003.P003-2023-2024-SensorCO2_S019_S020_S021

Introduction

📢OUR CO2 SENSOR IS THE RIGHT SOLUTION!

Motivation and analysis

Our daily problem is hard to **concentrate on work** and think creatively. That is because our brain needs **oxygen**. To resolve this problem we analyzed how to do it and we came with the idea to **measure the air quality** in order to have enough amount of oxygen in the room. We decided that the best solution to measure the air quality was **CO2 sensor** which would inform us whether the air in the room is suitable for our brain.

Read more: 02.Knowledge contribution (2023-2024-S019-S020-S021)

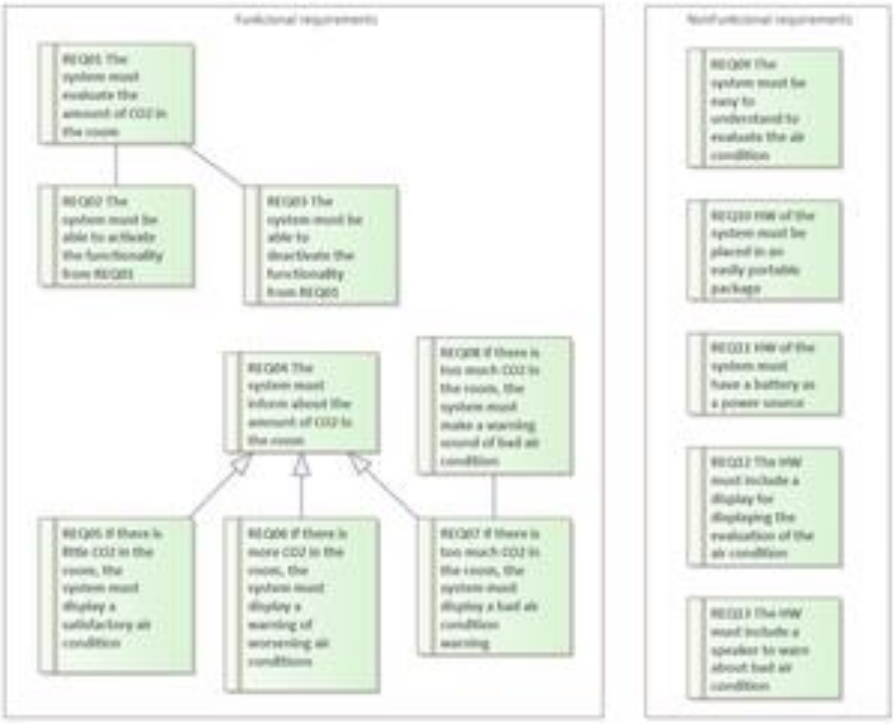
Our work

Our work consists of 3 parts:

- to cooperate in the team
- to work on project
- to create the product

Read more: 01.Project summary (2023-2024-S019-S020-S021)

Business layer



Two possible solutions for air condition visualization:

✓ the air contains enough oxygen

! air contains oxygen, but it also contains a larger amount of CO2

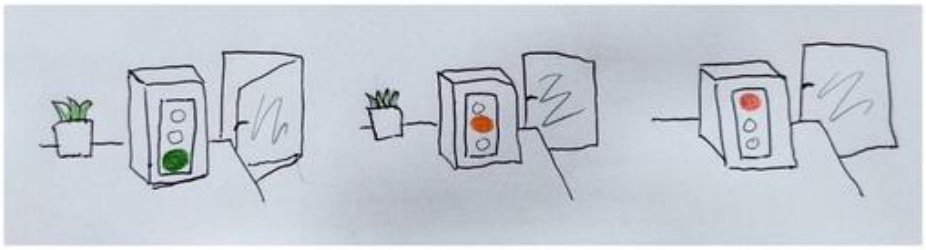
✗ the air contains too much CO2 and the room should be ventilated

