

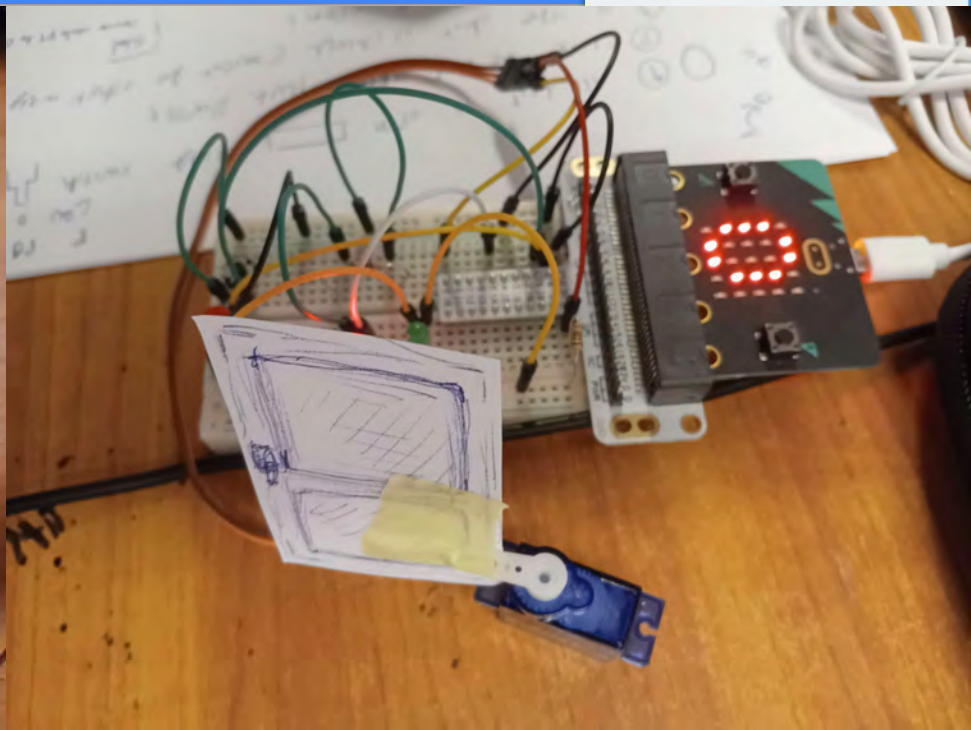
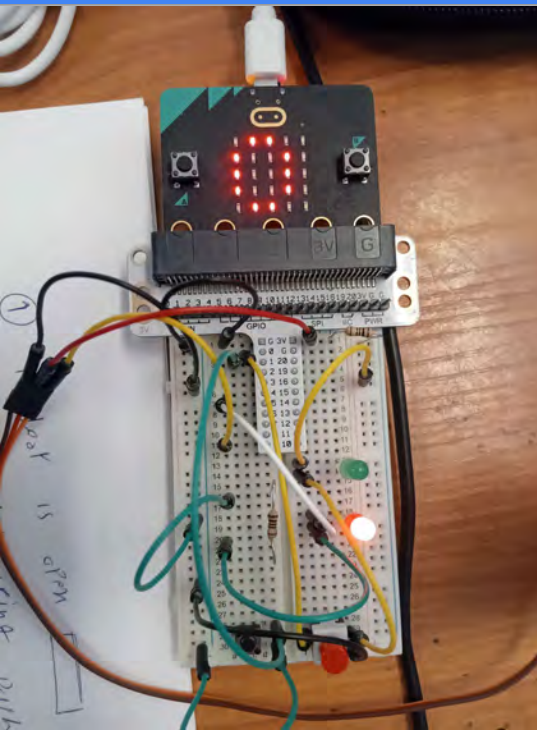
Door control project

Team: Andre, Cosmin, Elena, Milan

We created a circuit that opens or closes doors, the red led lights if the door is closed and green led if it is open, you can change the state of the door with a switch or a button

