

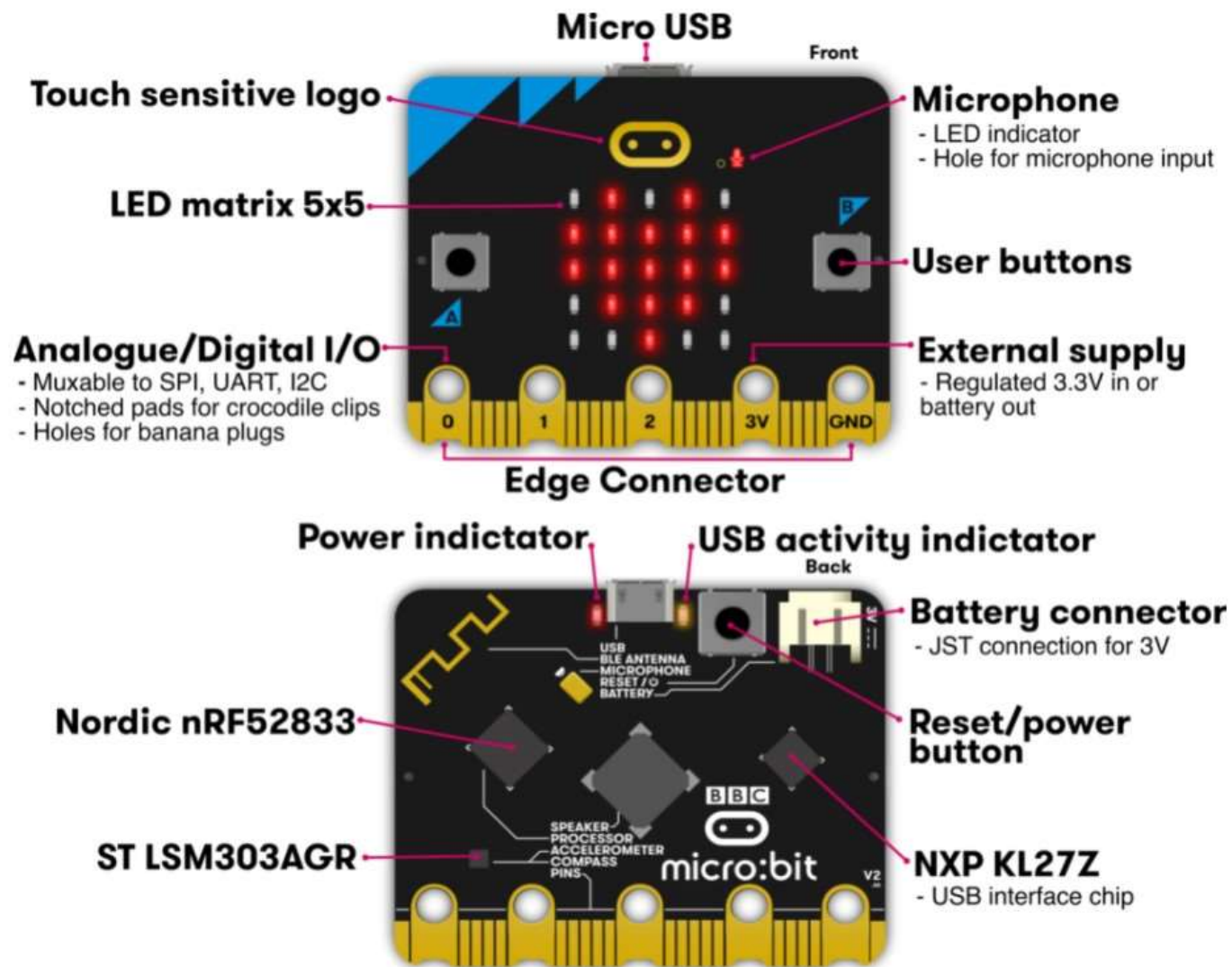
The Education University of Hong Kong 2021-2022 Quality Education Fund Thematic Network – Tertiary Institutes STEM Project Team

SCHOOL: S.T.F.A.WU SIU KUI MEMORIAL PRIMARY
SCHOOL (P5)

