

The Education University of Hong Kong

2021-2022 Quality Education Fund Thematic Network - Tertiary Institutes

STEM Project Team

SCHOOL: KOWLOON TONG GOVERNMENT PRIMARY
SCHOOL (P6)

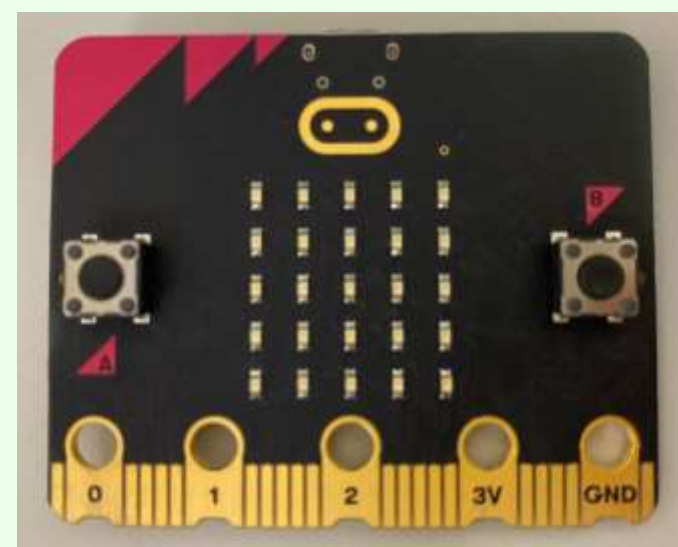
