Smart Home Kit

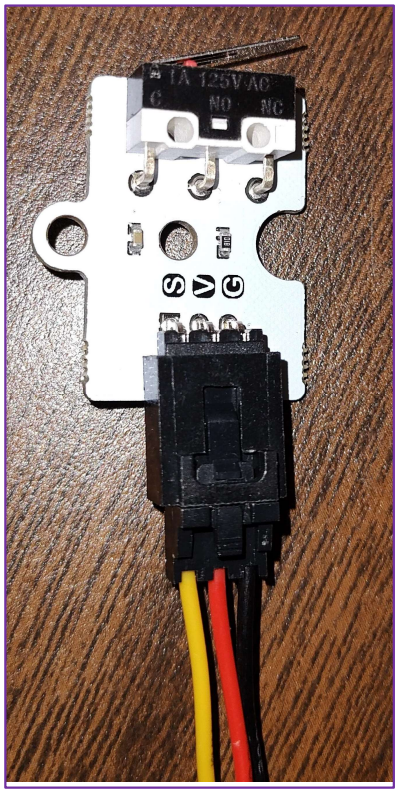
CODERS CS Team

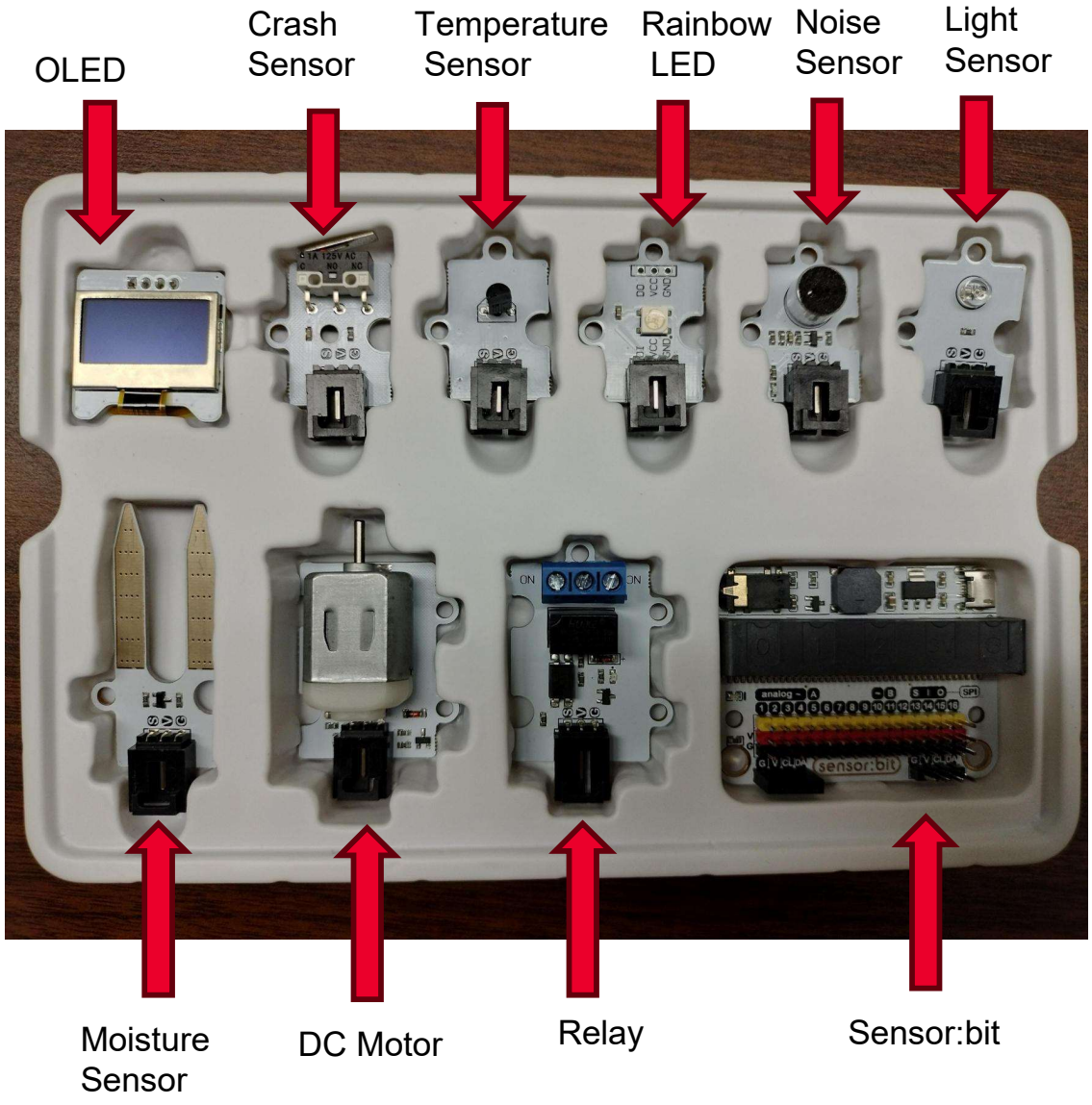
Summer 2023

Missouri State University

Meet Smart Home Kit!