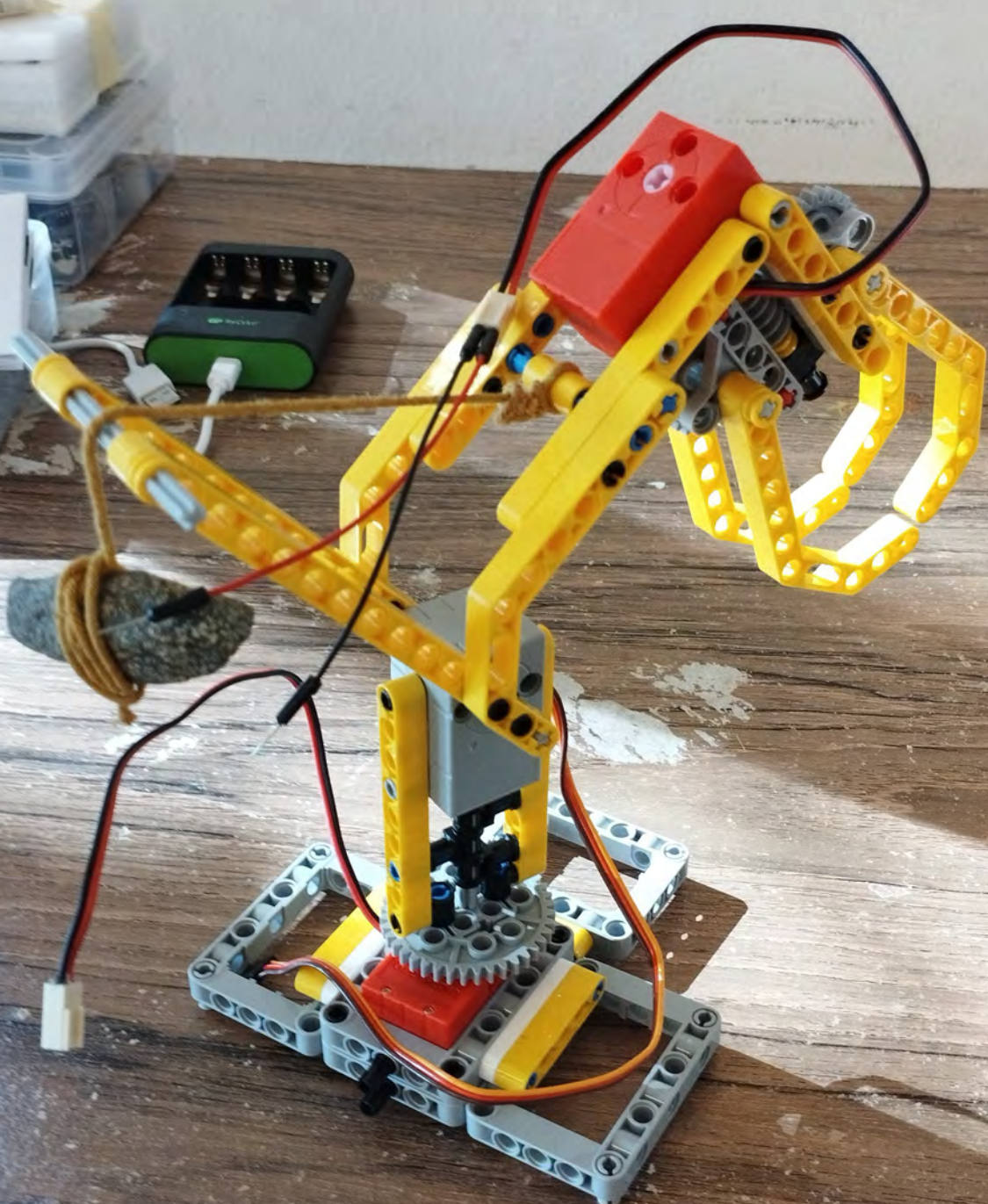


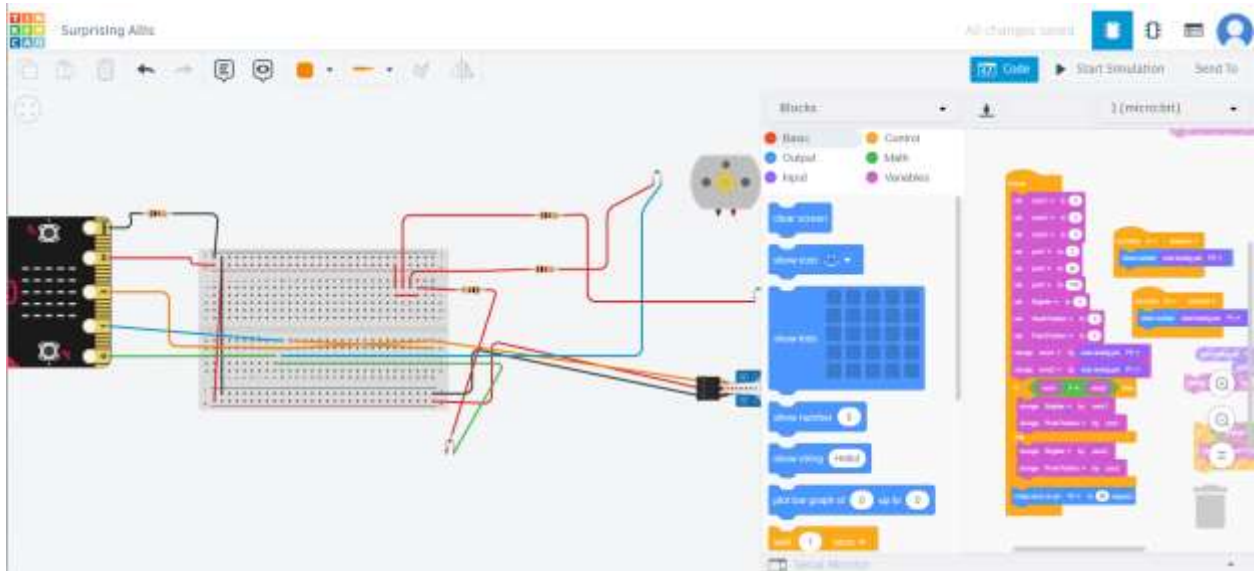