TOPIC: MICRO:BIT AUTOMATIC WATERING SYSTEM
WORKSHOP

Part 1.1 - Circuit: Soil Moisture Sensor



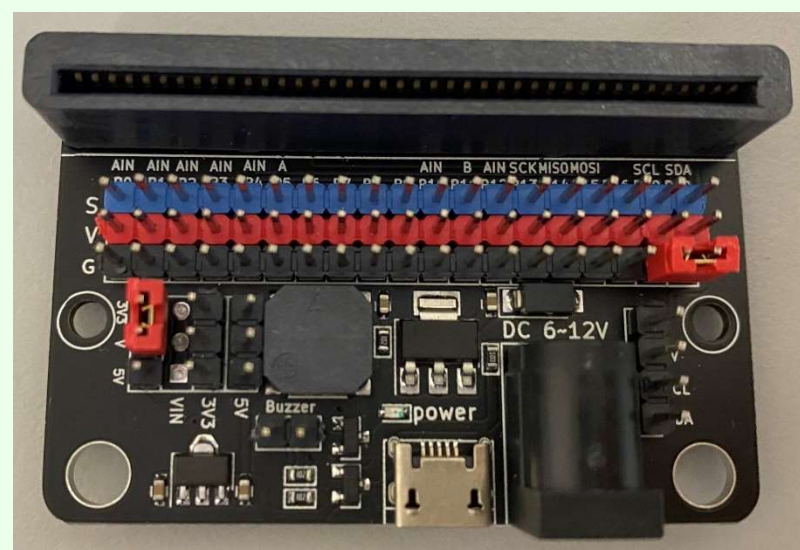
Soil Moisture Sensor
 土壤濕度計
 HW-080

+

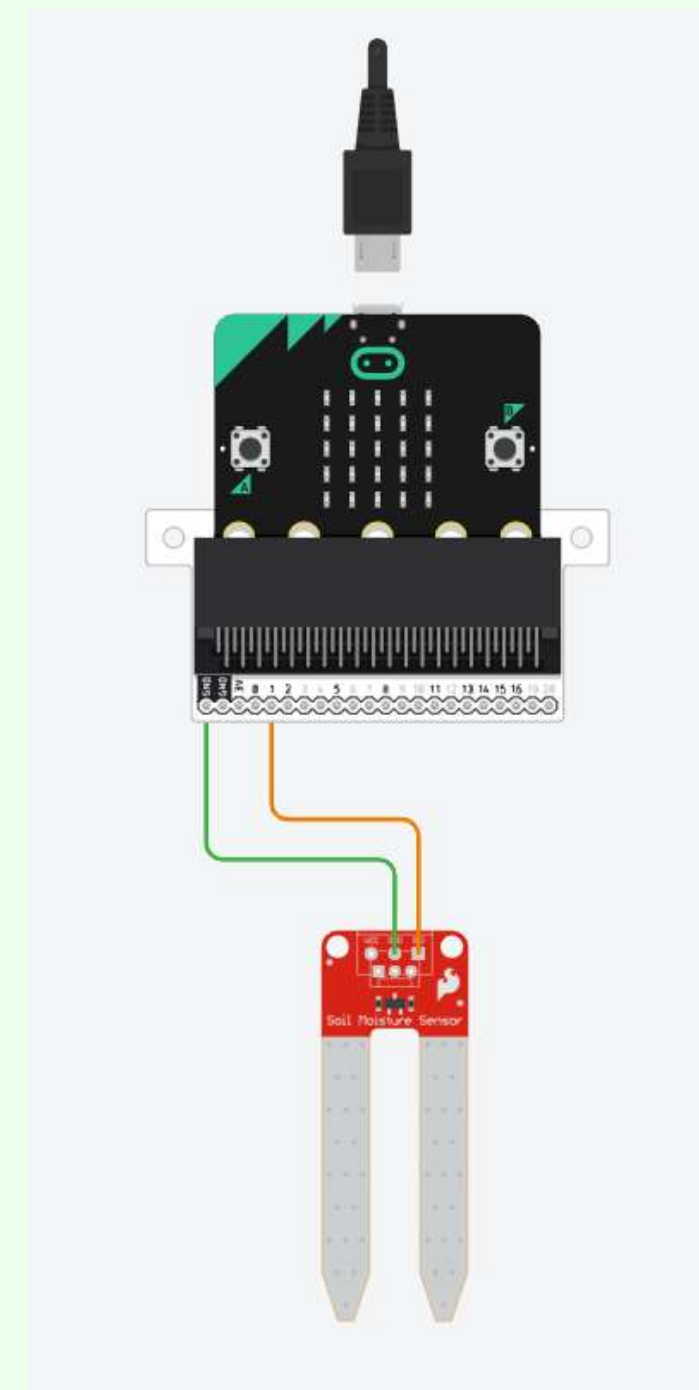


