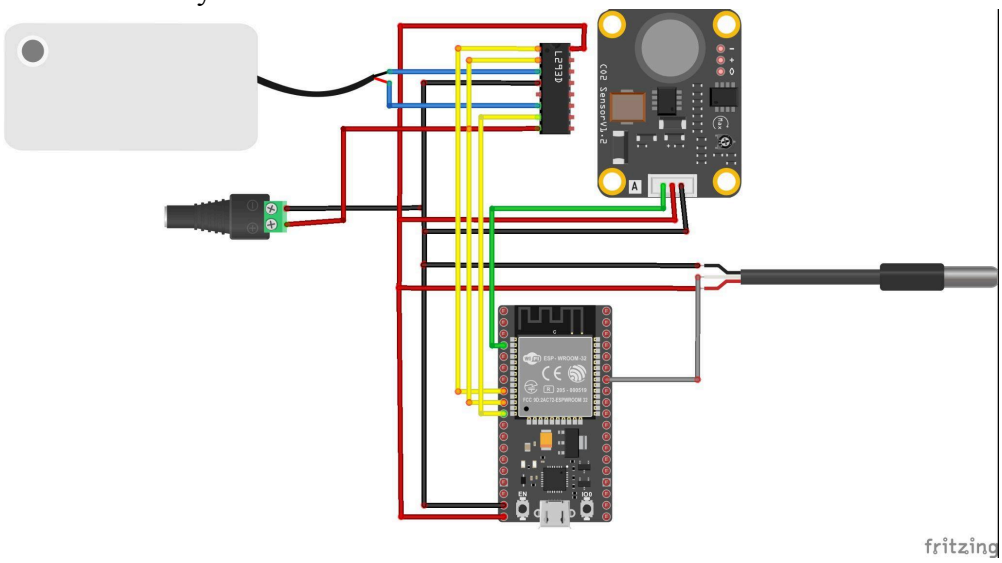
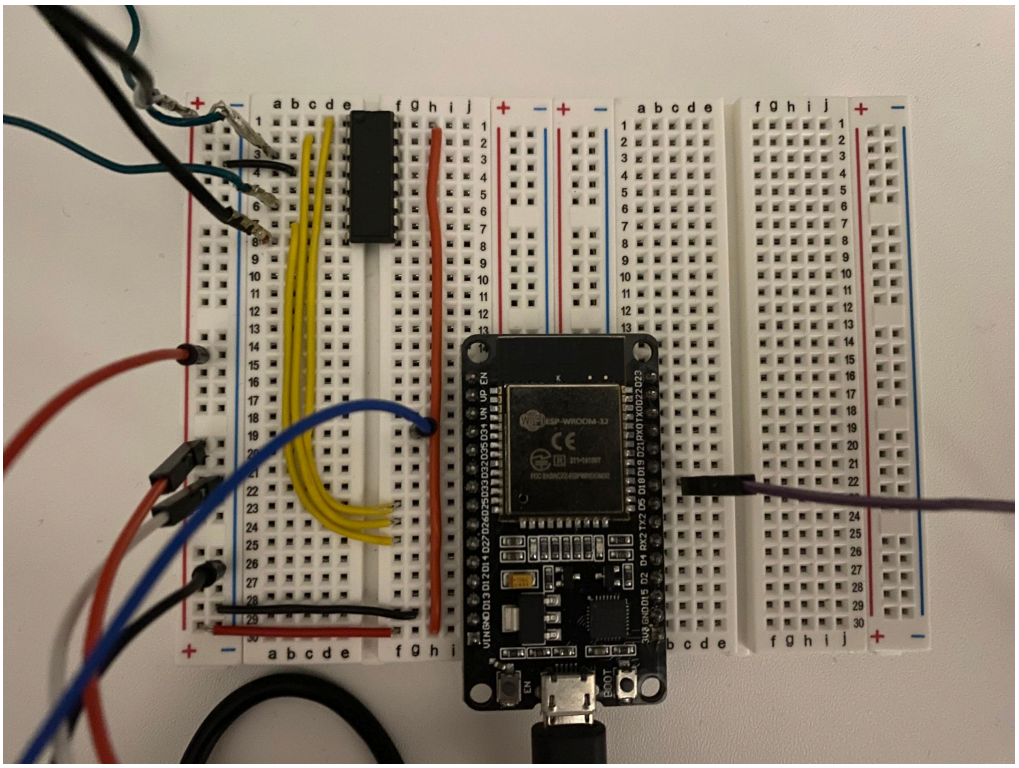
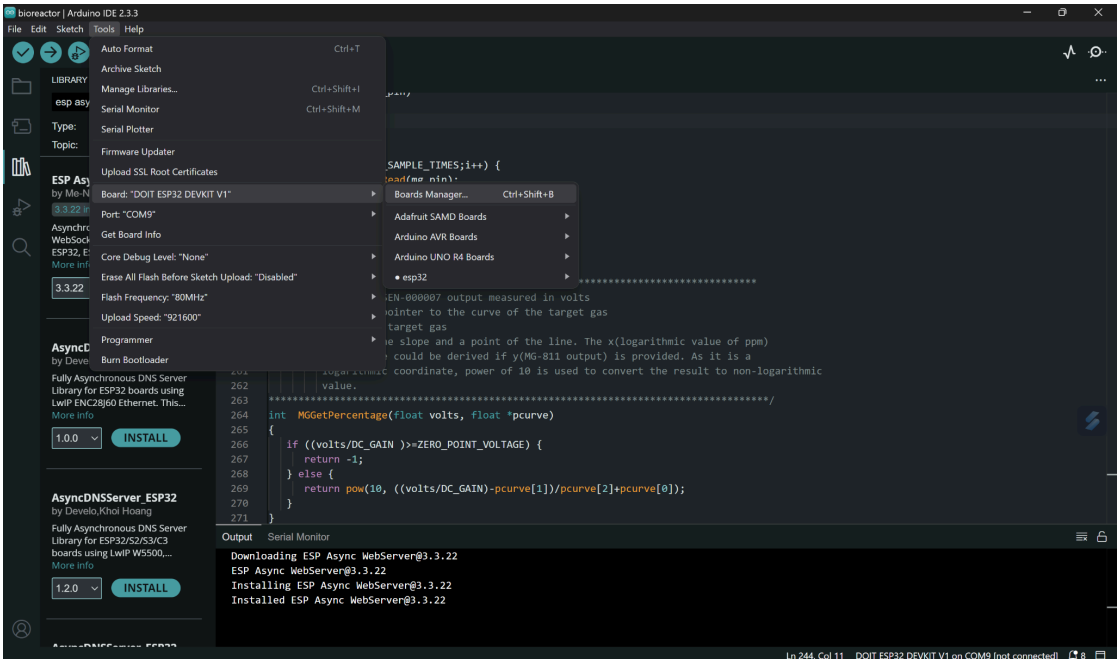
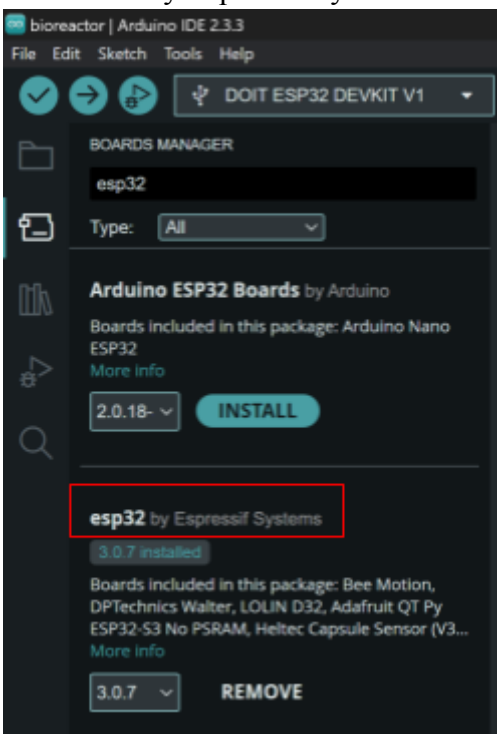
Link to these instructions in Google Docs:
https://docs.google.com/document/d/1eFGHNYcCwDcwbPrd09a7AQx_5VXZiTRYb7Jq9ZDGCpA/edit?usp=sharing