https://elecfreaks.com/learn-en/microbitKit/smart_home_kit/smart_home_kit.html





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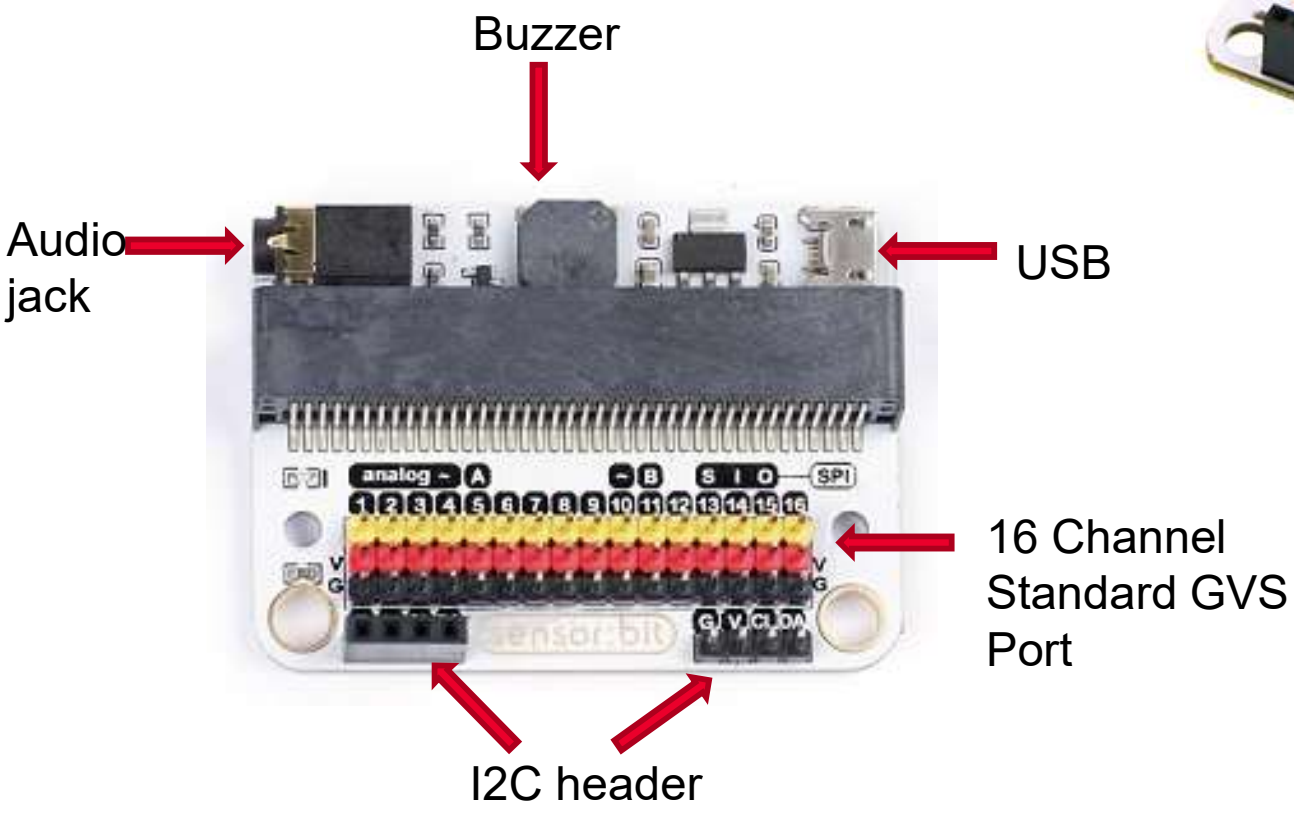
Sensor:bit

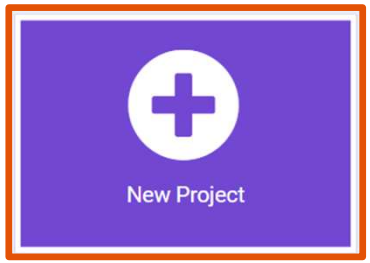

You need
a microbit!

