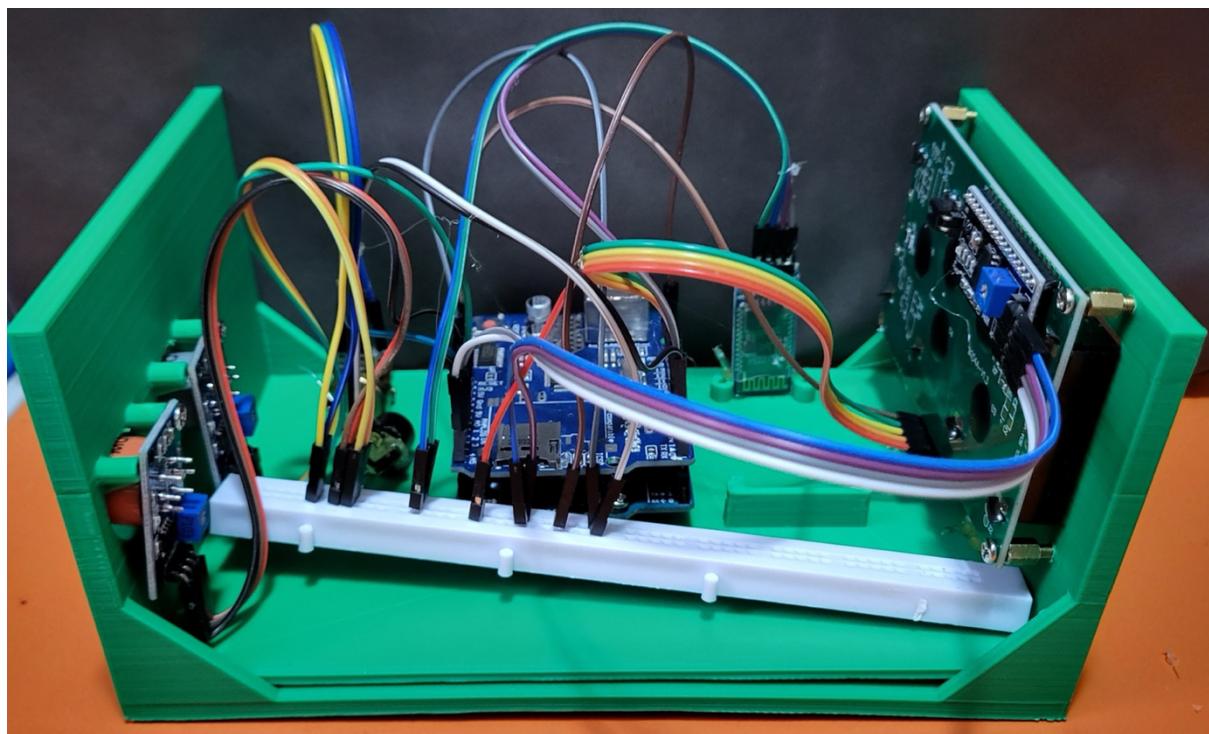


# GAS SENSOR WARNING SYSTEM

## Form 2 STEM Project

### Technical Information

Prepared by 2F Group 3



#### Index:

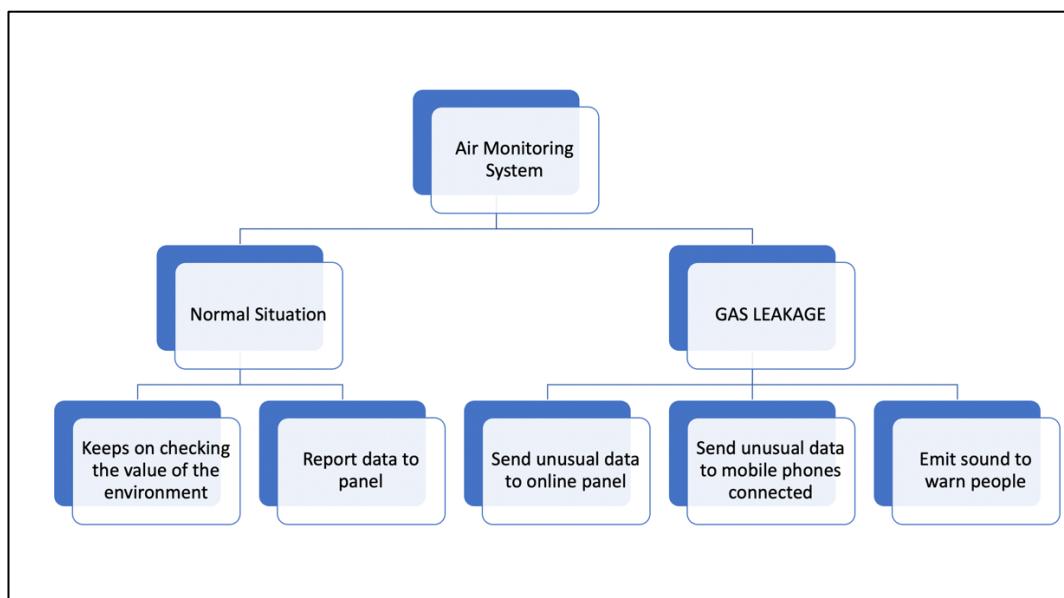
1. Idea of the Project
2. Workflow of the system
3. Materials
4. 3D printing model
5. Parts of the device
6. Notes on usage
7. Source code