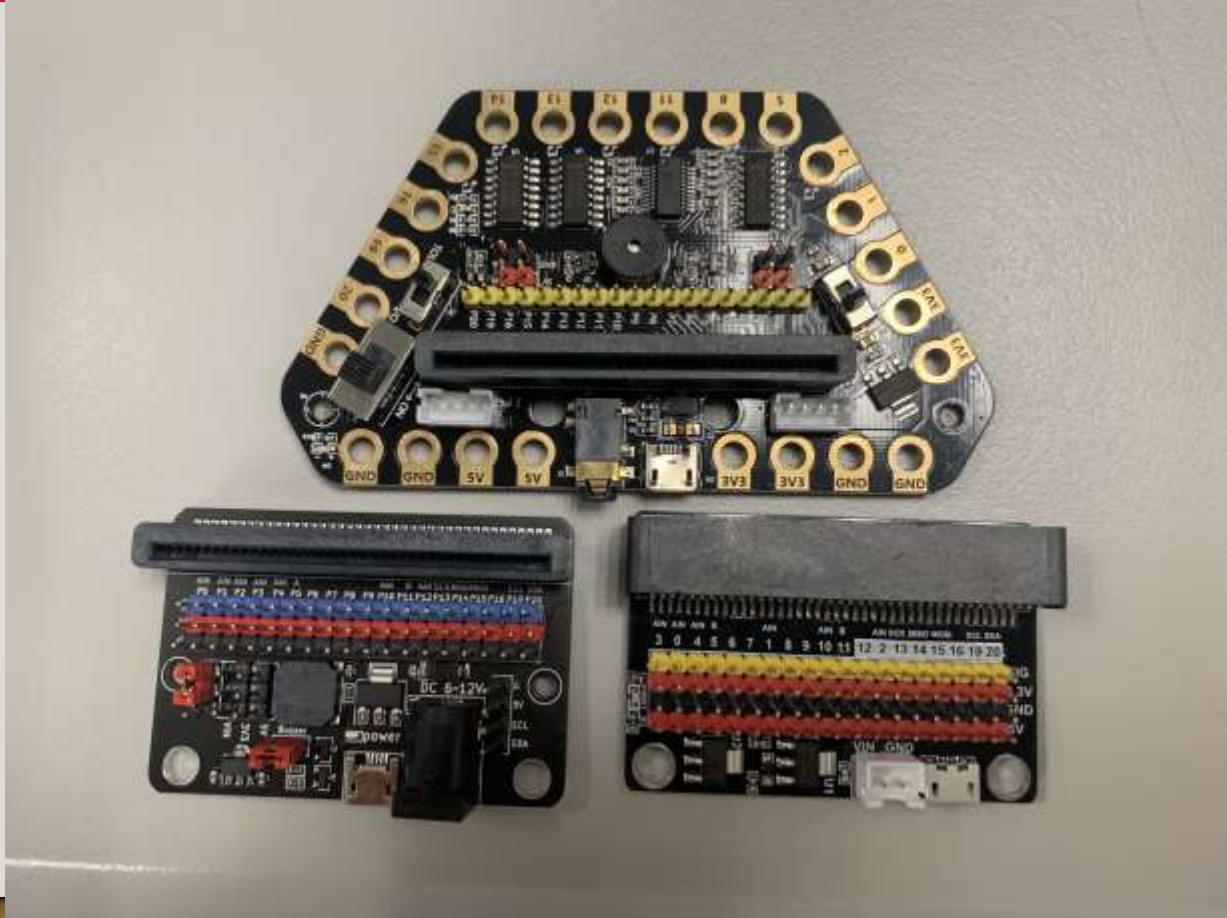
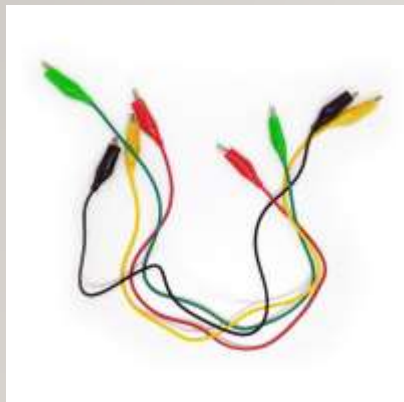
TOPIC: MICRO:BIT SMART CAMPUS SENSOR
APPLICATION WORKSHOP

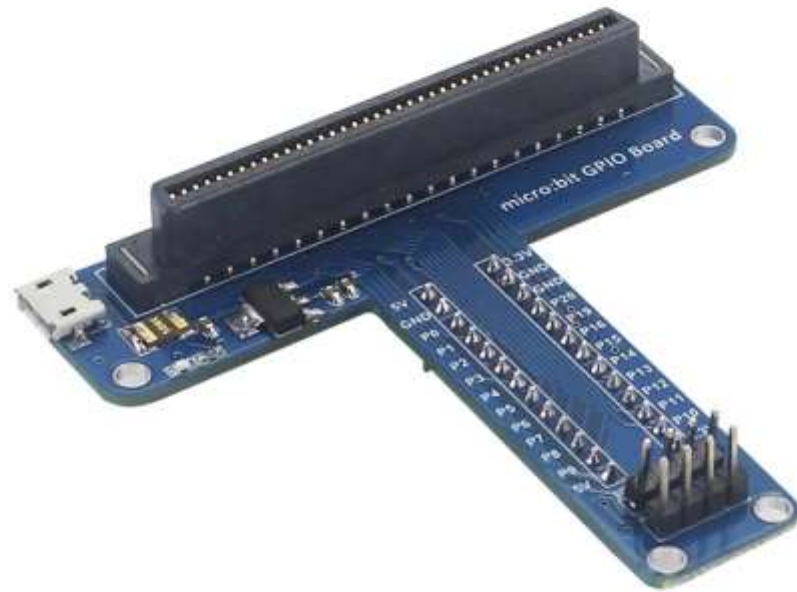
SENSOR 感測器

- 光感
- 溫度
- 水滴濕度 (Raindrop Sensor)
- 土壤濕度 (Moisture Sensor)

