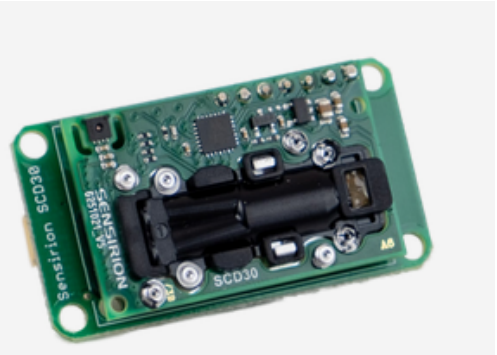
Worksheet 6a: Let's get to know the CO2 sensor



Dear students,

In the following worksheet you will get to know the CO2 sensor.

The measuring range of the sensor is CO2 measuring range: 0 - 40,000 ppm.

We can use the following limit values from the Federal Environment Agency:

Classification of indoor air quality according to DIN EN 13779: 2007-09 (DIN 2007-09). The table contains in columns 1-3 and 5 the specifications of DIN EN 13779. Column 4 presents, as an example, for a CO2 outdoor air concentration of 400 ppm, absolute CO2 concentrations in the indoor air are as follows:

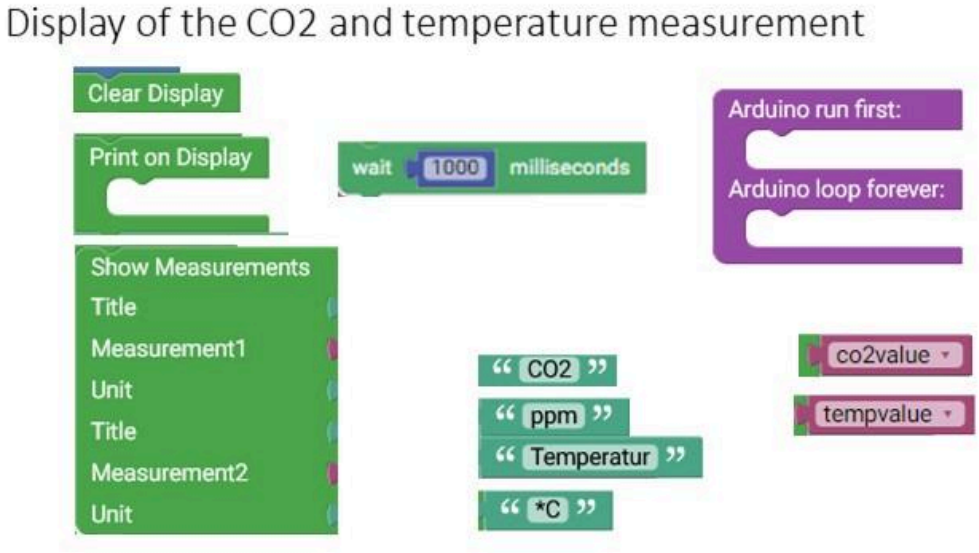
Indoor Air Category	Description	Increase of the CO2 concentration compared to the Outside air [ppm]	Absolute CO2 concentration in indoor air [ppm]	Ventilation rate/outdoor air flow rate [l/s person] ([m3/h person]
IDA 1	High air quality	<=400	<=800	>15 (>54)
IDA 2	Medium air quality	>400-600	>800-1000	10-15 (>36-54)
IDA 3	Moderate air quality	>600-1000	>1000-1400	6-10 (>22-36)
IDA 4	Low air quality	>1000	>1400	>6 (>22)

Source: Health assessment of carbon dioxide in the interior (Federal Environment Agency, 2008)

1. **Connect the CO2 sensor to your arduino board using a cable.**
2. **Have the CO2 measured value and the temperature shown on the OLED display.**

Go to https://blockly.sensebox.de/ardublockly/?board=sensebox-mcu#

Tip: Look at the following graphic to which blocks you need and put them in the correct order.



3. Load the program on your Board

If you want to load the program onto your senseBox, follow the steps below:

- ☐ Click on the orange button so that the program compiles.
- ☐ A pop-up window will open.
- ☐ Go to "Save File".
- ☐ Press the red reset button on the senseBox twice and wait until it turns green.
- ☐ Drag the .bin file onto the senseBox.
- ☐ Test if it works.

Sources:
The CO2 traffic light set, senseBox, https://docs.sensebox.de/hardware/sets-co2-ampel/#3--software-aufspiele-und-testen, retrieved on the 19th September 2021

CO2 sensor, senseBox, https://sensebox.kaufen/product/co2-sensor, accessed on October 5, 2021

Health assessment of carbon dioxide in the interior, Federal Environment Agency, https://www.umweltbundesamt.de/sites/default/files/medien/pdfs/ kohlendioxid_2008.pdf, accessed on October 5, 2021