## 1. Idea of the Project

In the Sustainable development goal, we would like to solve goal3, subgoal 9, which is to reduce illnesses and death from hazardous chemicals and pollution, so we would like to design a product to avoid accidents from toxic gas poisoning.

We would like to develop a system that keep on monitoring the presence of a certain gases and give warning to people. If a certain gas is detected, the device will send warnings to people around it and users can check the exact concentration of the gas in the air through a system.

## 2. Workflow of the system



### 3. Materials

a. Char Siu board system

1. Charsiu Board
2. MQ-series sensor (any 2)
3. Potentiometer (If needed for testing)
4. Jumper wires
5. 3D printed case
6. M3 screw x4

b. Arduino Board system

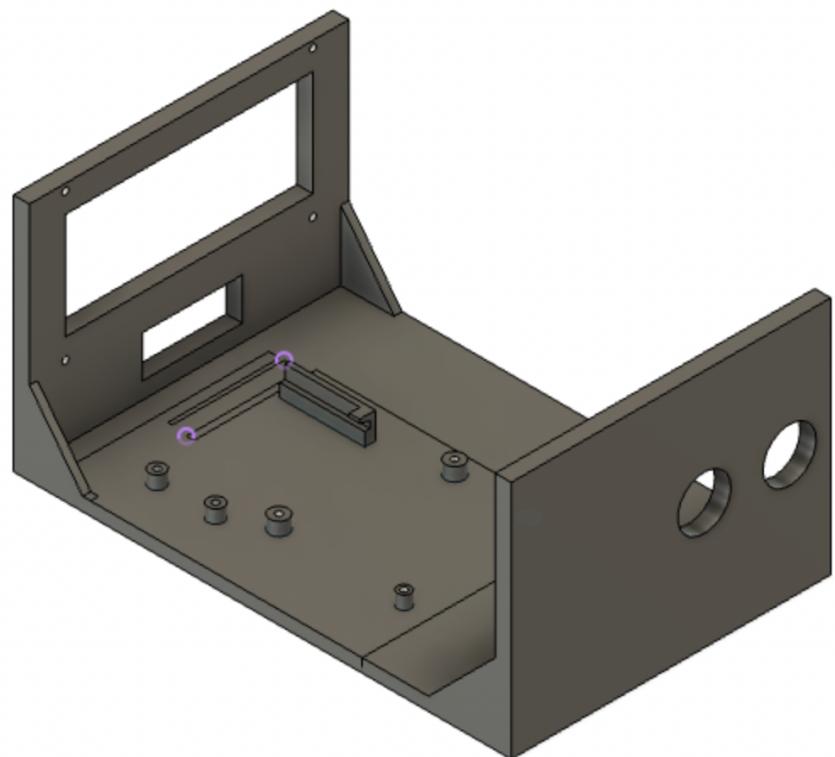
1. Arduino Uno
2. W5500 ethernet shield / W5100 ethernet module
3. 2004A LCD display
4. IIC module for 2004A LCD display
5. MQ-series sensor (any 2)
6. Potentiometer (If needed for testing)
7. Buzzer
8. Jumper wires
9. HC-06 Bluetooth module
10. Type A to Type B wire
11. Ethernet cable
12. 3D printed case
13. M3 screw x12