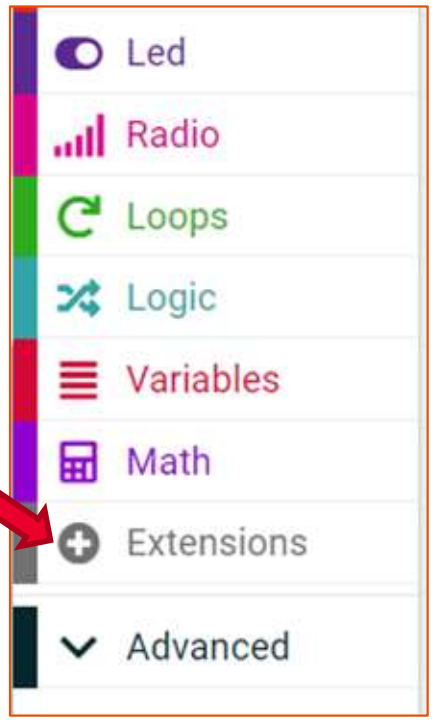

Buzzer
Audio jack
USB
16 Channel Standard GVS Port
I2C header
analog
A
B
SPI
sensor:bit

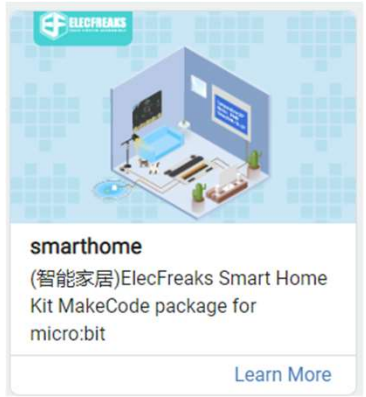
MakeCode-Project Setup

https://makecode.microbit.org/

1. Create a new project, and give it a unique name
2. Click on Extensions
3. Find for smarthome
4. Add smarthome to your project