Design 1: display with icons

● air contains enough oxygen for normal functioning

● air contains oxygen, but it also contains a larger amount of CO2

● the air contains too much CO2 and the room should be ventilated

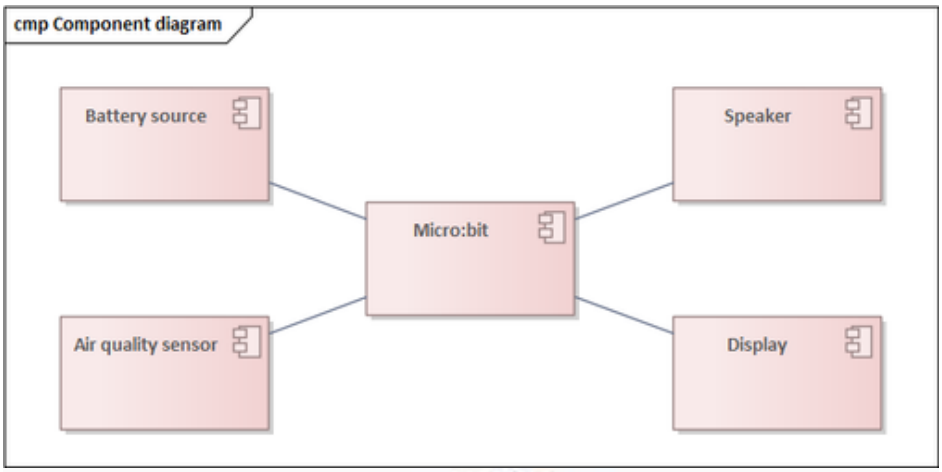


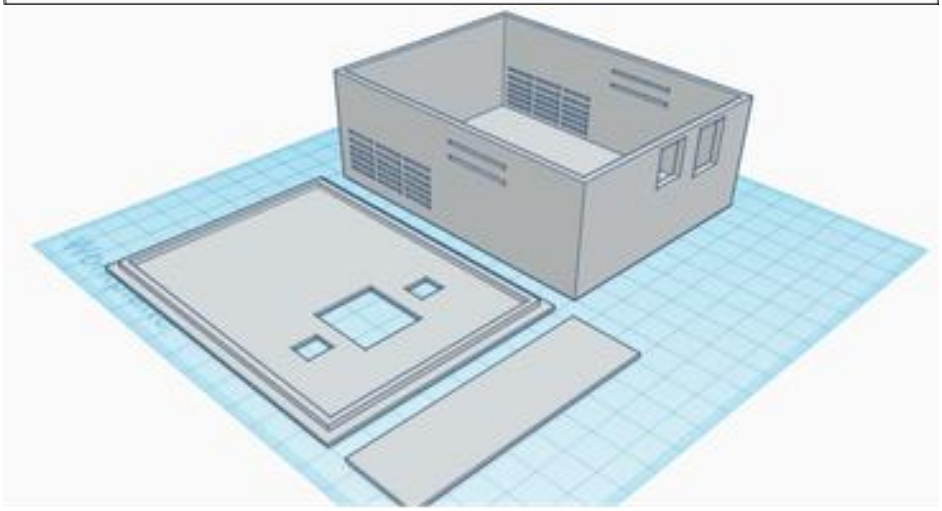
Design 2: display with color LEDs

Read more: [03.Business layer (2023-2024-S019-S020-S021)]