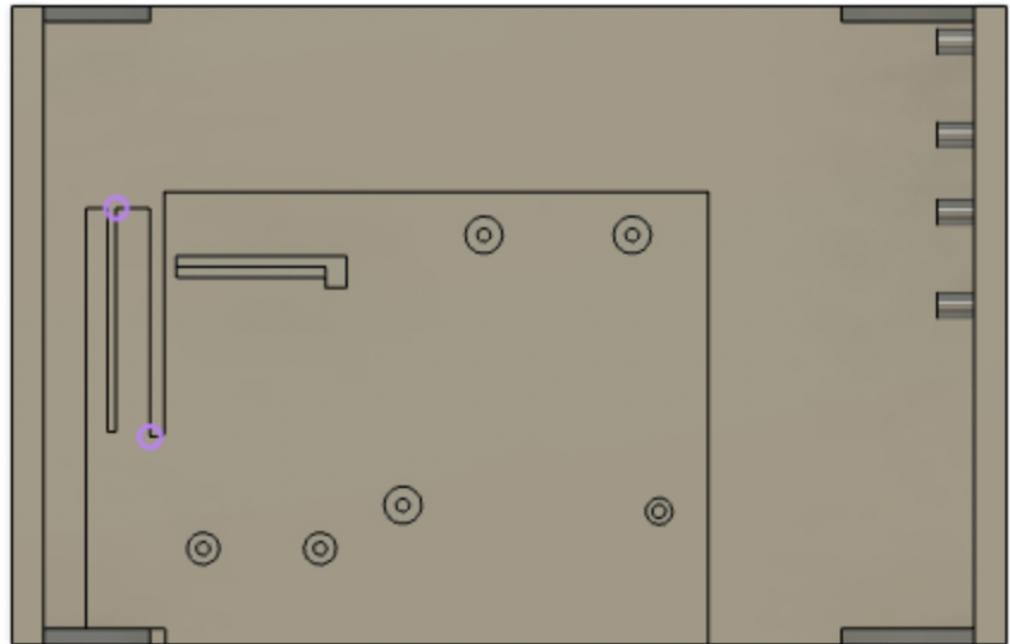
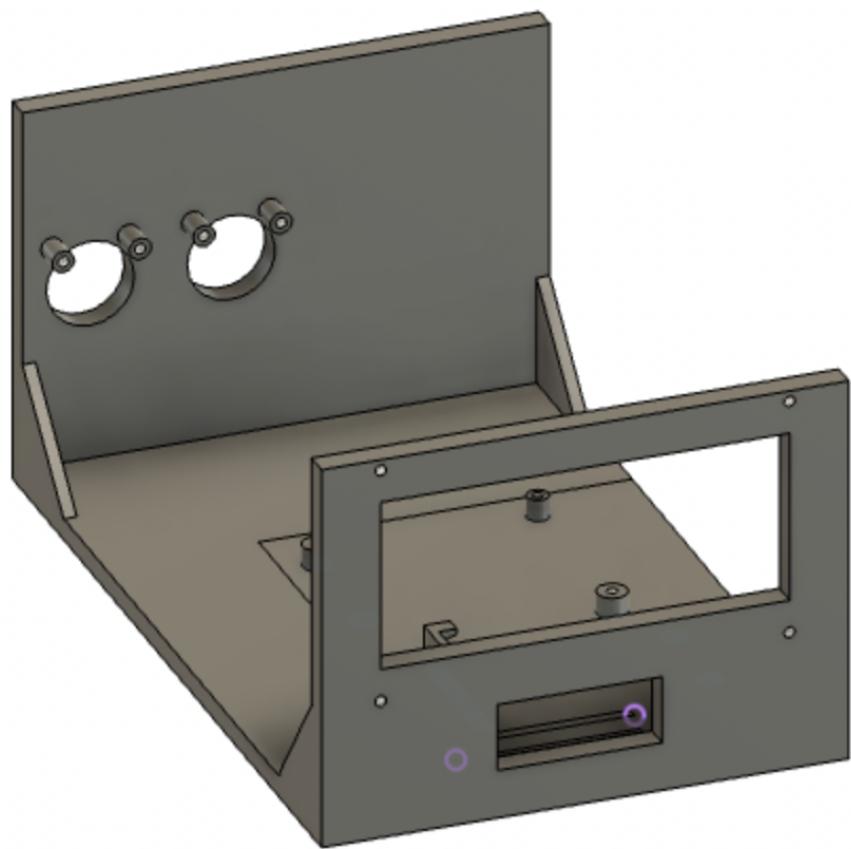
#### 4. 3D printing model

a. Charsiu Board Model (Created with Fusion 360)