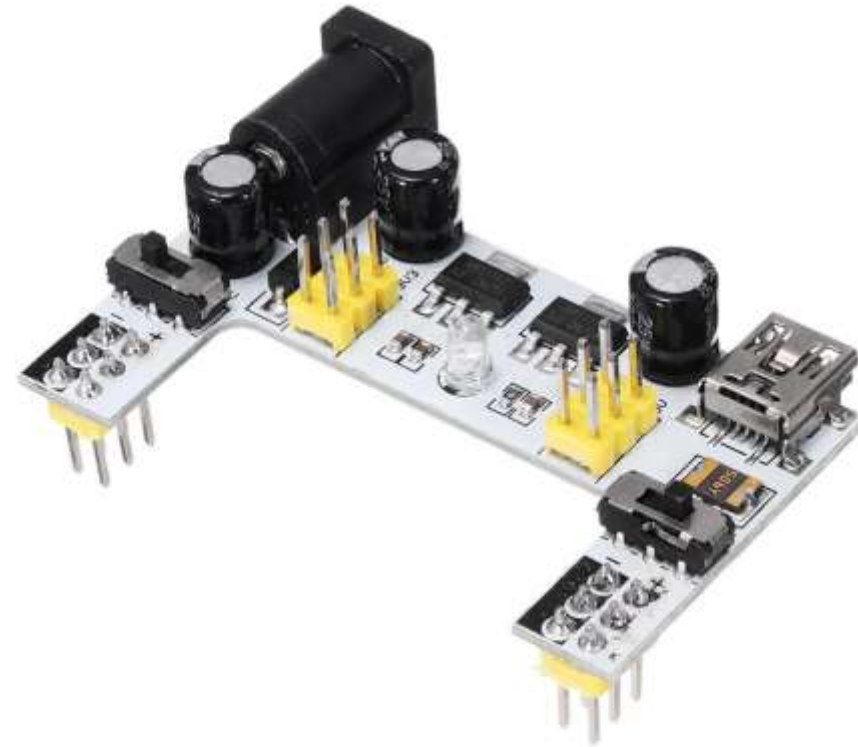


MICRO:BIT 擴充板 駁線 + 電源



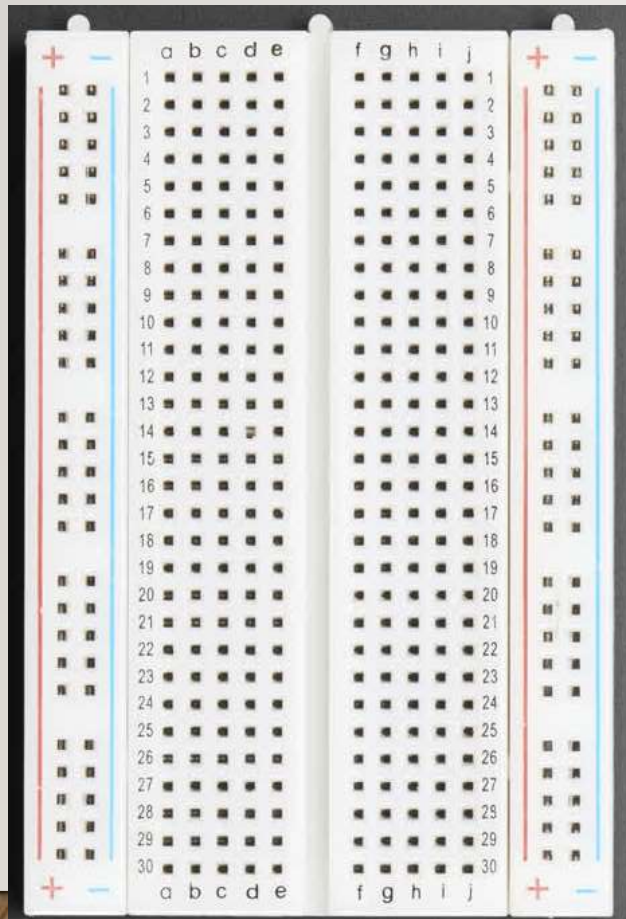


Micro:bit GPIO Expansion Board
T Type 3.3V Output

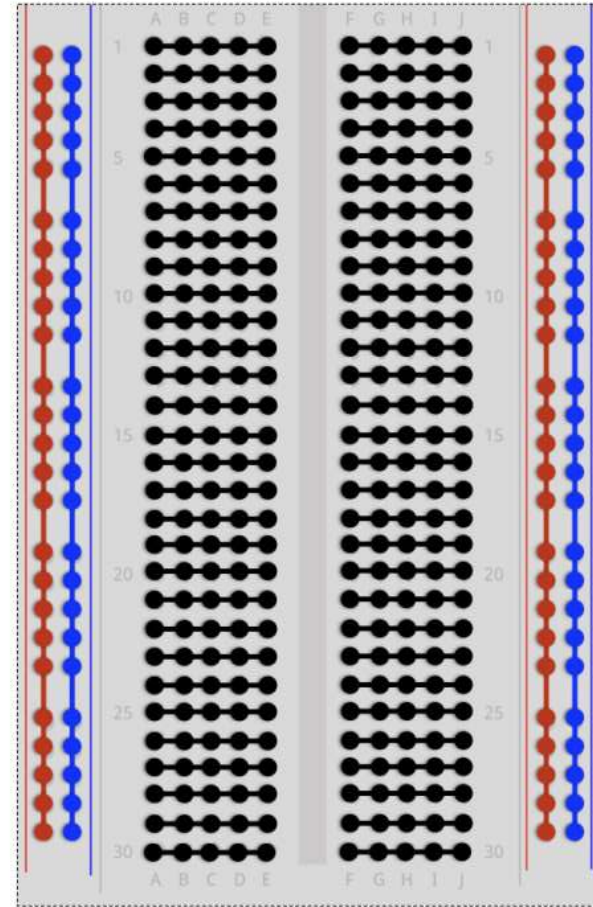