Instructions

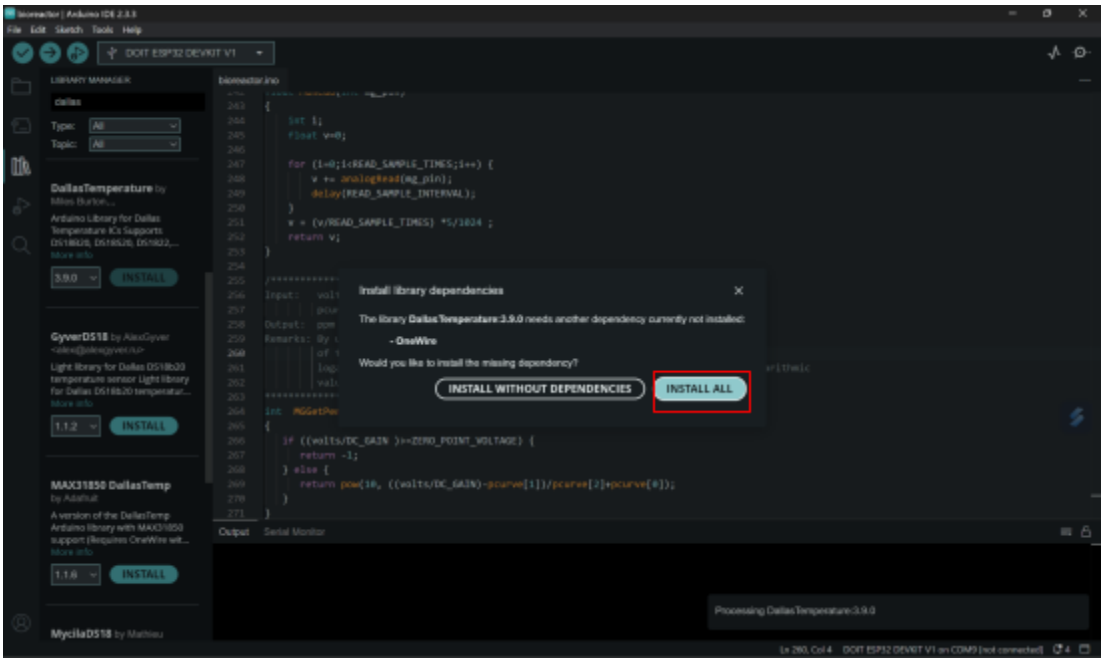
1. Connect all the circuitry as shown below.
   a. 

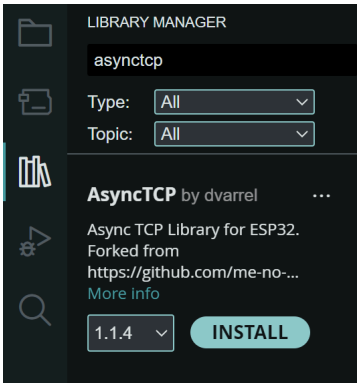
   b. 
2. Leave the ESP32 plugged into a power source for at least 48 hours to warm up the CO_2 sensor.
3. Install the Arduino IDE.

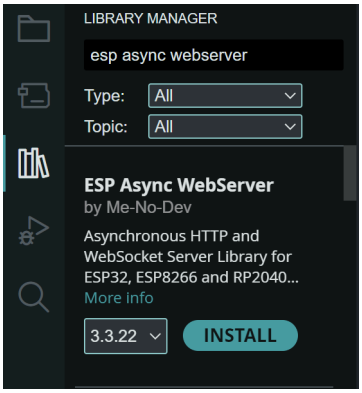
    a. https://www.arduino.cc/en/software
4. Open bioreactor.ino in the Arduino IDE.
5. Go to the board manager.
    a. 