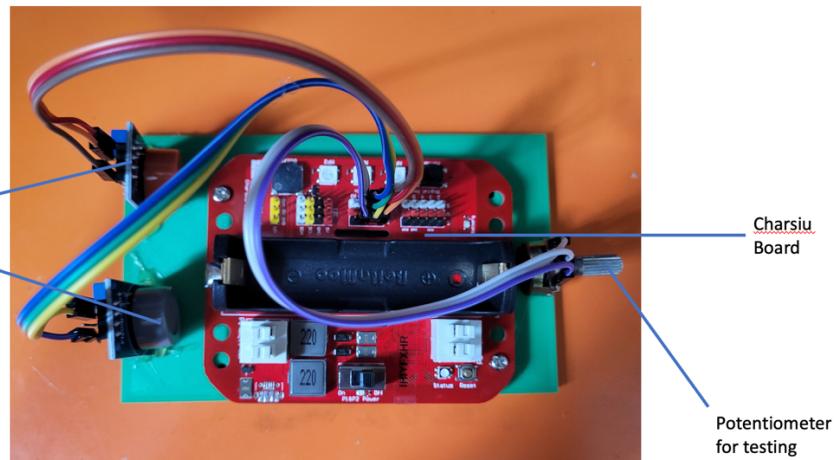
b. Arduino Board Model (Created with Fusion 360)