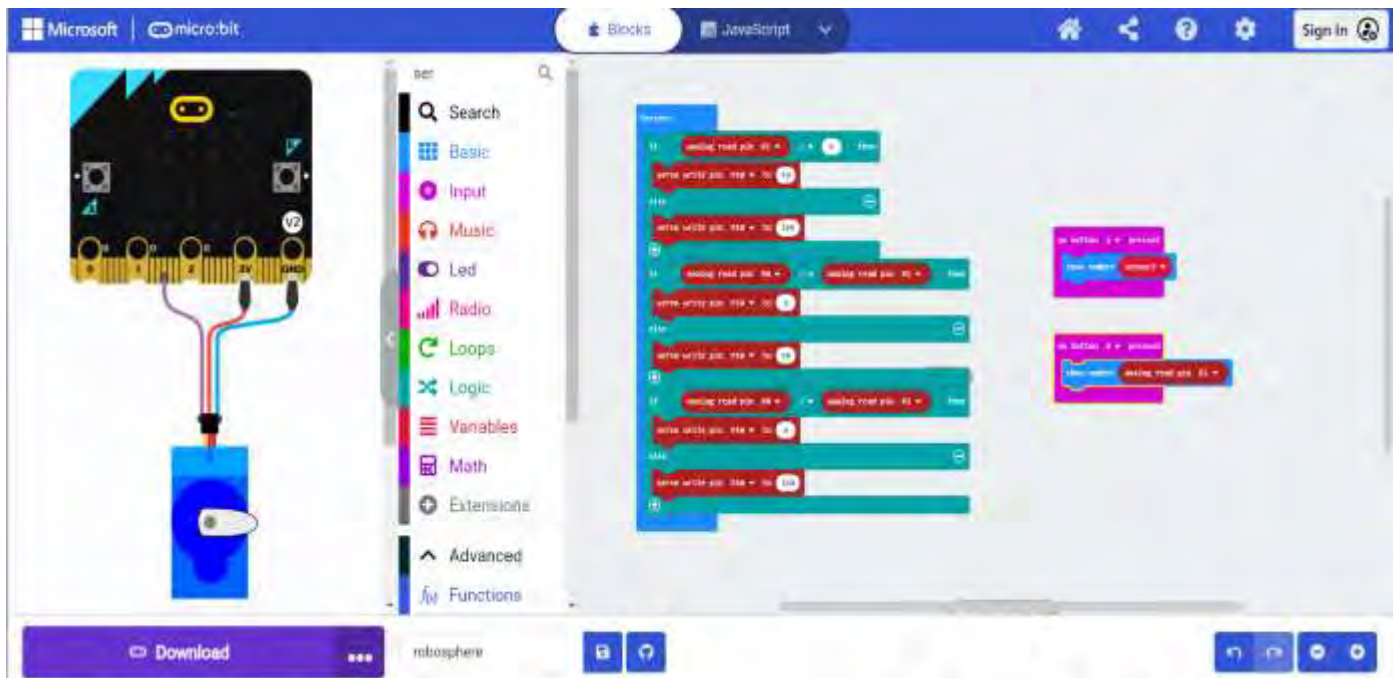
Our project hardware and software