6. Install the “ESP32 by Espressif Systems” board in the Arduino IDE.
    a. 

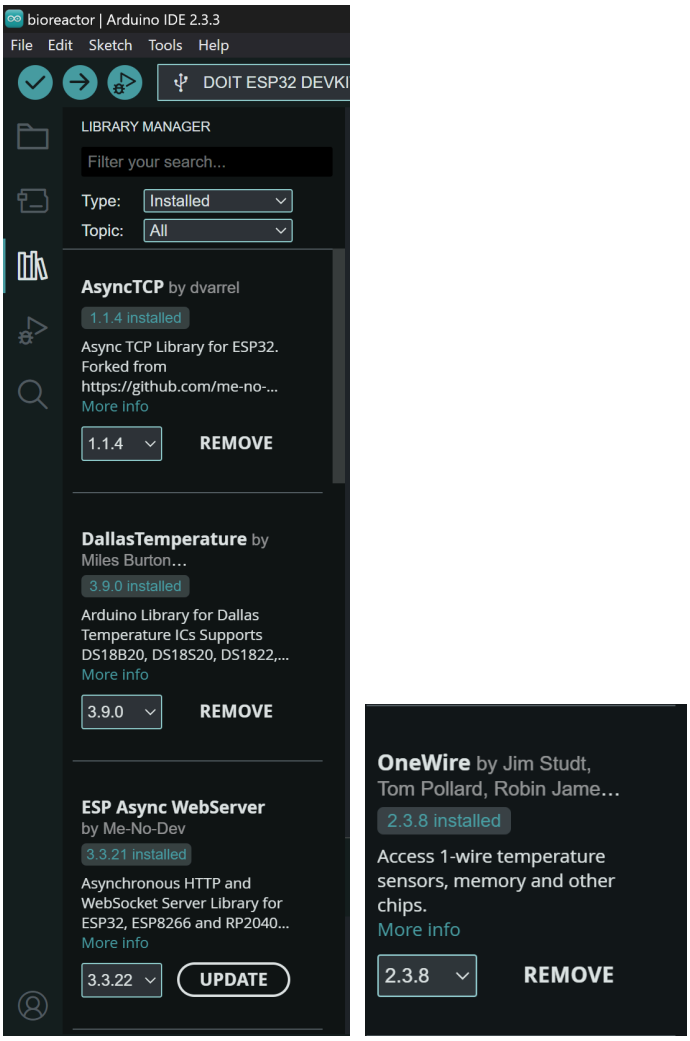
    b. *Note:* For more information: https://randomnerdtutorials.com/installing-the-esp32-board-in-arduino-ide-windows-instructions/

7. Install the “DallasTemperature by Miles Burton” library, choosing “Install All” when prompted.
    a. 

8. Install the “AsyncTCP by dvarrel” library.
    a. 

9. Install the “ESP Async WebServer by Me-No-Dev” library.
    a. 

10. Ensure that the libraries below were installed correctly.

a. 