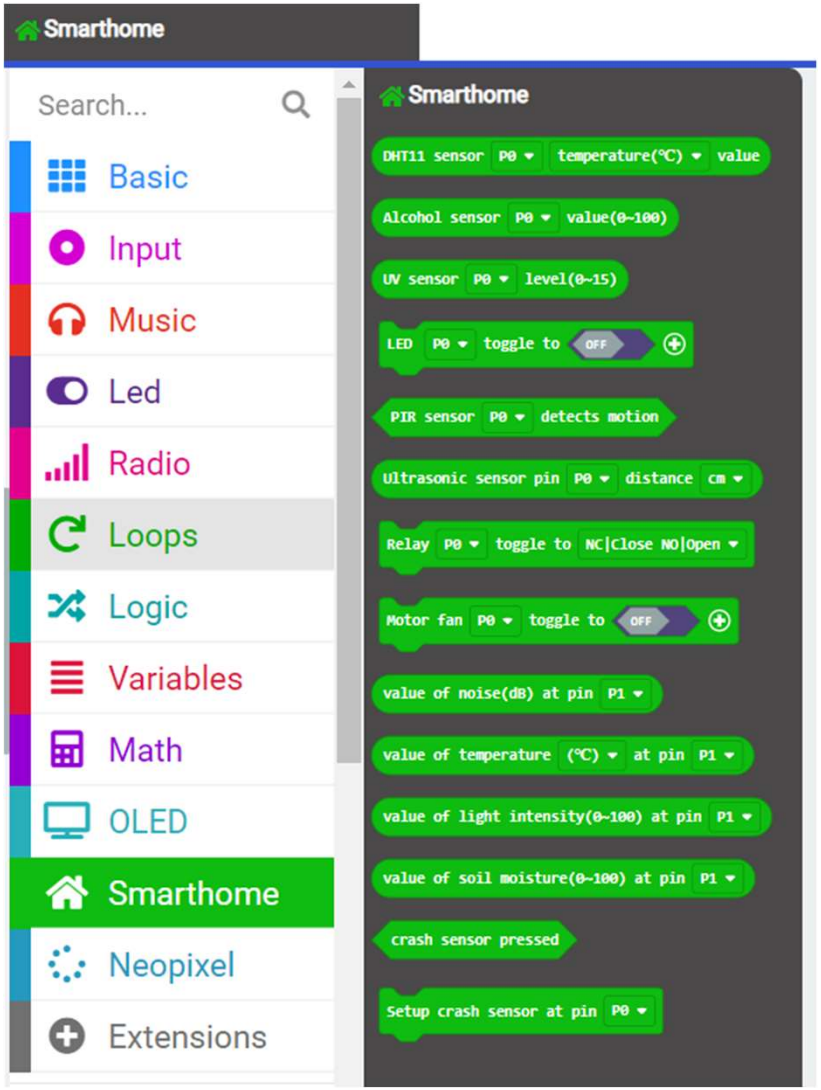






MakeCode: Sensors

Sensors: Noise, Light, Temperature, Moisture, and Crash



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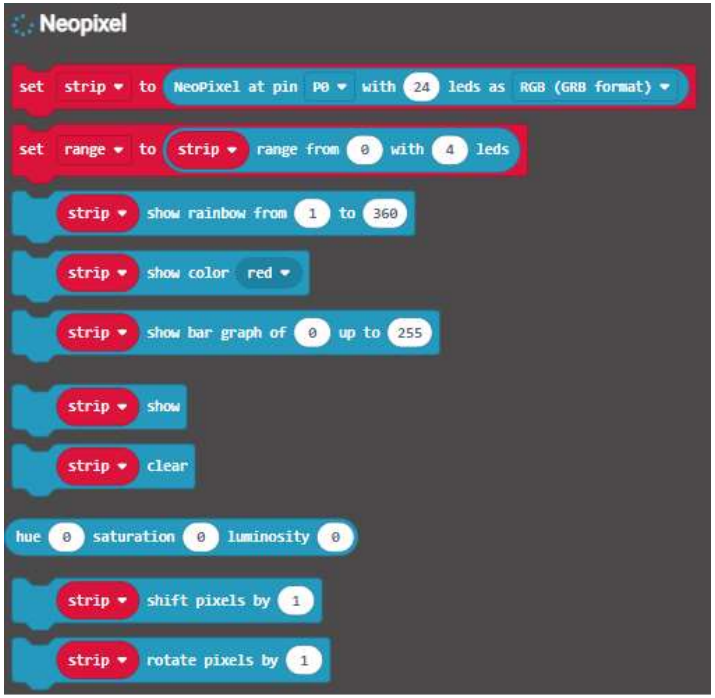
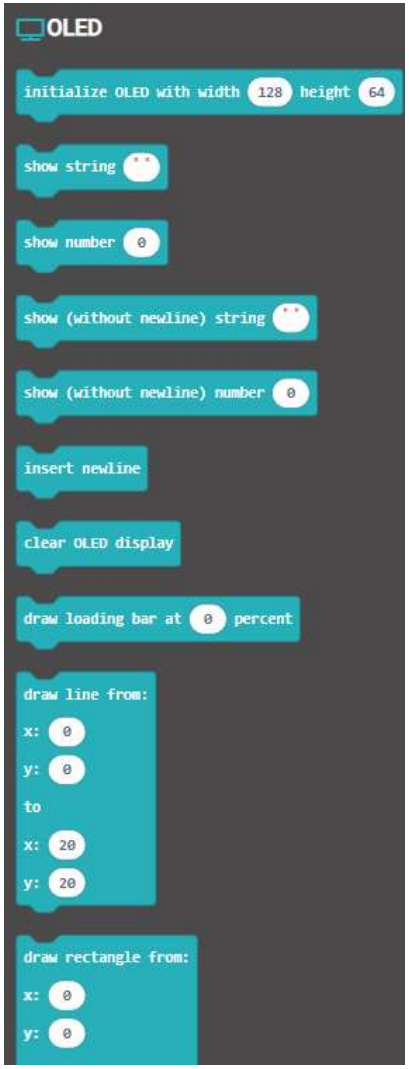
MakeCode: Actuators