XD-42 5V/3.3V Dual Channel Solderless
Breadboard Power Supply Module

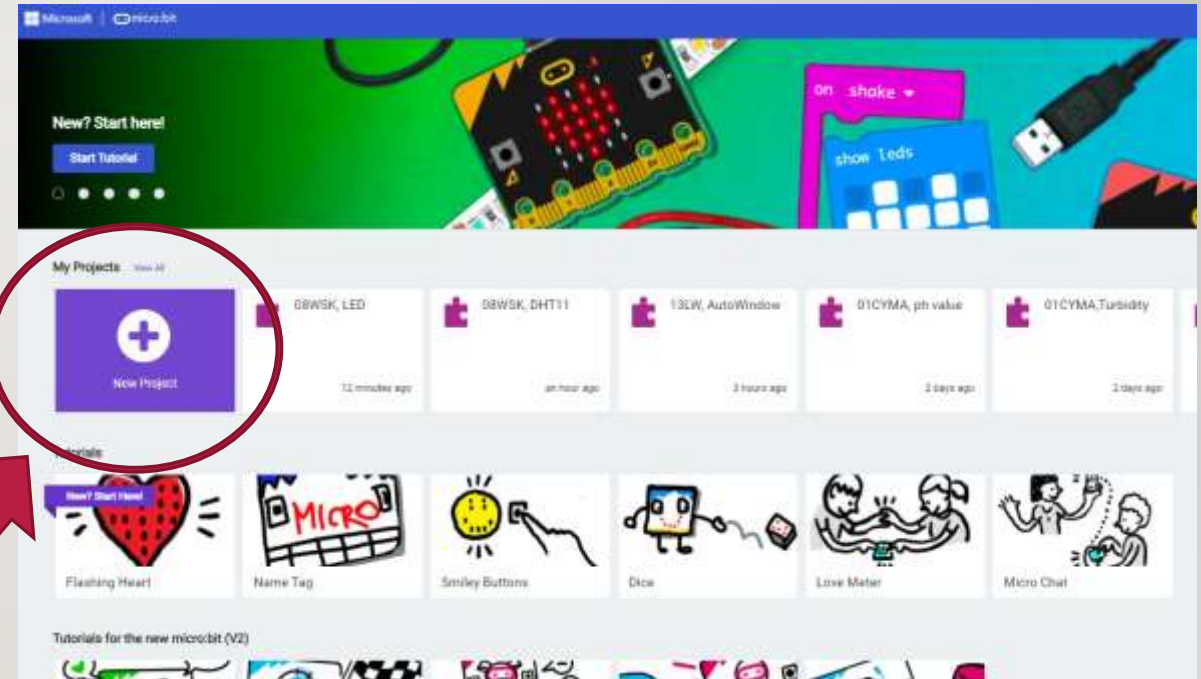
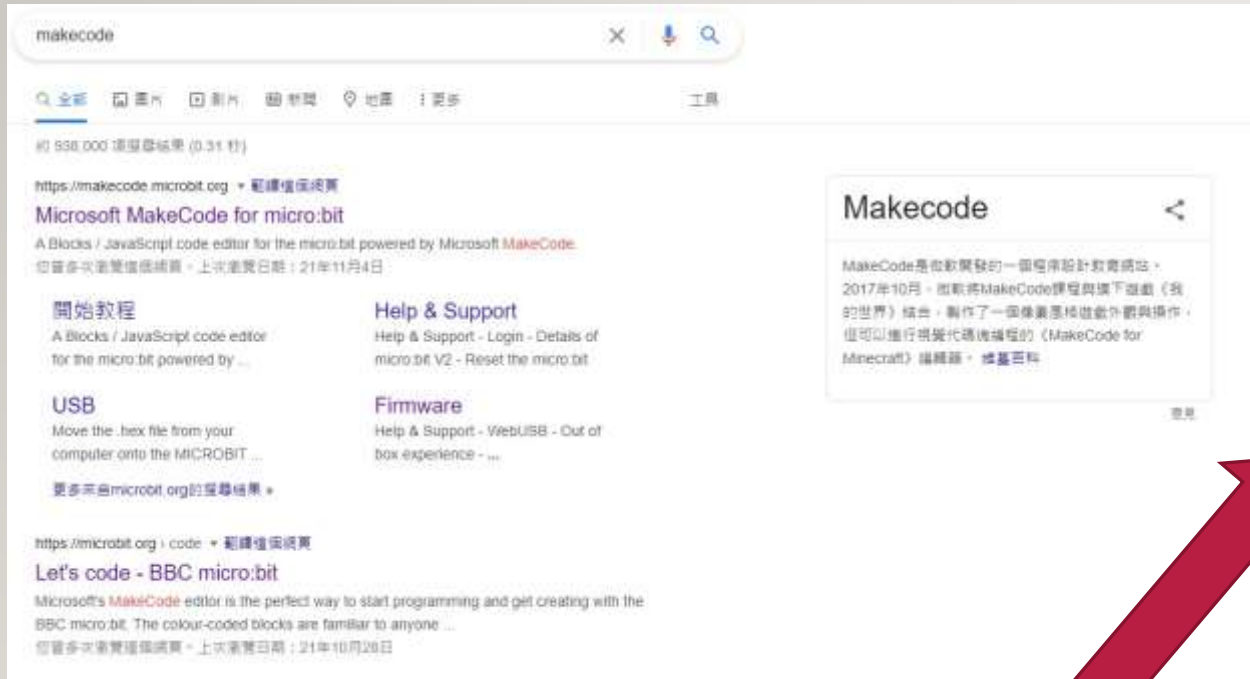
BREADBOARD