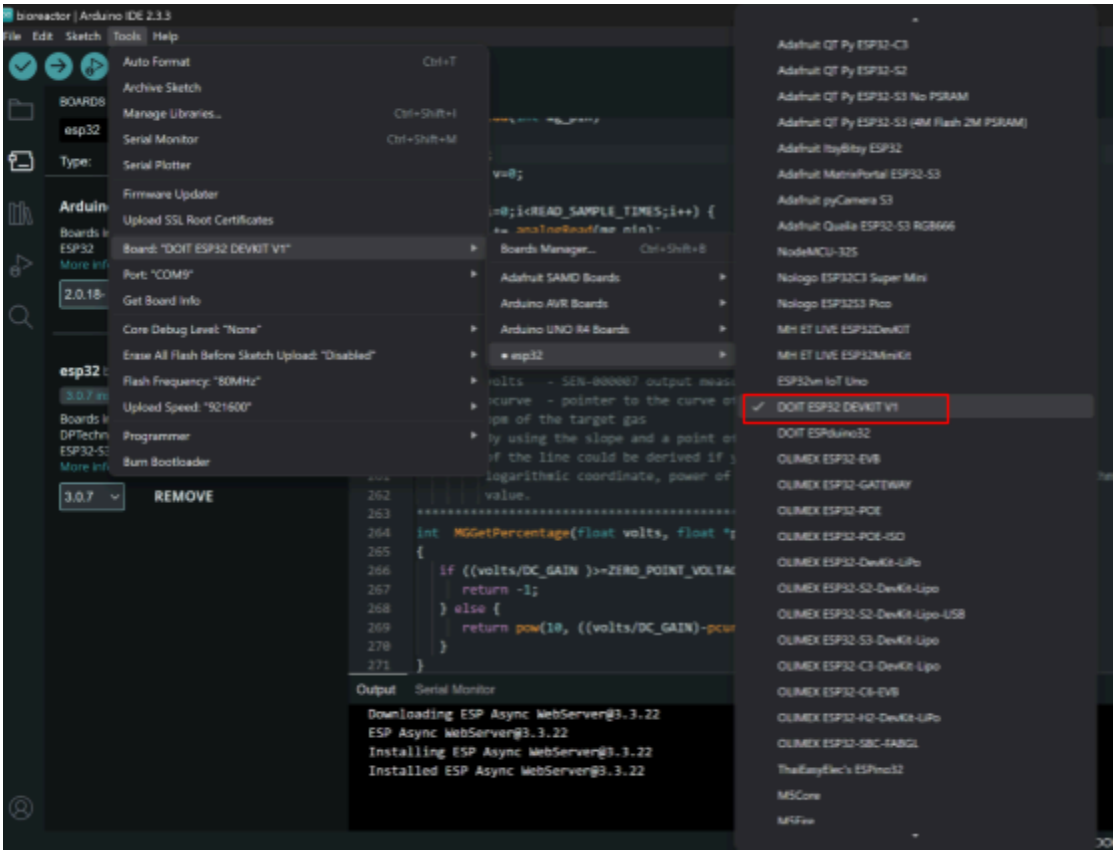
11. Add your network name in the parentheses in line 18.

a. 

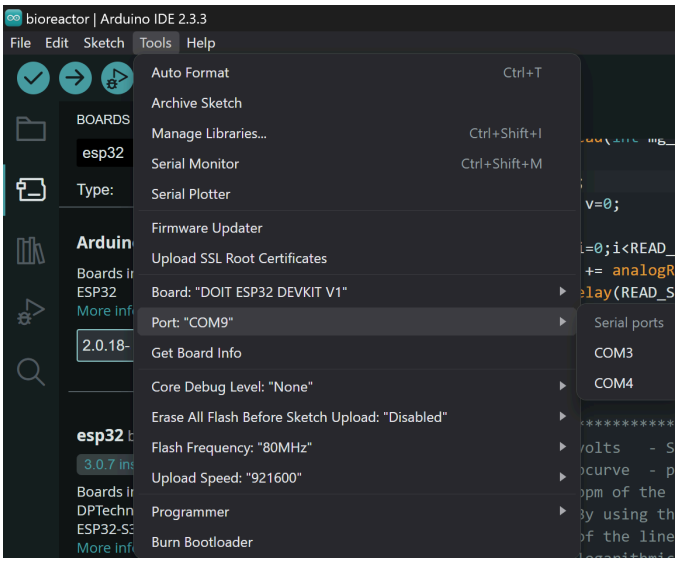
12. Add your network password in the parentheses in line 19.

a. 

13. Choose the “DOIT ESP32 DEVKIT V1” board.

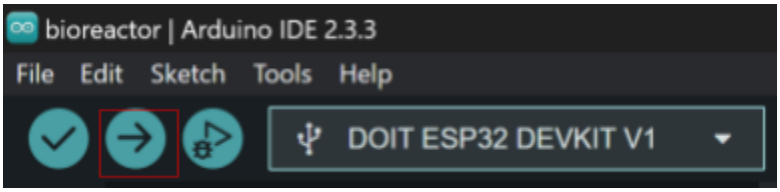
a. 