Actuators: Rainbow LED (Neopixel), OLED, DC motor





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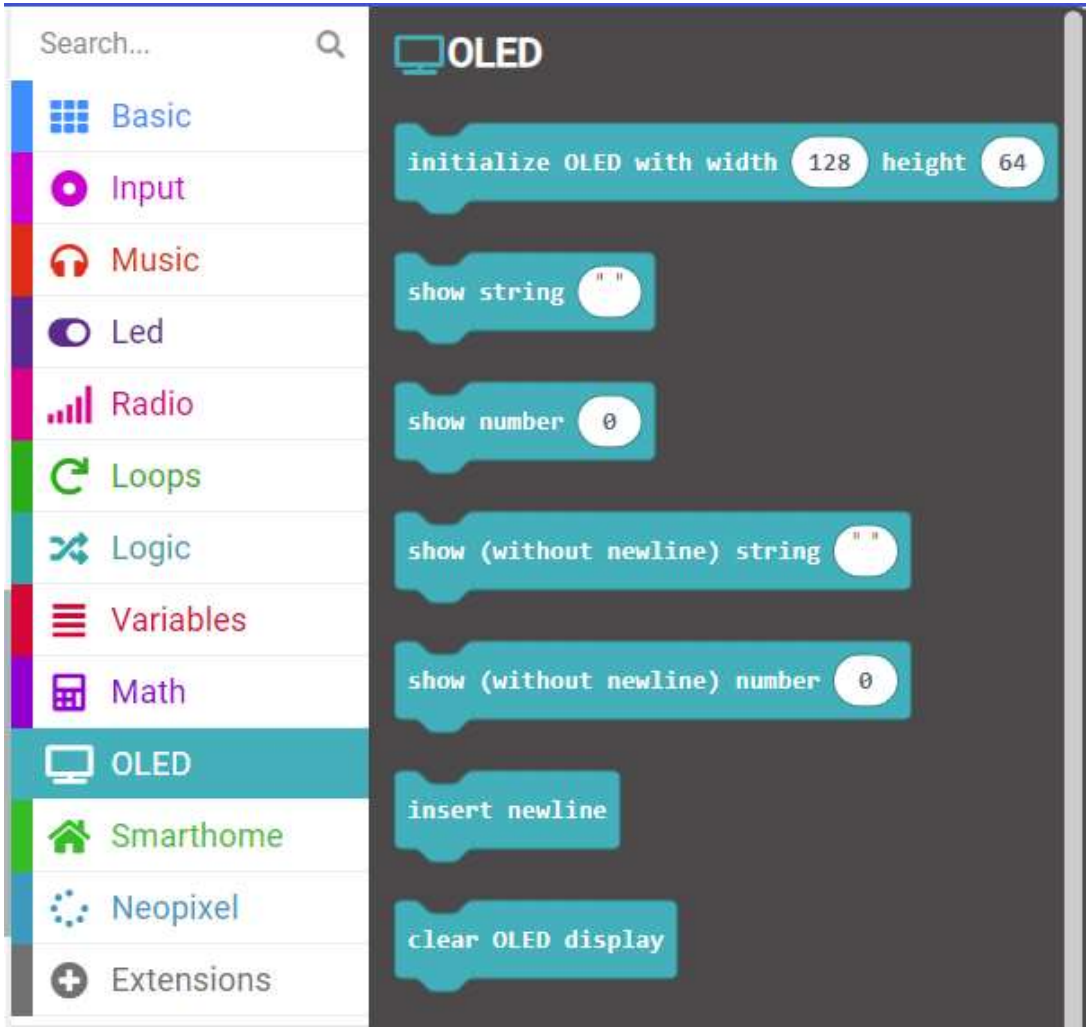
MakeCode: OLED