Micro:bit

=



Extension Board
 擴展板

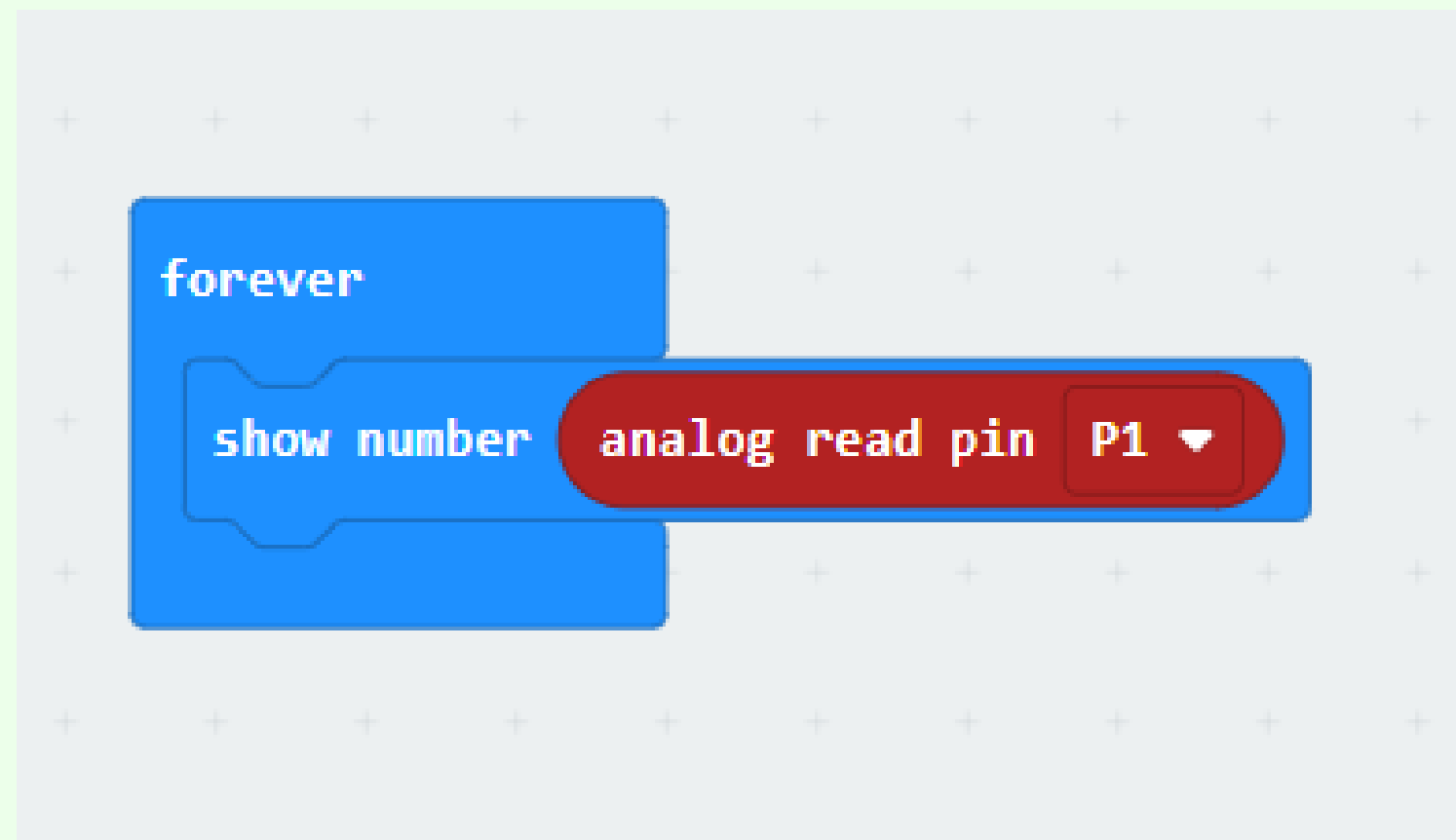


Part 1.2 - Coding: Make Code



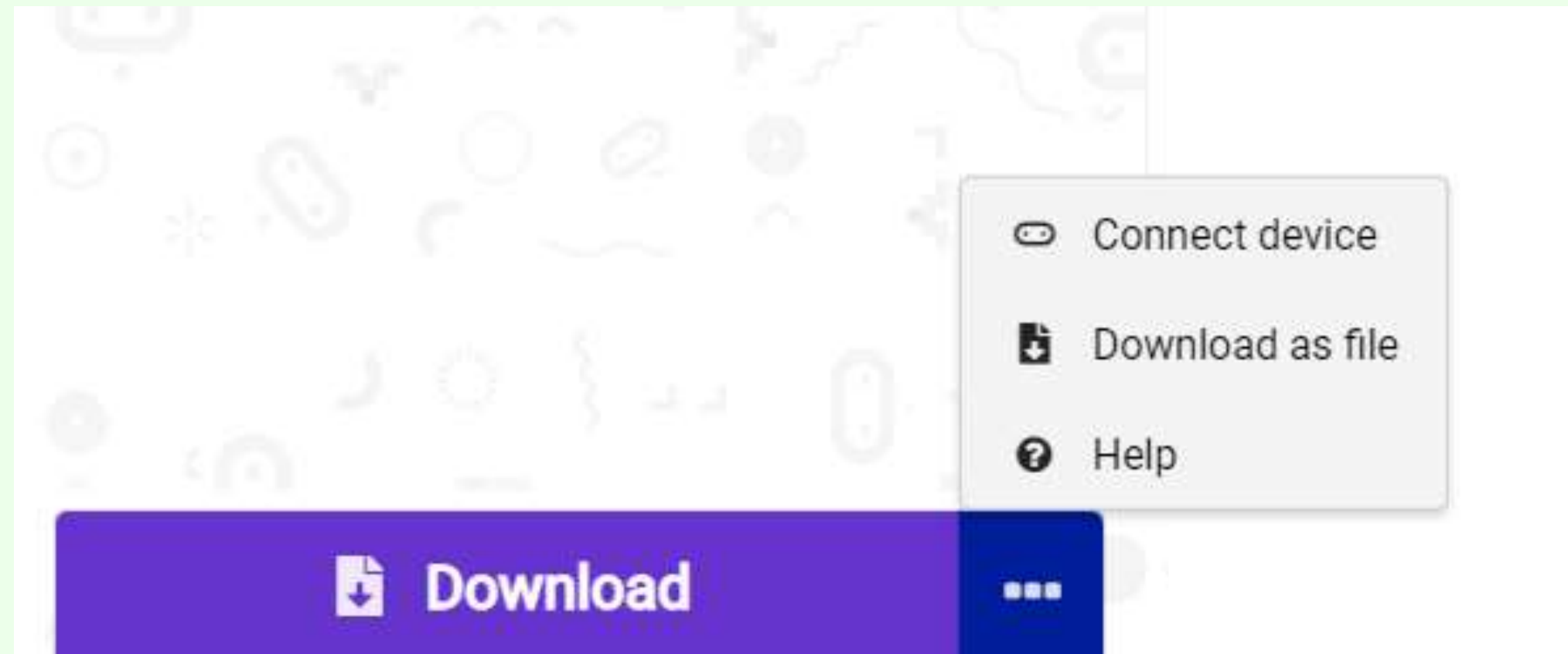
*** <https://makecode.microbit.org/> ***