14. Plug the ESP32 into your computer.
15. Choose the Port the ESP32 is connected to.

a. 

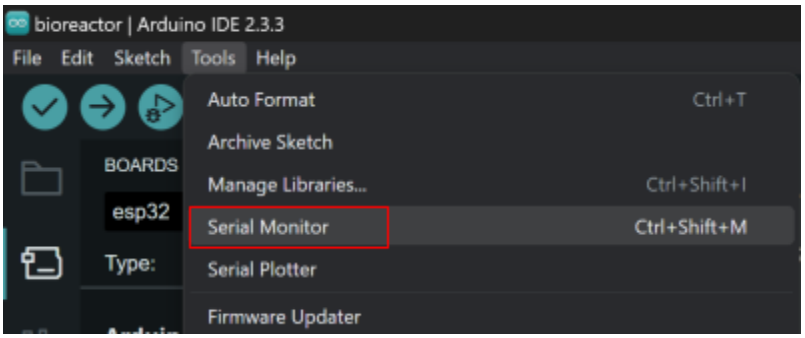
   b. *Note:* the port number varies from computer to computer.
      i. To find out what your port number is: unplug the ESP32 and see which port disappears

16. Upload the code to the ESP32 by clicking the arrow in the top left corner.

a. 

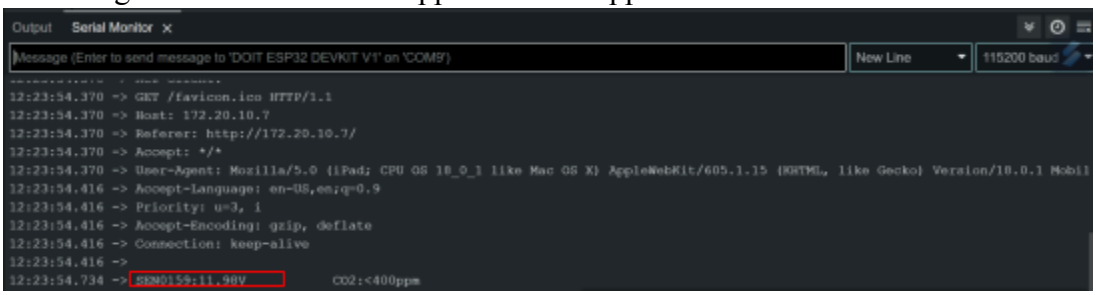
b. *Note:* If the code doesn't upload, reupload while holding the boot button on the ESP32 until "Connecting…" appears in the output.

17. Open the serial monitor at 115200 baud.

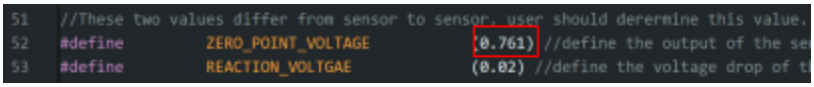
a. 

b. 

18. Record the voltage measurement at 400 ppm and 1000 ppm.

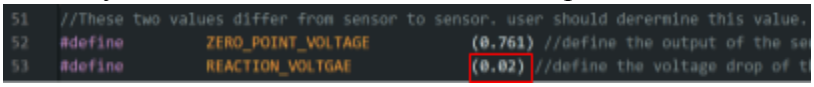
a. 

19. Divide the voltage value at 400 ppm by 8.5. Then, insert the divided value inside the parentheses in line 52 of the code.

a. 

b. *Note:* For more information: https://wiki.dfrobot.com/CO2_Sensor_SKU_SEN0159

20. Take the difference in the voltage measurements at 400 ppm and 1000 ppm. Then, divide the difference by 8.5 and insert the value inside the parentheses in line 53.

a. 

21. Upload the new code to the ESP32.

22. To access the website, type the IP address in the serial monitor as the URL.

a.