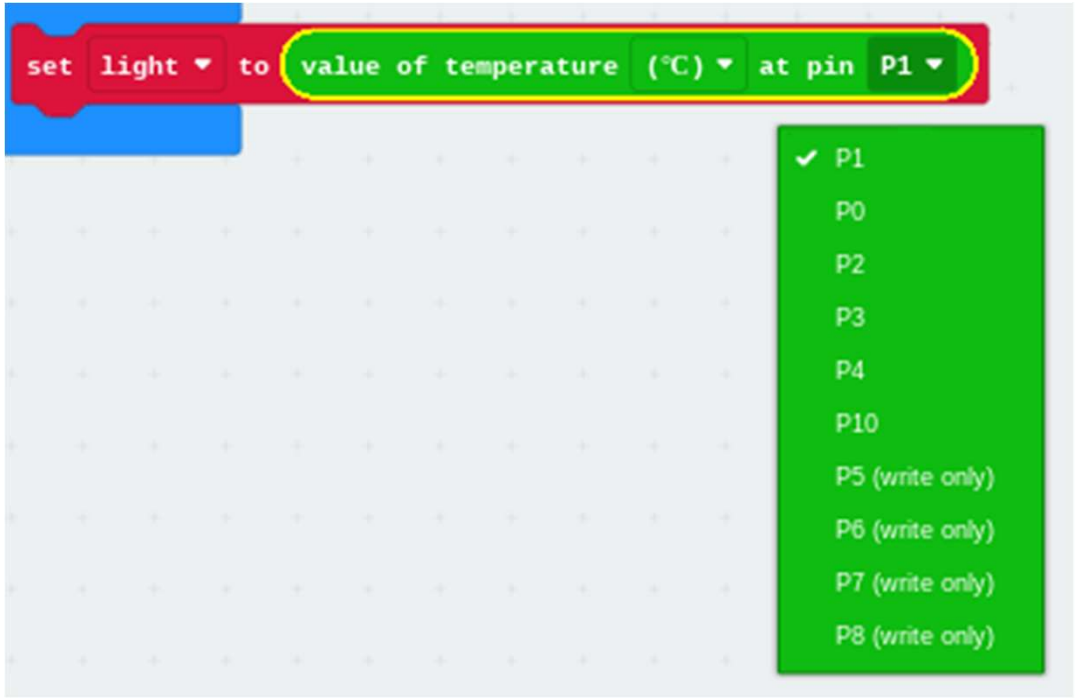


- We connect the OLED to the I2C female pins of Sensor:bit

- Then, set width and height of OLED for showing value or string in your code (e.g., see Activity-1 code)
- Then, output number or string from the code

MakeCode: Pins

We can receive data from sensors connected to specific pins and send data to the pins for actuation.

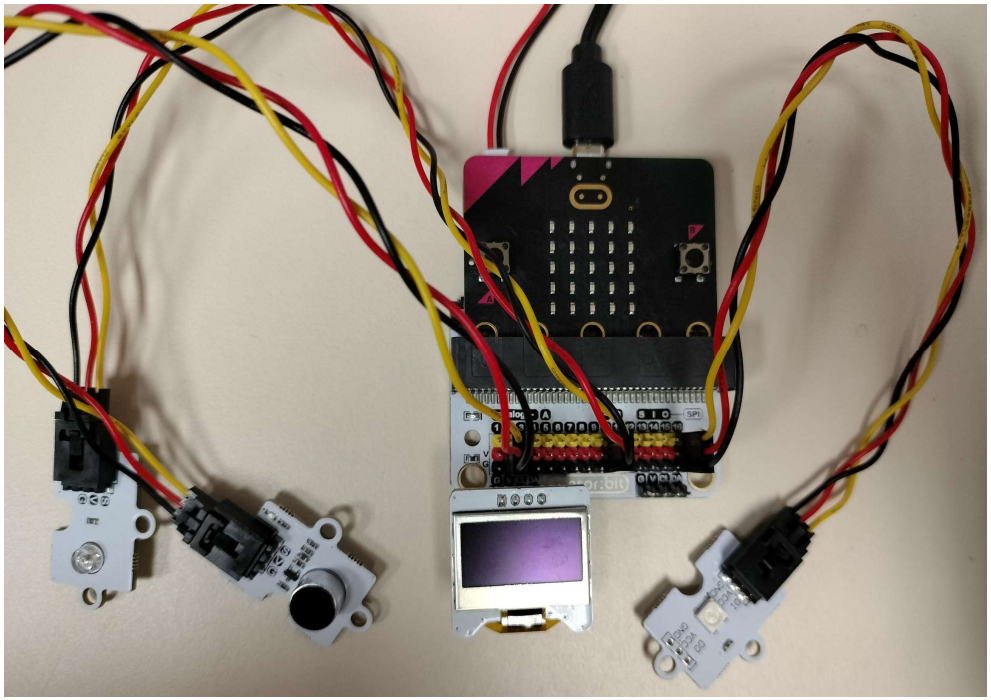


Activity-1: Ghostbuster

Goal: Activate the neopixel light at night if there is a noise.

Required items:

- Micro:bit
- Sensor:bit
- Noise sensor
- Light sensor
- Rainbow LED
- OLED



Steps:

- Connect light sensor to pin 4
- Connect noise sensor to pin 2
- Connect rainbow LED to pin 1

Activity-1: Code

Input:

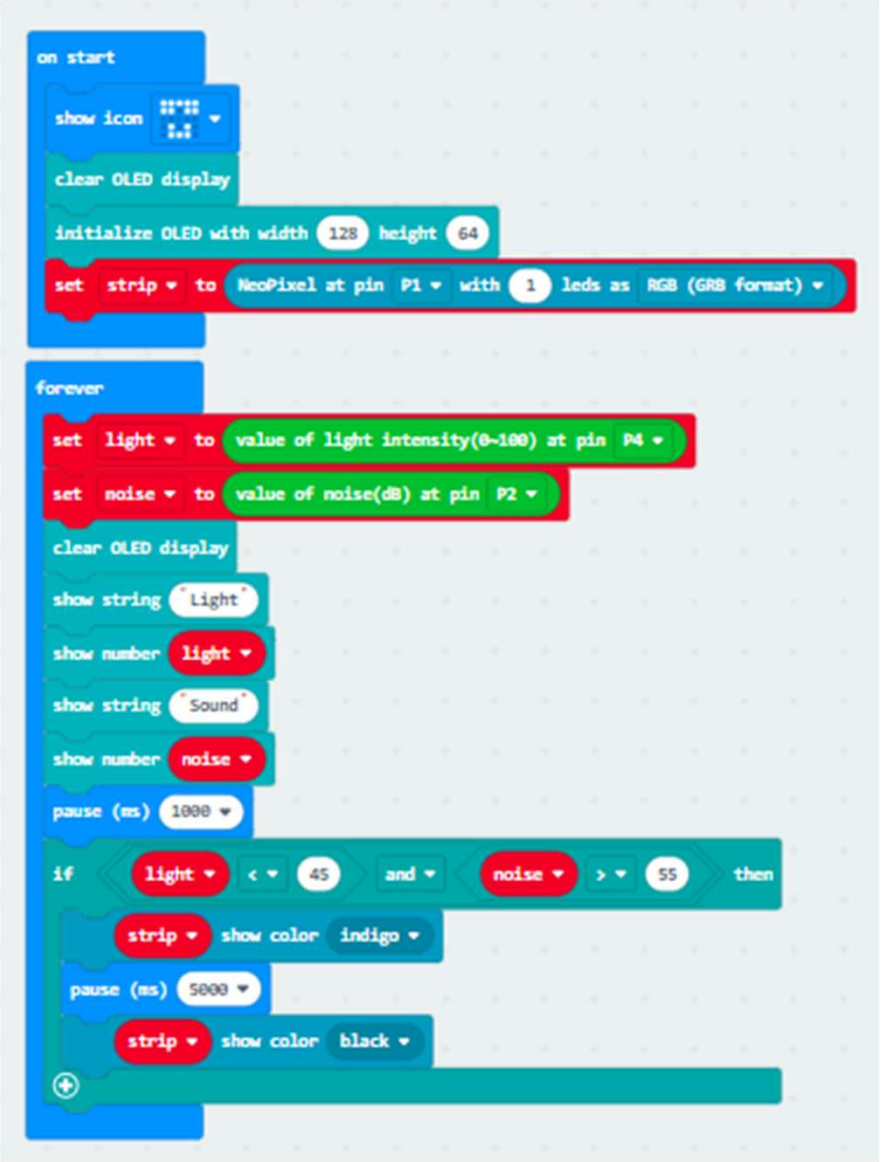
- Read light intensity from pin 4
- Read noise level from pin 2

Logic:

- If the light intensity is below a certain threshold and the noise level is above a certain value, then turn on light.

Output:

- Set RGB value of light in pin 1

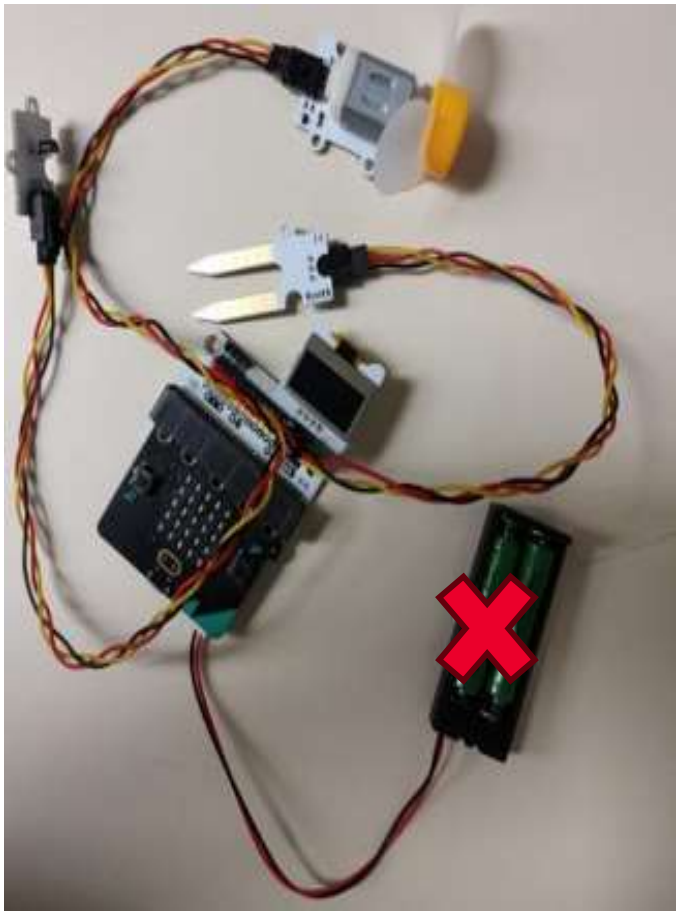


Activity-2: It's Summer!