fritzing



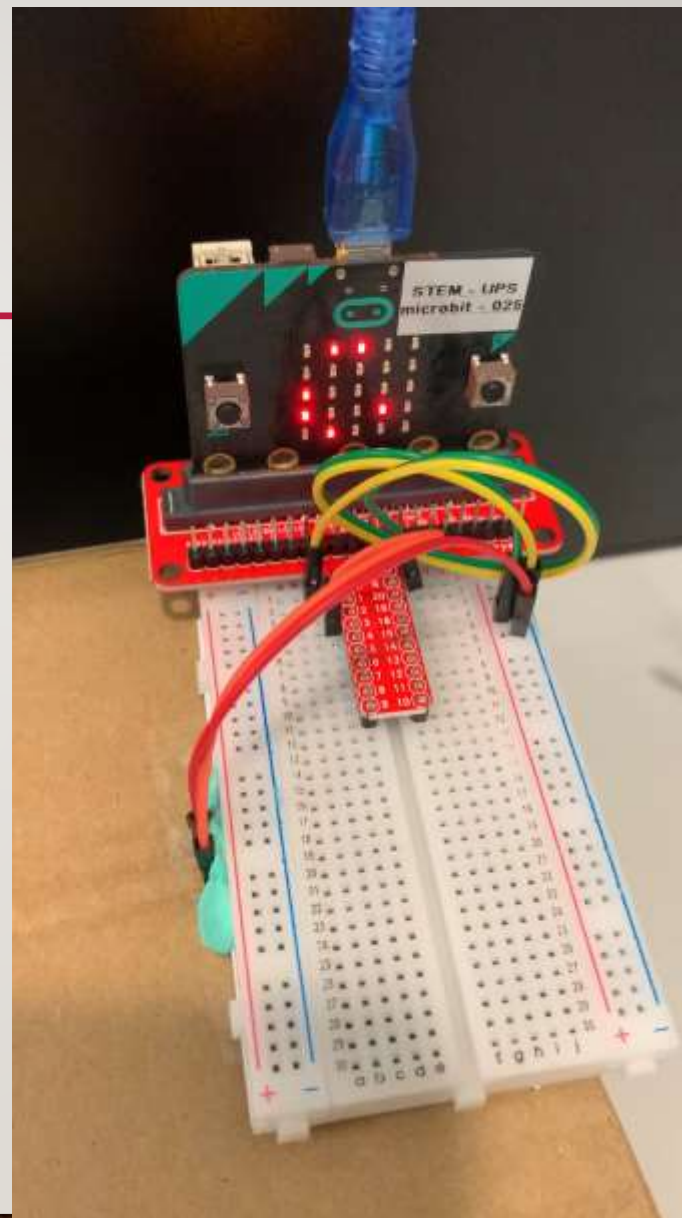
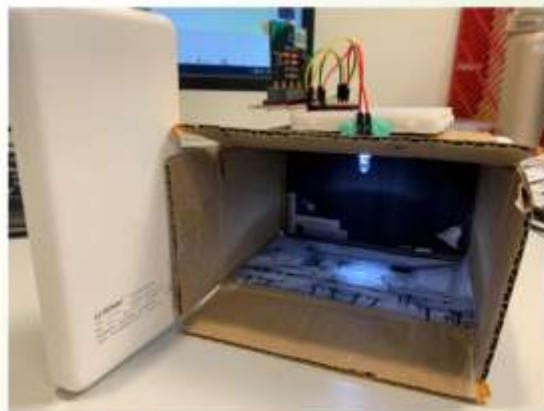
MAKECODE



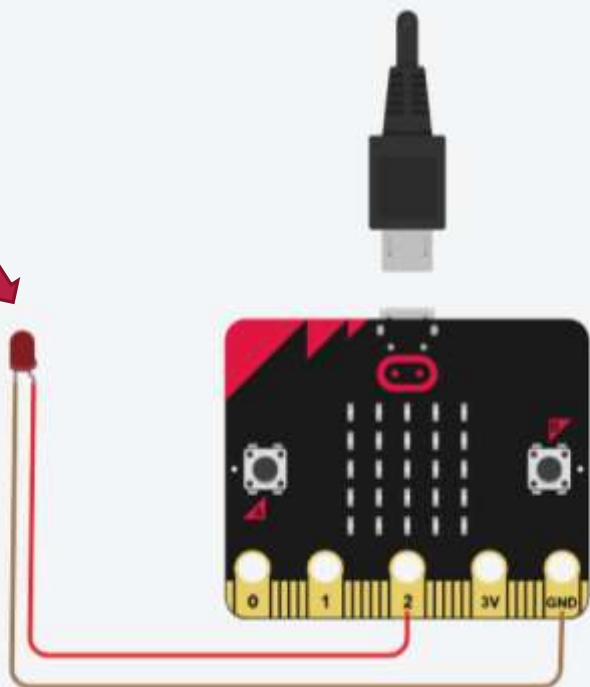
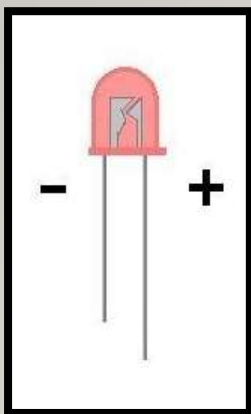
光感：示範(中一)