Part 1.2 - Coding: Analog Reading



*** Analog Read: From 0 to 1024 ***

Part 1.2 - Coding: Connect Micro:Bit



Part 1.3 - Measure: Reference Reading

Trial	Substance	Measure
1	Air	600-700
	Water	30-50
2	Cotton (Dry)	600-700
	Cotton (Wet)	50-60
	Cotton (Super Wet)	0-30
3	Soil (Dry)	70-120
	Soil (Wet)	20-30
	Soil (Super Wet)	0

Part 2.1 - Circuit: Water Pump



9V Battery
9V 電池

+



Micro DC 3-6V Submersible Mini Water Pump/DC Motor
直流小水泵 3V-6V

Part 2.2 – Math Element: Measure Volume of Water



100 ml



?? second

Part 3.1 - Circuit: Water Pump



Micro DC 3-6V Submersible Mini Water Pump/DC Motor
直流小水泵 3V-6V



Relay Module
繼電器
SRD-03VDC-SL-C

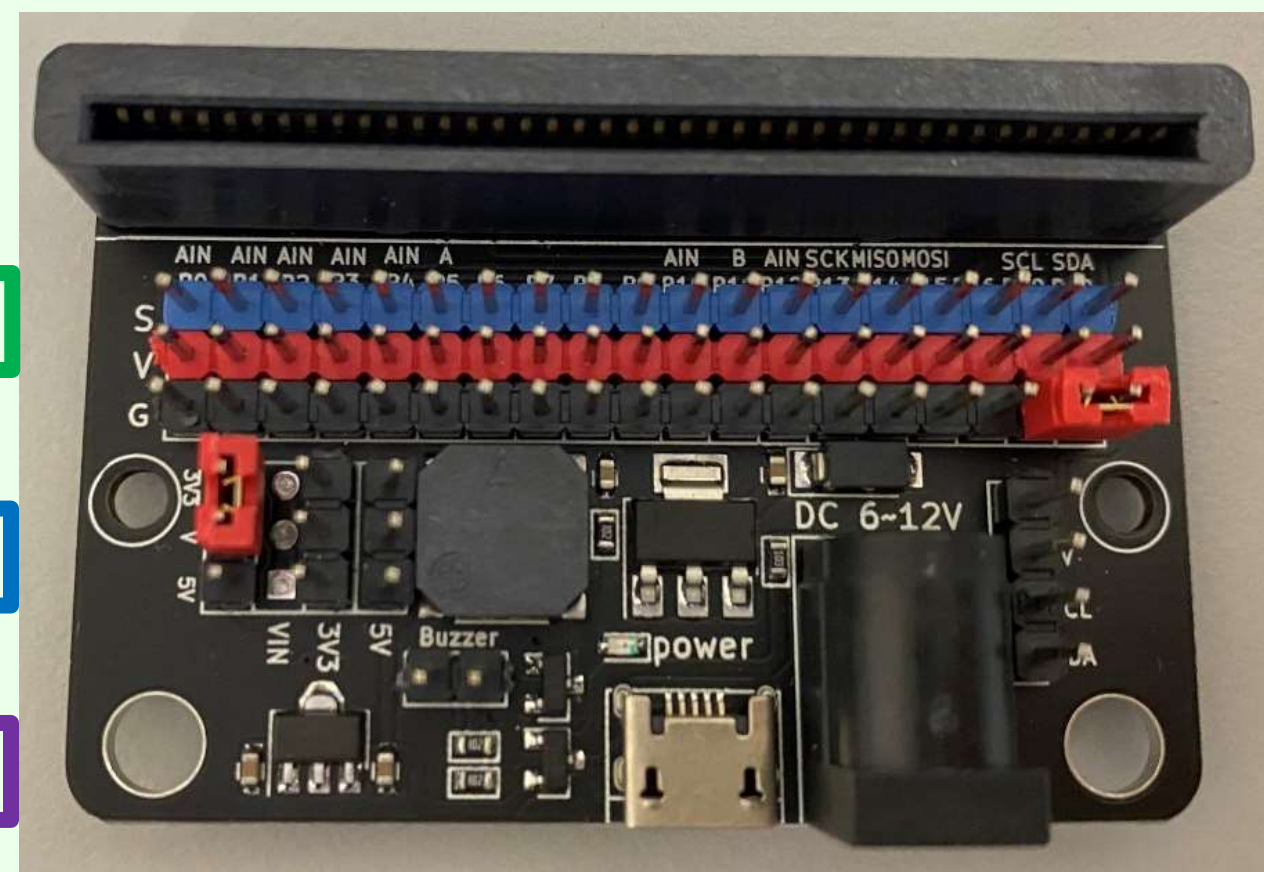
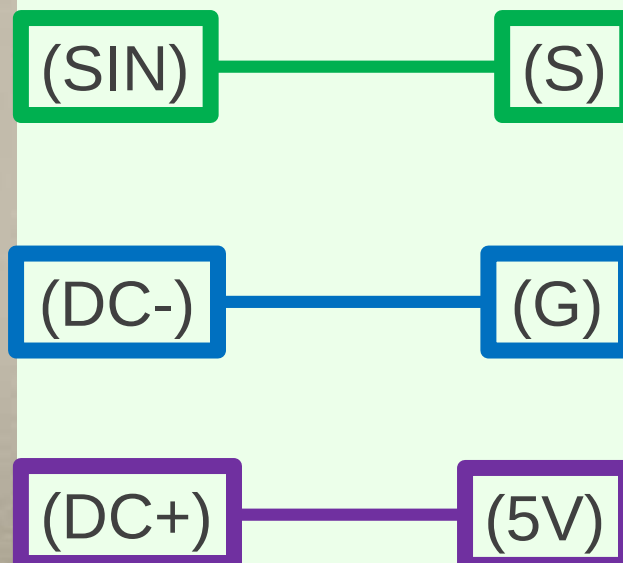