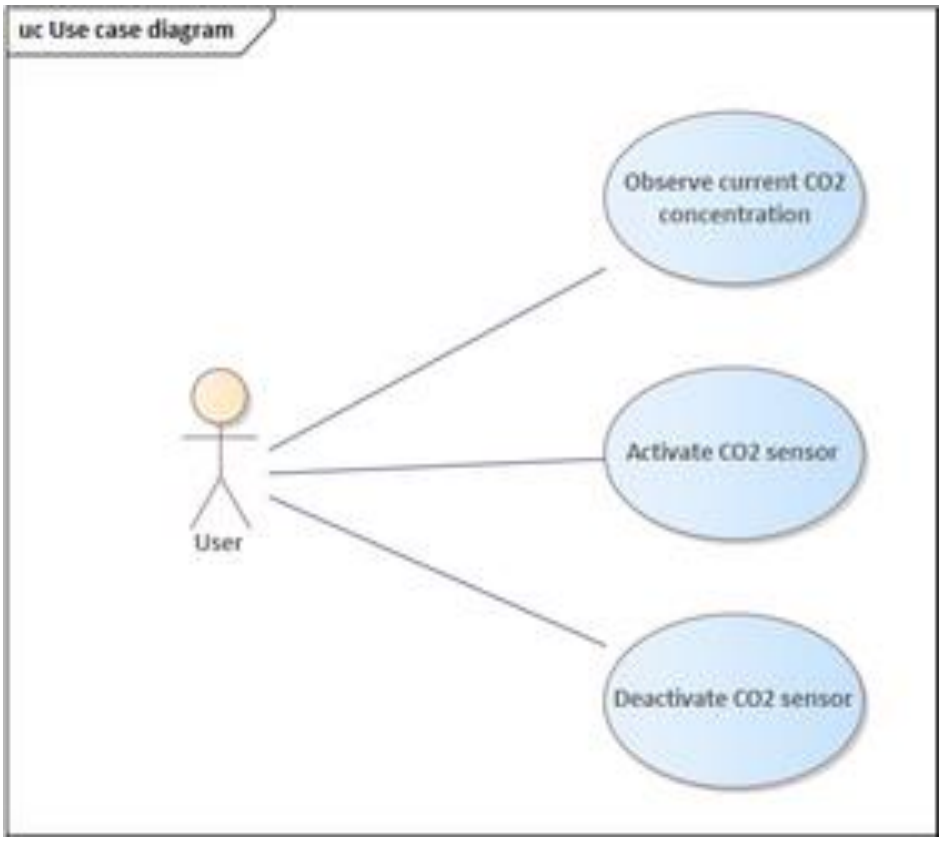
System layer

System consists of a Micro:Bit with connected batteries and air quality sensor providing air quality data to the Micro:Bit, which utilizes its display and speakers to inform and notify the user about the air quality data.





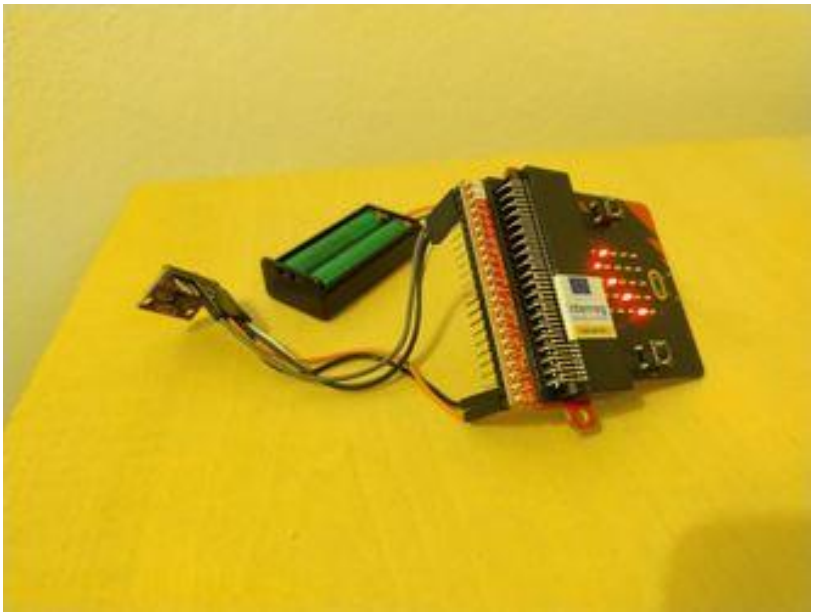
The main use case of our sensor consists of observing the current CO2 concentration of the surrounding air. Other than that, the seonsor can be turned on or off.

