Assignment 4

- The hardware implementation

  Components: Arduino board, breadboard, three DC motors, LED, piezo buzzer, gas sensor, resistors, wires.

  Connections:

  - I connected the breadboard to GND and 5V of Arduino.
  - I connected the LED's anode to D13 and the cathode to Gnd.
  - I connected the DC motors' pins: Terminal 1 to Gnd, Terminal 2 to D12 (for Valve 1), Terminal 1 to Gnd, Terminal 2 to D11 (for Valve 2), Terminal 1 to Gnd, Terminal 2 to D10 (for Valve 3).
  - I connected the buzzer's pins: - to Gnd, + to D9.
  - I connected the gas sensor's pins: A1, H1 to Gnd, A2 to A0 (of Arduino), B1, H2, B2 to Vcc.

    I used appropriate resistors to limit the current (200 Ohms) for every component.

- The software implementation

  I declared variables for the pins of the LED, DC motors, buzzer, gas sensor. I also created variables for the motors' sequence period.

  After that, in the setup function, I set the pins' mode: gas sensor as input and the rest (DC motor, LED, piezo) as outputs.

  In the loop function I read the value from the gas sensor and if the value is greater than 500, but before it wasn't detected gas, the valves will close in order, the lighting will be shut down and an alarm will go off. Otherwise, the lighting will be on.

The software implementation can be found at the following link:

https://www.tinkercad.com/things/hPK4kd5kvCI-assignment-4-rtcs-ionescu-natalia-cen4ha/editel?sharecode=Tu6y9HNSBrbK_uJ_Kta78ZA5wUmBdkj_QXBimnBpD1w

- Personal information

  I chose the threshold value for the gas as 500. To simulate the closing of the valves, the DC motors will be activated for 300 ms, then stop, one after the other. For this, I had to verify that the previous value read from the gas sensor was less than 500.
  To simulate the lighting I used a LED.