Goal: Turn on a fan when the temperature and moisture are high

Required items:

- Micro:bit
- Sensor:bit
- Temperature sensor
- Moisture sensor
- Motor with fan blades



Steps:

- Connect moisture sensor to pin 1
- Connect temperature sensor to pin 4
- Connect DC Motor to pin 2

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Activity-2: Code

Input:

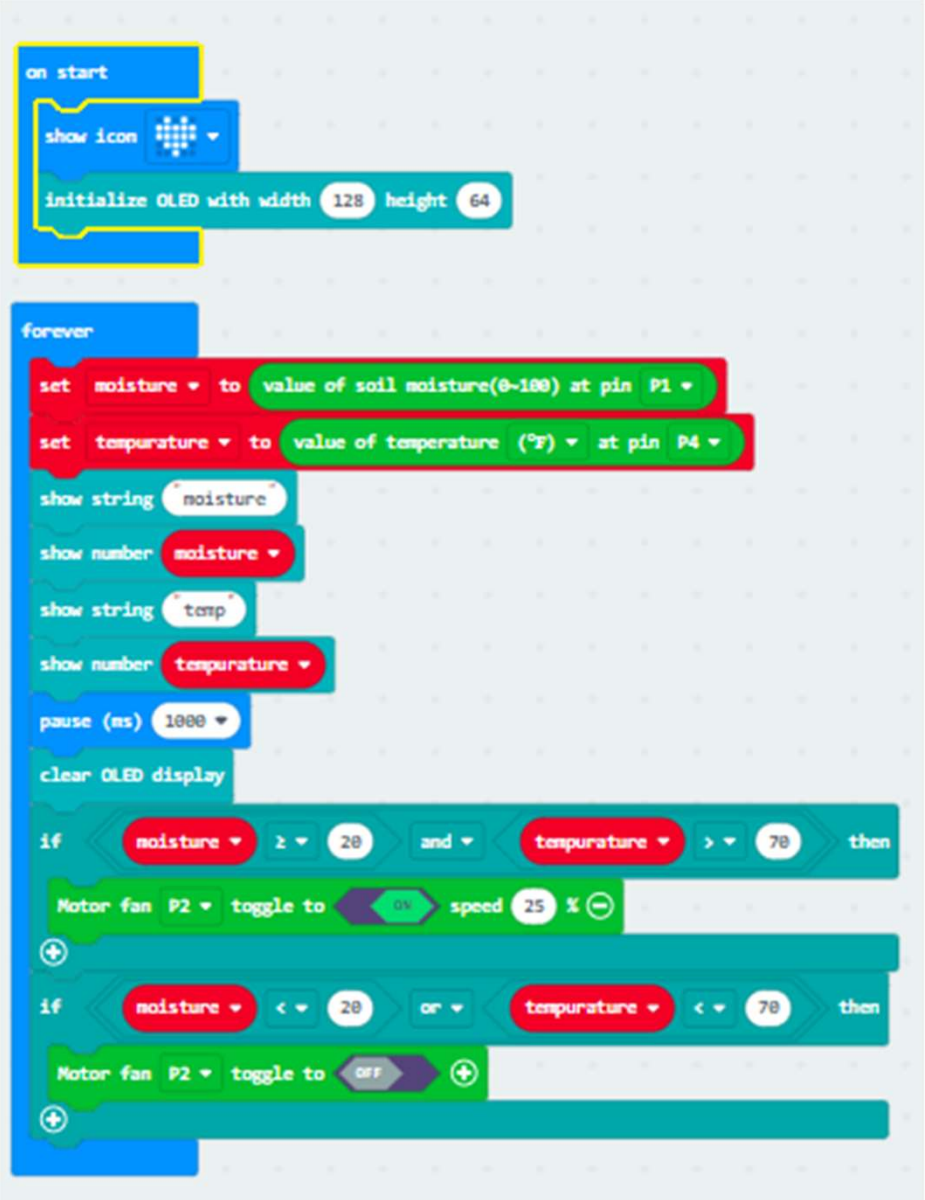
- Read moisture level from pin 1
- Read temperature from pin 4

Logic:

- If the moisture is above a certain threshold and the temperature is above a certain value, then turn on DC motor.

Output:

- DC motor rotation



Thank You

Any Questions?

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