建議一 光感燈光控制

- 因應戶外自然光的強度
- 自動調節室內課室光源



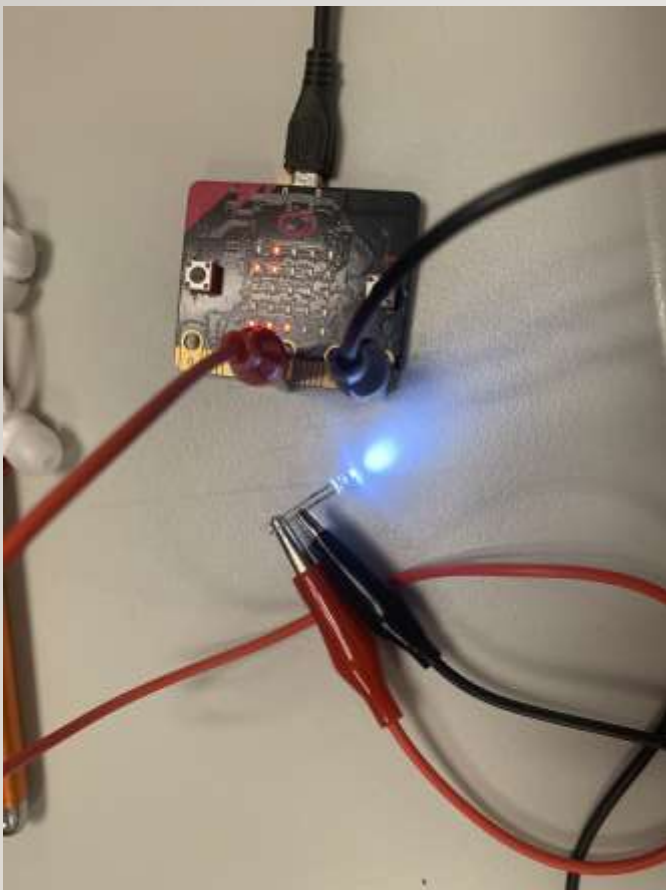
光感：燈光控制 電路圖 + MICRO:BIT 編程



The screenshot shows the Micro:bit programming interface with a JavaScript script. The script is as follows:

```
Blocks JavaScript  
Search...  
Basic  
Input  
Music  
Led  
Radio  
Loops  
Logic  
Variables  
Math  
Advanced  
Functions  
forever  
  show number light level  
  if light level < 50 then  
    digital write pin P2 to 1  
  else  
    digital write pin P2 to 0  
  pause (ms) 2000
```


TEST



```
Blocks JavaScript
```

Search...

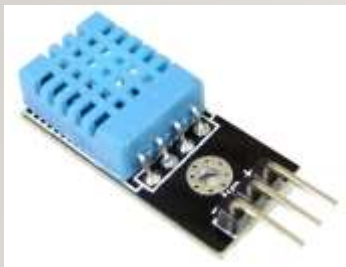
- Basic
- Input
- Music
- Led
- Radio
- Loops
- Logic
- Variables
- Math
- Advanced
- Functions

```
forever
  show number light level
  if light level < 50 then
    digital write pin P2 to 1
  else
    digital write pin P2 to 0
  pause (ms) 2000
```

Light level: 0-255

溫度：DHT 11、DHT22、DS18B20

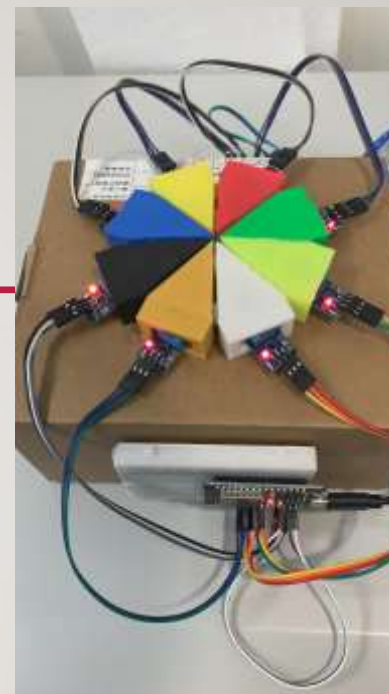
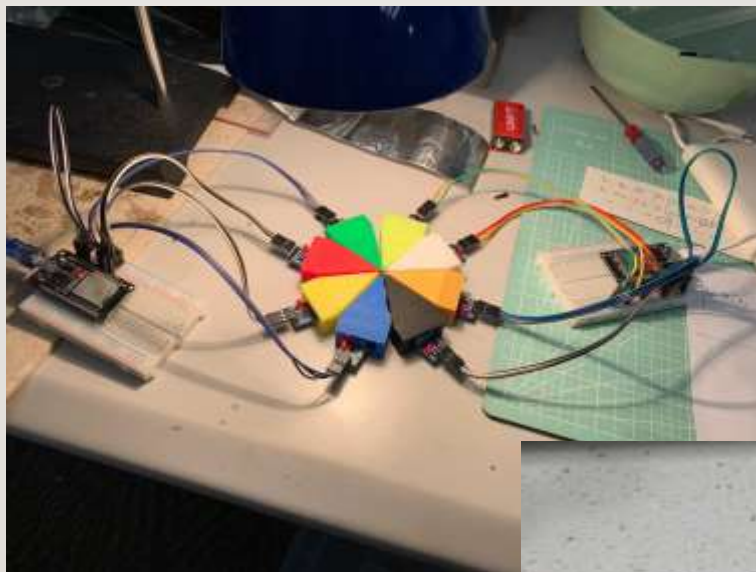
DHT11
溫濕度傳感器



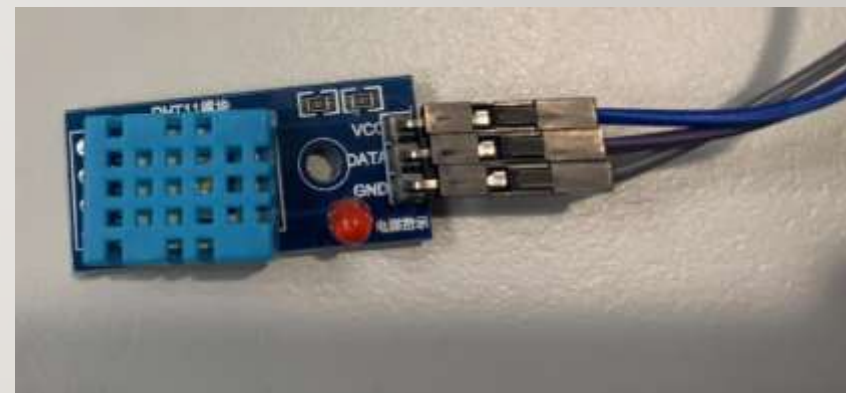
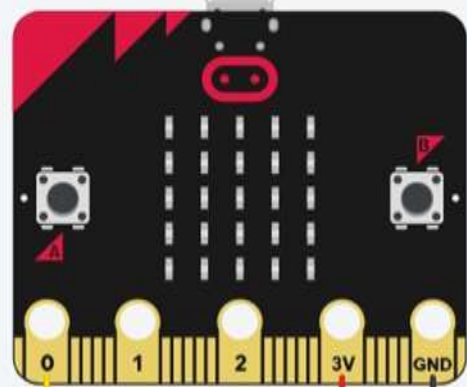
DHT22
溫濕度傳感器



