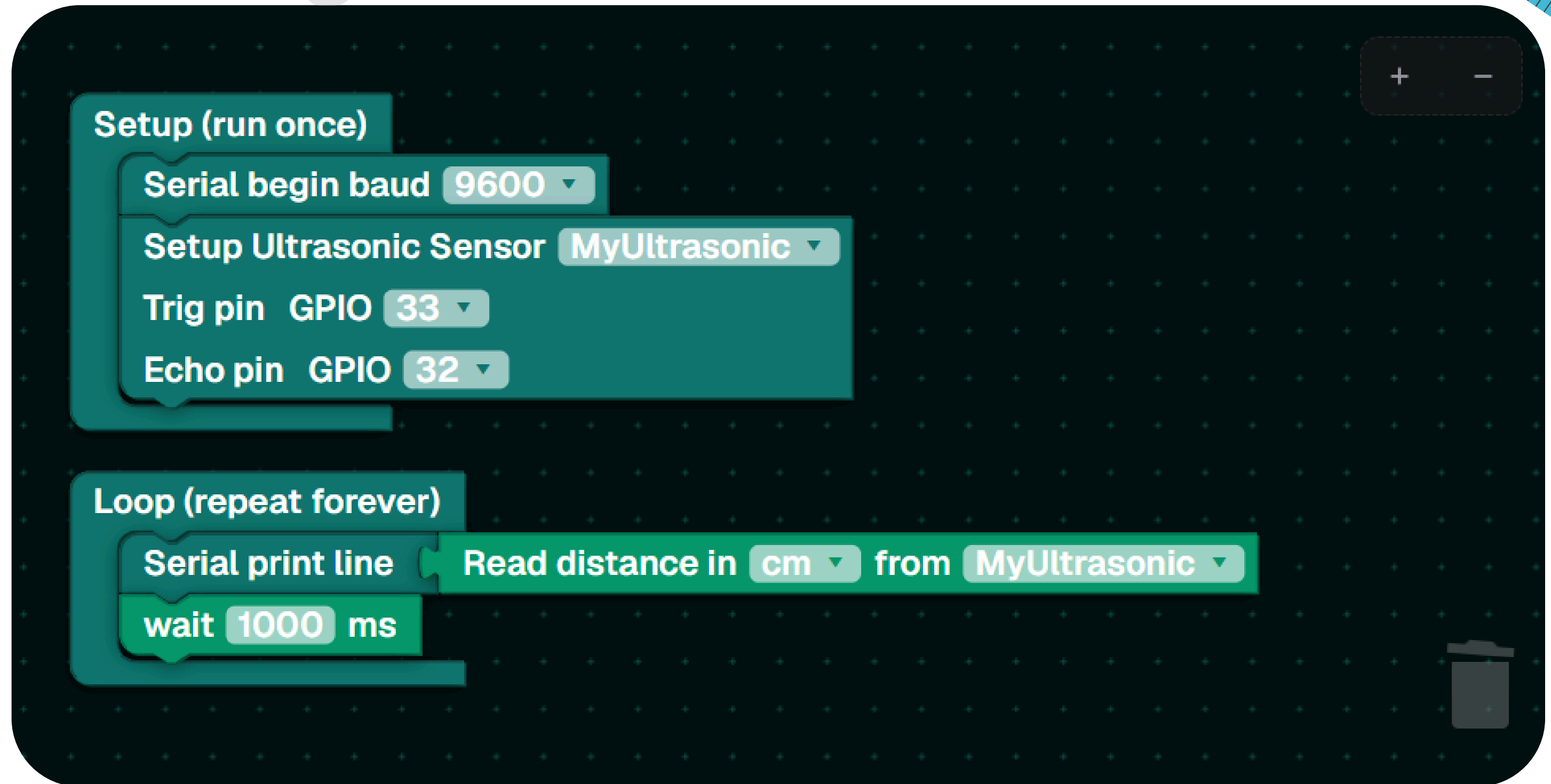
- WiFi Listen for Commands

Coding - Remote Control

After uploading the code for remote control, follow these steps to control your bot:

1. Open WiFi on your phone and connect to your bot with the same ssid and password provided with the kit.
2. Make sure mobile data is turned OFF.
3. Open any browser and type **192.168.4.1** this is the default IP address and will show the controls for your bot if your code is correct.

Coding - Ultrasonic Sensor



The image shows a Scratch code editor with a dark blue grid background. On the left, there are seven horizontal purple tabs. The code is organized into two main sections: 'Setup (run once)' and 'Loop (repeat forever)'. The 'Setup' section contains four blocks: 'Serial begin baud' set to '9600', 'Setup Ultrasonic Sensor' set to 'MyUltrasonic', 'Trig pin GPIO' set to '33', and 'Echo pin GPIO' set to '32'. The 'Loop' section contains two blocks: 'Serial print line' followed by 'Read distance in' set to 'cm' and 'from' set to 'MyUltrasonic', and a 'wait' block set to '1000 ms'. In the top right corner of the editor, there are '+' and '-' buttons. In the bottom right corner, there is a trash can icon.

```
Setup (run once)  
  Serial begin baud 9600  
  Setup Ultrasonic Sensor MyUltrasonic  
  Trig pin GPIO 33  
  Echo pin GPIO 32  
  
Loop (repeat forever)  
  Serial print line Read distance in cm from MyUltrasonic  
  wait 1000 ms
```

Coding Challenges



A. Remote Control - Try lighting up the LEDs wired in diagram 6 making them act like headlights!.

B. Remote Control - Try making sounds with the buzzer wired in diagram 7. (Note: in c2c block studio, you can add buttons and connect them to whatever function you like)

C. Automatic - Try making an obstacle avoidance bot combining codes learned from this manual.

Adding custom buttons

This can also be used to make a button turn on a buzzer at different tones!



Need Help?



Tell us about your problem here!