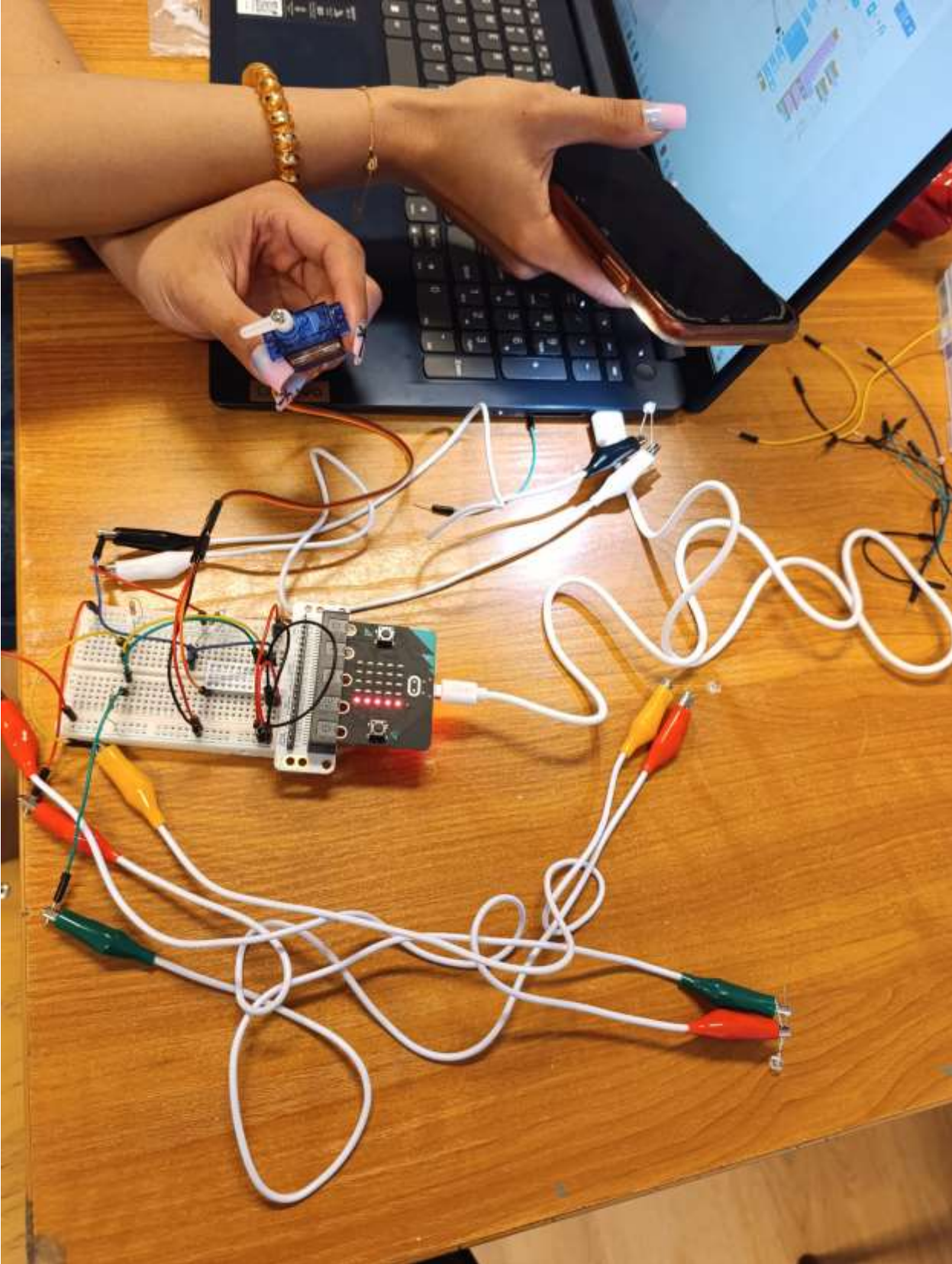


```
on start
  servo write pin P9 (write only) to 0
  set door state to 0
  set last button used to 0
```

```
forever
  show number door state
  if pin P1 is pressed then
    if last button used == 0 then
      if door state == 0 then
        set door state to 1
      else
        set door state to 0
    set last button used to 1
  else
    if pin P0 is pressed then
      set door state to 1
    else
      set door state to 0
    set last button used to 0
  if door state == 1 then
    digital write pin P5 to 0
    servo write pin P9 (write only) to 90
  else
    digital write pin P5 to 1
    servo write pin P9 (write only) to 0
```