電池盒

Part 3.1 - Circuit: Water Pump



Relay Module
繼電器
SRD-03VDC-SL-C



Extension Board
擴展板

Part 3.1 - Circuit: Water Pump



(常開)

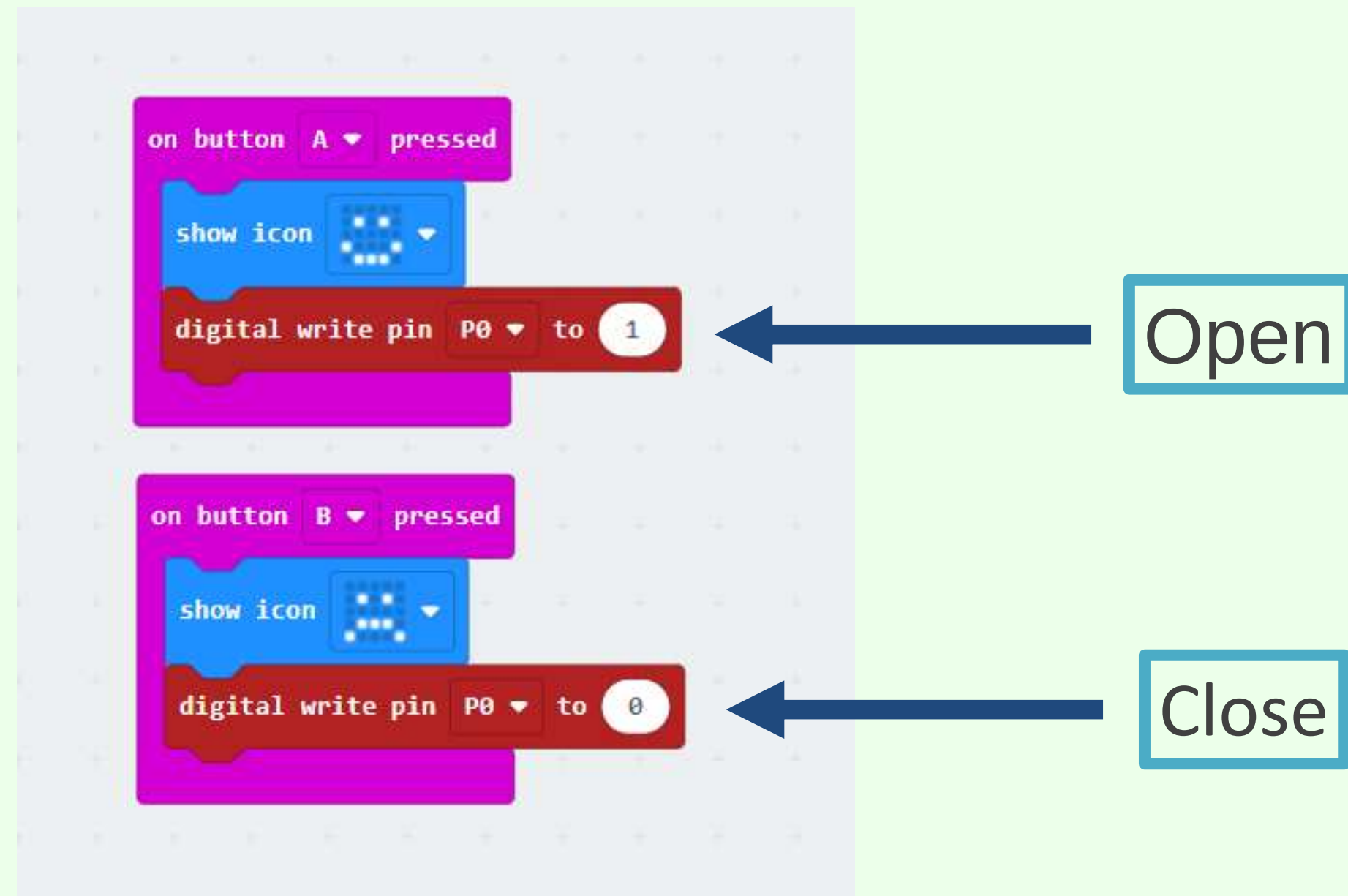
(Close Circuit)