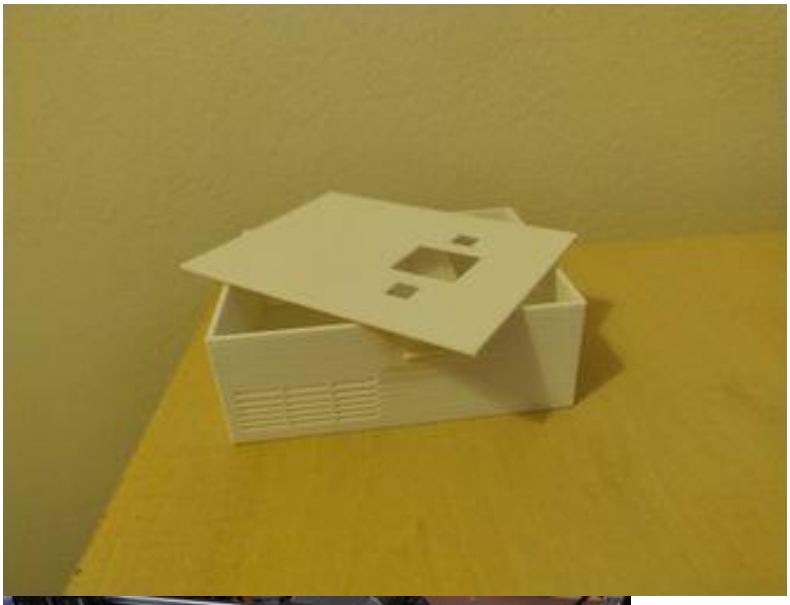


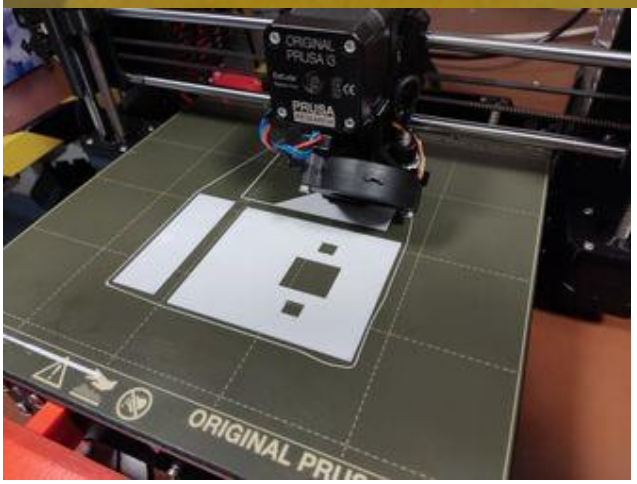
Read more: 04.System Layer (2023-2024-S019-S020-S021)

Technology layer

sparkfun
VCC
GND
SCL
SDA
UNK
INT
RST
ADD







20231225_145630 - Trim.mp4
20231225_153605 - Trim.mp4

Read more: 05.Technical documentation (2023-2024-S019-S020-S021)

Future work and possible improvemnent

1. **Calibration and Accuracy Improvement:**
    - Sensor can be calibrated to enhance the accuracy of the CO2 measurements. This could involve comparing sensor readings with a certified reference standard and making necessary adjustments.
2. **Sensor Sensitivity:**
    - Experiment with the sensor's sensitivity to CO2 levels. Sensor parameters can be adjusted to ensure it can detect a wide range of concentrations accurately.
3. **Power Consumption and Battery Life:**

- We can think about optimizing power consumption of the sensor, and adding a possibility to power it via USB connector. It will require design being remade and hardware parts changed, which will involve change in production price.

4. **User Interface and User Experience (UI/UX):**
   - Sensor can use a better display to display information in more understandable format (e.g displaying a whole number at once, change LED color based on the measured quality of air)
5. **Miniaturization:**
   - Since sensor prototype is quite big, we can consider making it smaller for better user expirience, but only if it will not lower quality of service it provice - accuracy and sensitivity of sensor. Also, price should be considered here, if this sensor will be used as a commercial product.