Water level control - Robosphere mini-project

Participants:

- Vincze Tamas
- Zagyva Aron
- Reka Simsik
- Andjelija Stambolovic
- Bogdana Stambolovic

The aim of the project is to measure the water level in two containers. After reaching 50% of the first container, the servo motor opens the valve that opens proportionally to the range of 50-100% of the first container. After reaching 50% in the second container, an alarm is sounded and the valve is closed until the level returns to the range below 50%.

Scratch code

```
on start
  set state = to 0

forever
  set level1 = to analog read pin A1
  set level1 = to analog read pin A1
  if state = 0 then
    digital write pin P13 = to 0
    digital write pin P14 = to 0
    digital write pin P15 = to 0
    servo write pin P12 (write only) = to 0
  if level1 > 510 then
    set state = to 1
  else if level1 > 512 then
    set state = to 2
  else if state = 2 then
    digital write pin P13 = to 1
    digital write pin P14 = to 1
    digital write pin P15 = to 1
  if level1 > 511 then
    set state = to 2
  else if level1 > 511 then
    servo write pin P12 (write only) = to map level1 from low 512 high 520 to low 0 high 90
  else
    set state = to 0
  else if state = 0 then
    play tone middle C for 2 * beat until done
    digital write pin P13 = to 0
    digital write pin P14 = to 0
    digital write pin P15 = to 0
    servo write pin P12 (write only) = to 0
  if level1 < 510 then
    set state = to 0
```