(公共)

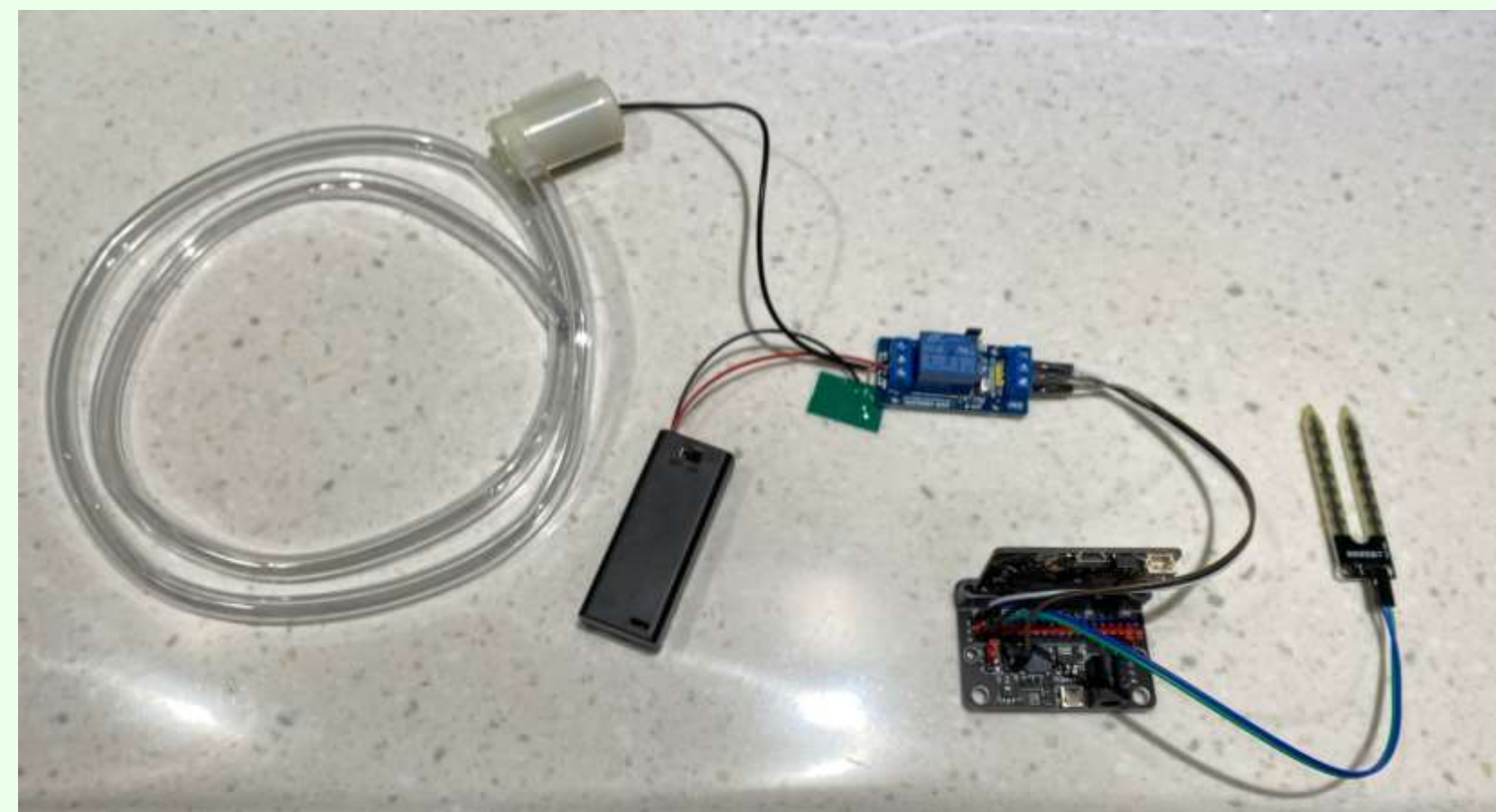