DS18B20
數位溫度傳感器

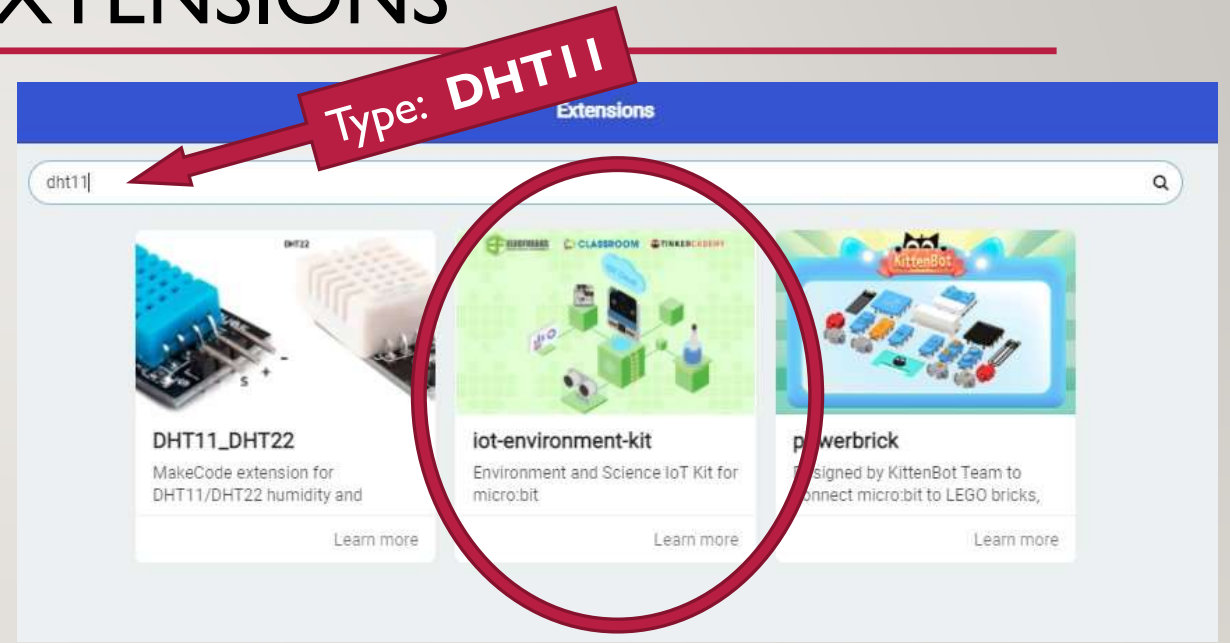
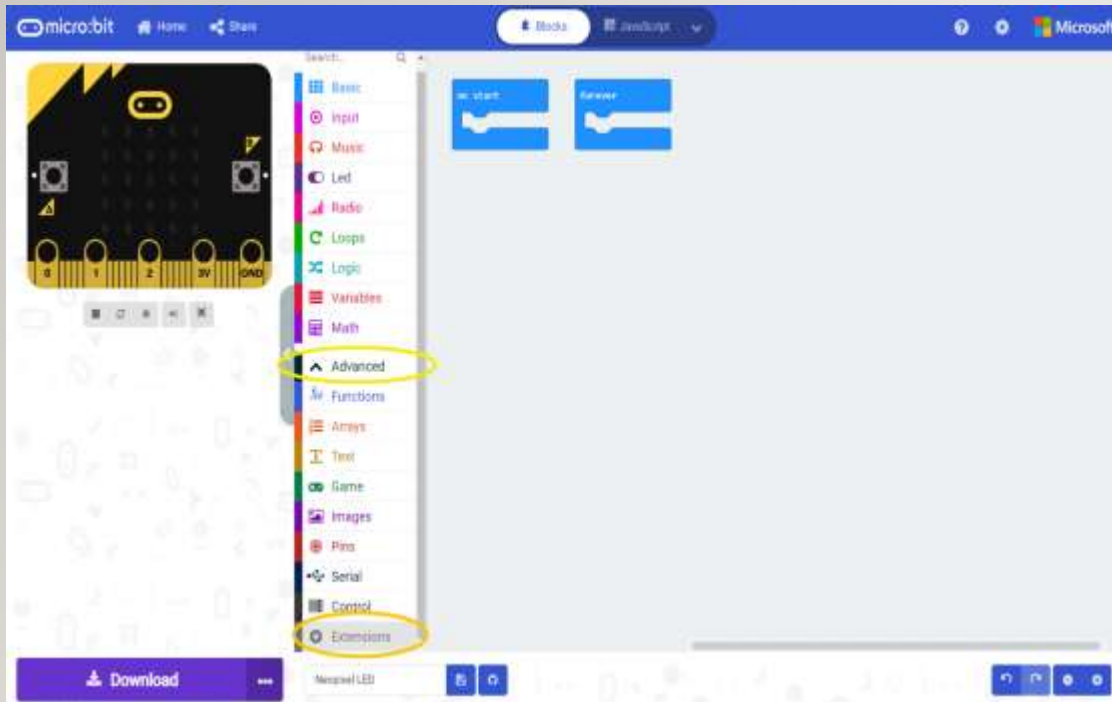