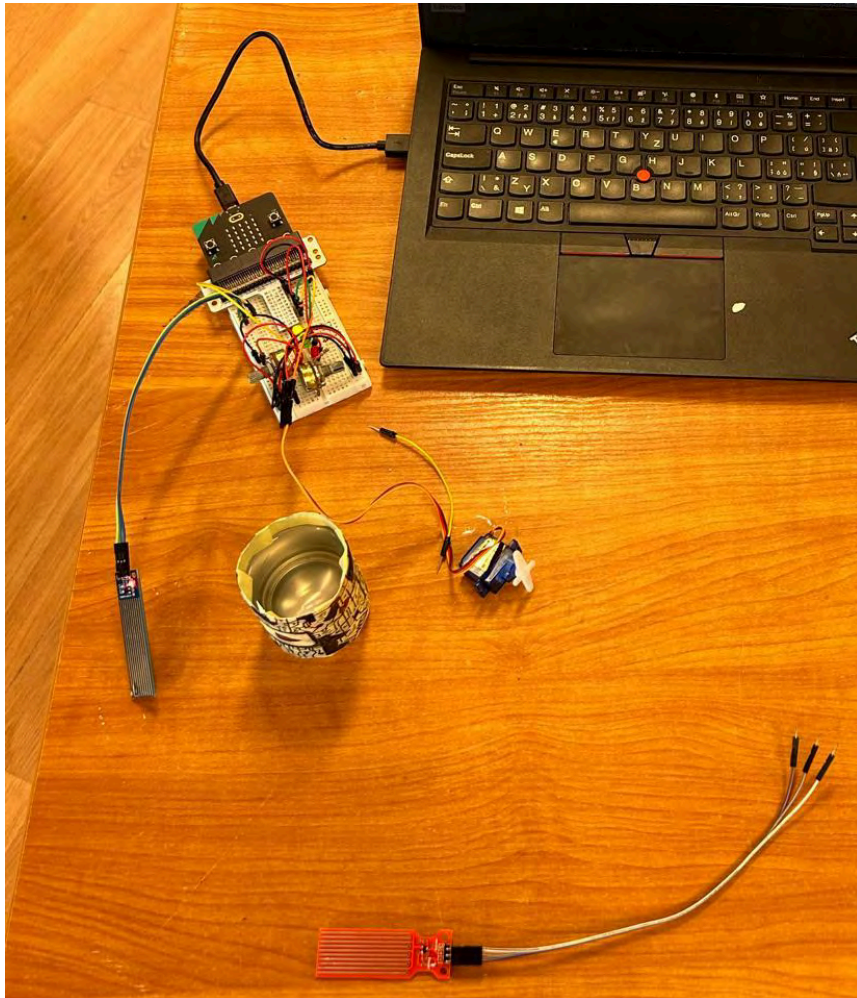
Converted Python code

```
level2 = 0
level1 = 0
state = 0

def on_forever():
    global level1, level2, state
    level1 = pins.analog_read_pin(AnalogPin.P2)
    level2 = pins.analog_read_pin(AnalogPin.P1)
    if state == 0:
        pins.digital_write_pin(DigitalPin.P13, 1)
        pins.digital_write_pin(DigitalPin.P14, 0)
        pins.digital_write_pin(DigitalPin.P15, 0)
        pins.servo_write_pin(AnalogPin.P12, 0)
        if level2 > 511:
            state = 2
        elif level1 > 511:
            state = 1
    elif state == 1:
        pins.digital_write_pin(DigitalPin.P13, 0)
        pins.digital_write_pin(DigitalPin.P14, 1)
        pins.digital_write_pin(DigitalPin.P15, 0)
        if level2 > 511:
            state = 2
        elif level1 > 511:
            pins.servo_write_pin(AnalogPin.P12,
Math.map(level1, 512, 1023, 0, 90))
        else:
            state = 0
    elif state == 2:
        music.play(music.tone_playable(262,
music.beat(BeatFraction.DOUBLE)),
            music.PlaybackMode.UNTIL_DONE)
        pins.digital_write_pin(DigitalPin.P13, 0)
        pins.digital_write_pin(DigitalPin.P14, 0)
        pins.digital_write_pin(DigitalPin.P15, 1)
        pins.servo_write_pin(AnalogPin.P12, 0)
```

```
    if level2 <= 511:  
        state = 1  
basic.forever(on_forever)
```

Connected Circuit



- Dunking the sensor is used to emulate changing water levels
- Wiper resistors also used to emulate sensor output
- LEDs showing three states: idle, flowing water and alert
- Servo motor controls opening a valve depending on the level in the two tanks



**Co-funded by
the European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.