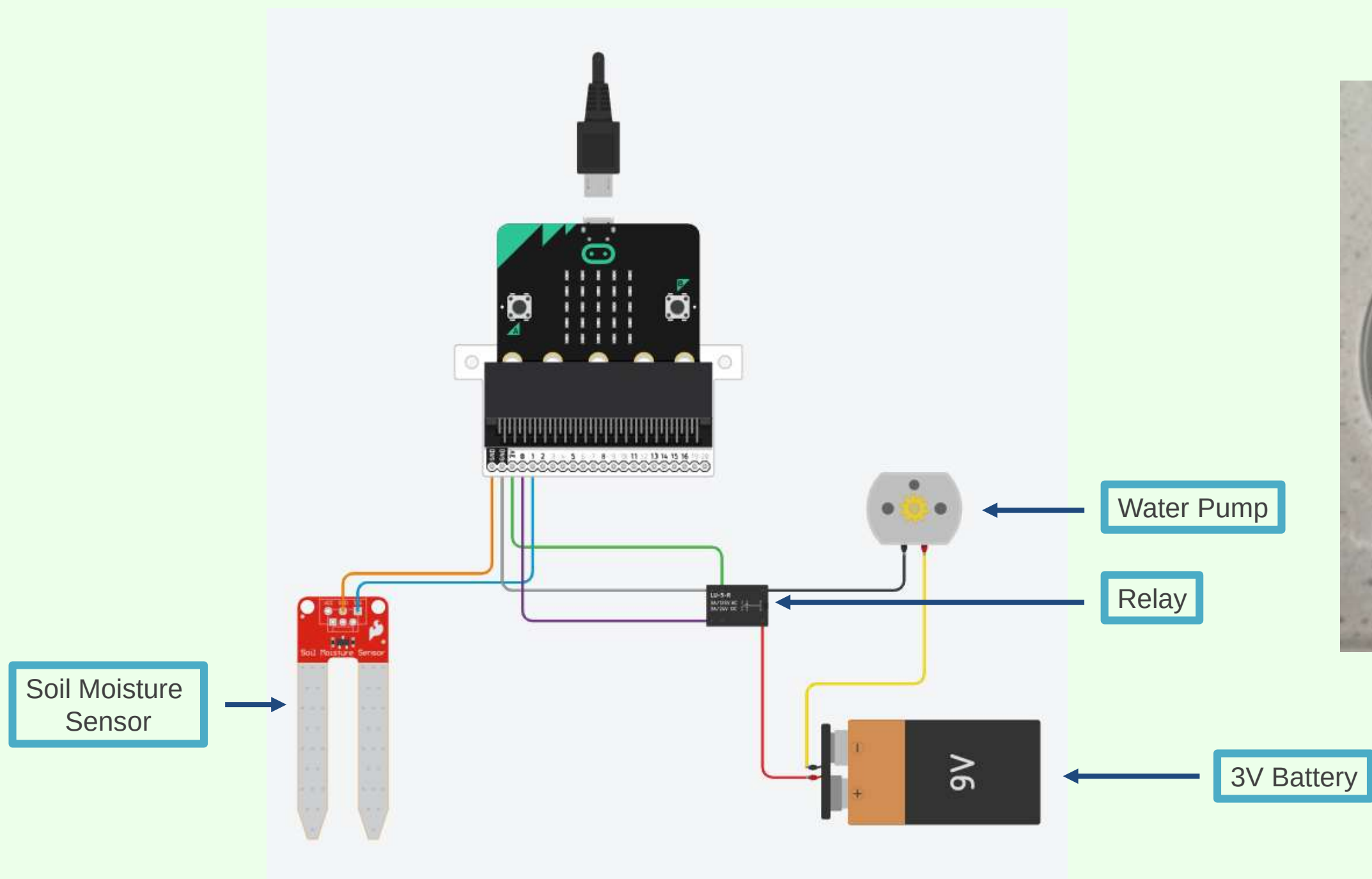