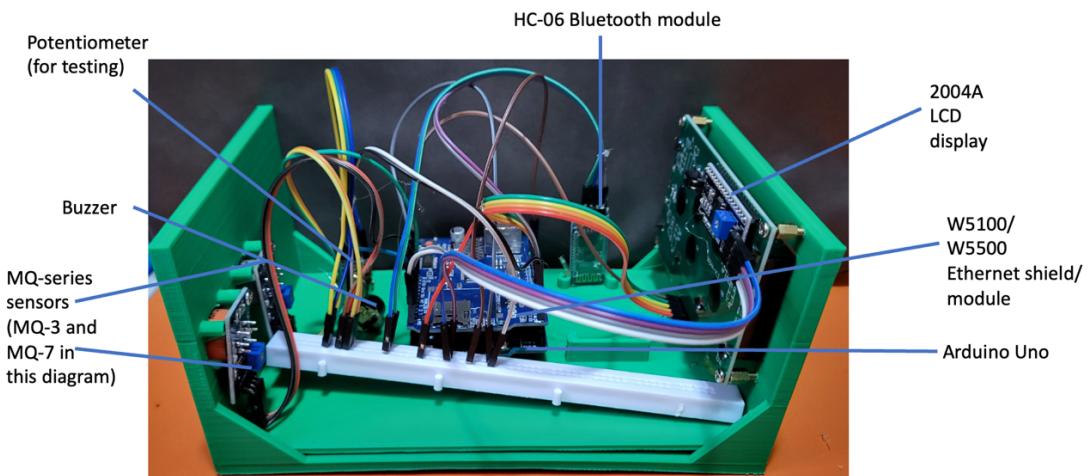


## 5. Parts of the Device

### a. Charsiu Board system



### b. Arduino Board system



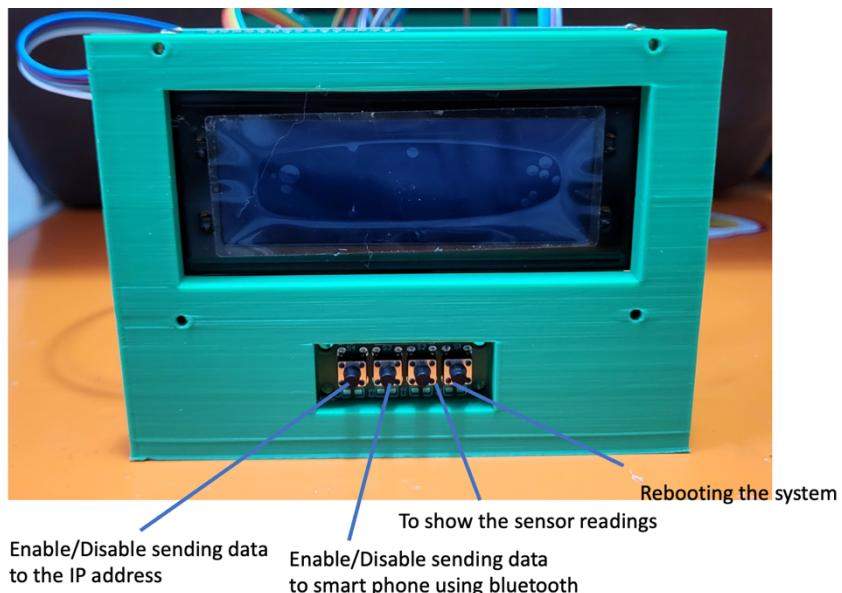
## 6. Notes on usage

### a. Charsiu Board system

1. The warning email will only be sent to the registered email
2. A regular testing of system is recommended

### b. Arduino Board system

#### 1. Function of Buttons



#### 2. Sensitivity of the sensor

You may change the sensitivity of the MQ-series sensor by turning the 'Variable Resistor' at the back of the sensor (the blue one).

#### 3. Connection to bluetooth

The app created for connecting to the bluetooth module is NOT capabile with device using android 12 or later.

#### 4. Bug

If the LCD display shows unknown characters or other bugs occurs, press the fourth button to reboot the system to solve the error.

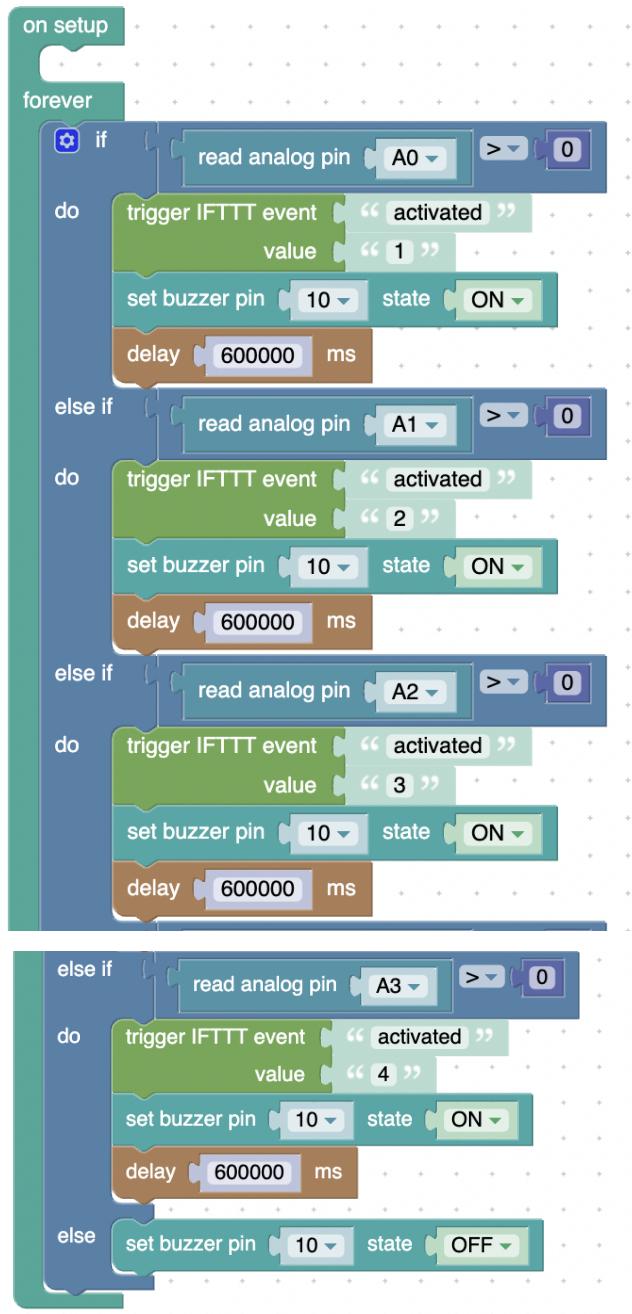
#### 5. Ethernet Issues

If you see that the local website shows that Ethernet has been disabled, that means the user did not allow the system to send data to the website. To solve this, press the first button to enable it. If the word on the display did not change, try to press it for longer time.

#### 6. A regular testing of system is recommended

## 7. Source Code

### a. Charsiu Board system



b. Arduino Board system

Check this website :

<https://github.com/Danielc3388/AirMonitor/blob/main/maincode/maincode.ino>



### **Versions:**

First Version, Published on 19 May 2023.