Part 3.2 - Coding: Control Water Pump with A/B Button

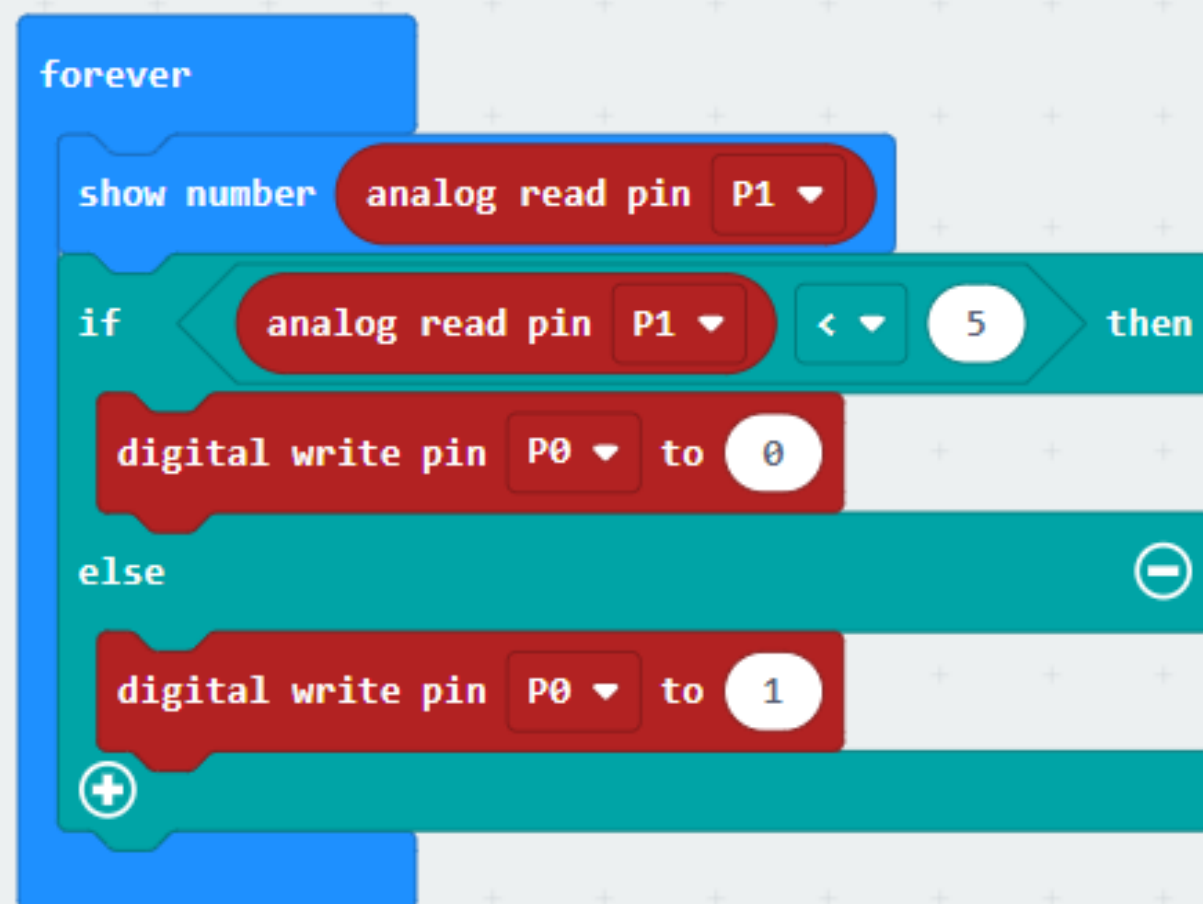


*** Digital Read: 0, 1 ***

Part 4.1 - Circuit: Soil Moisture Sensor & Water Pump



Part 4.2 - Coding: Soil Moisture Sensor & Water Pump



```
forever
  show number analog read pin P1
  if analog read pin P1 < 5 then
    digital write pin P0 to 0
  else
    digital write pin P0 to 1
```

The image shows a Scratch code block for a microcontroller. It starts with a 'forever' loop. Inside the loop, there is a 'show number' block followed by an 'analog read pin' block with 'P1' selected. Below this is an 'if' block with the condition 'analog read pin P1 < 5'. If the condition is true, it executes 'digital write pin P0 to 0'. If the condition is false, it executes 'digital write pin P0 to 1'. The code is set against a light blue grid background.

P0 = Water Pump

P1 = Soil Moisture Sensor

Part 5 – Extension