DHT11 - 溫濕度傳感器 電路圖

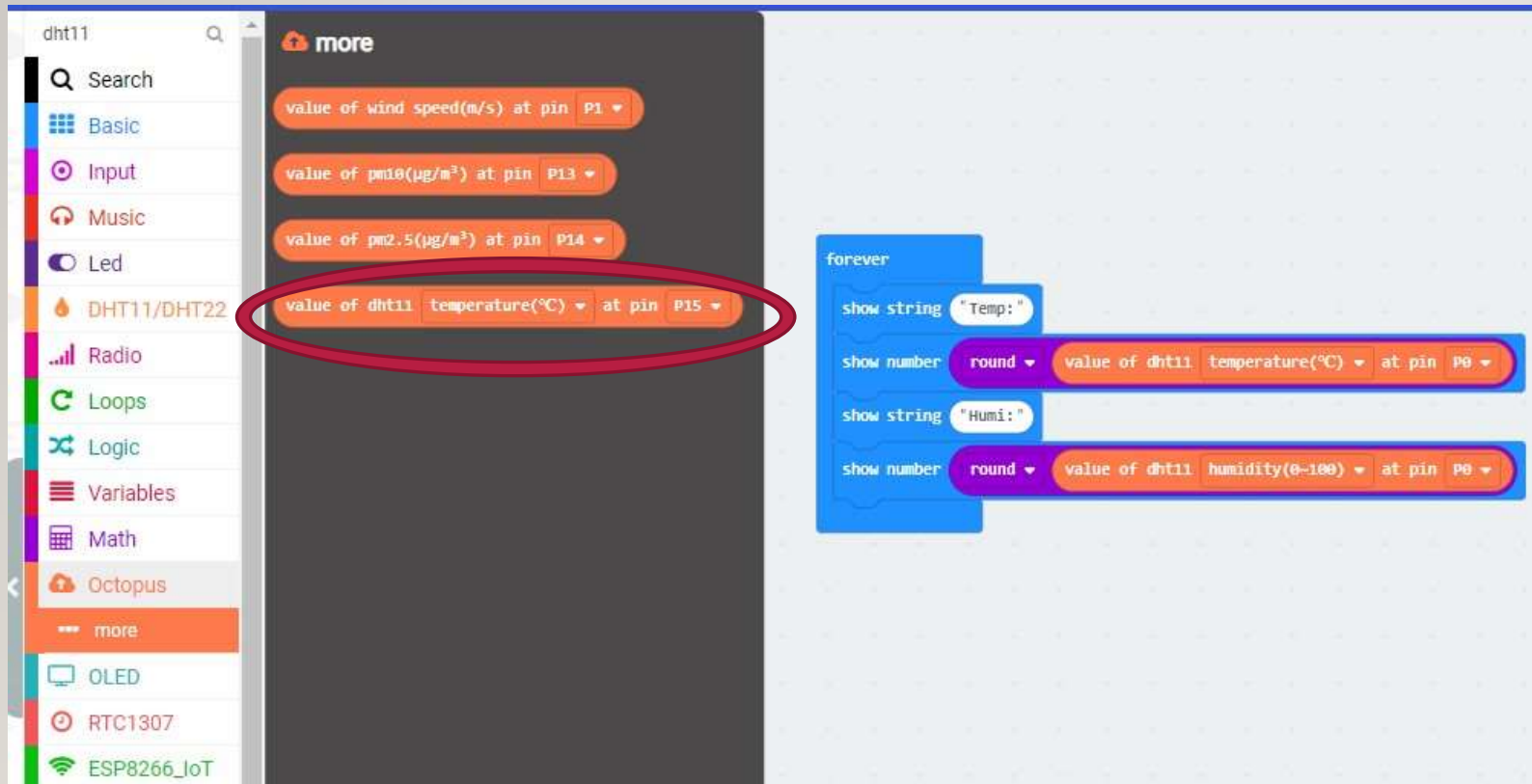


Sensor:
VCC = positive(+)
DATA = Signal
GND = negative(-)

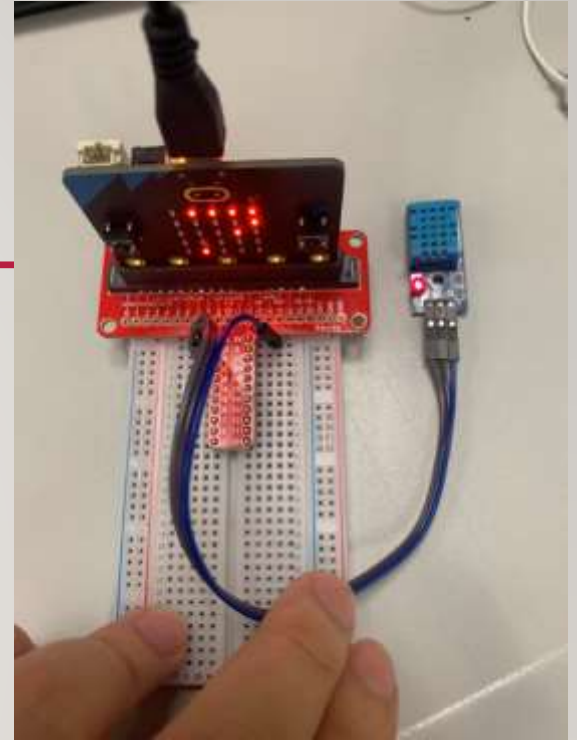
DHT11 - 溫濕度傳感器 MICRO:BIT 編程 - EXTENSIONS



DHT11 - 溫濕度傳感器 MICRO:BIT 編程



The screenshot shows the Micro:bit IDE interface. On the left, a sidebar lists various components, with 'DHT11/DHT22' highlighted. The main workspace shows a 'forever' loop containing four blocks: 'show string "Temp:"', 'show number round value of dht11 temperature(°C) at pin P0', 'show string "Humi:"', and 'show number round value of dht11 humidity(0-100) at pin P0'. A red circle highlights the 'value of dht11 temperature(°C) at pin P15' block in the 'more' dropdown menu.



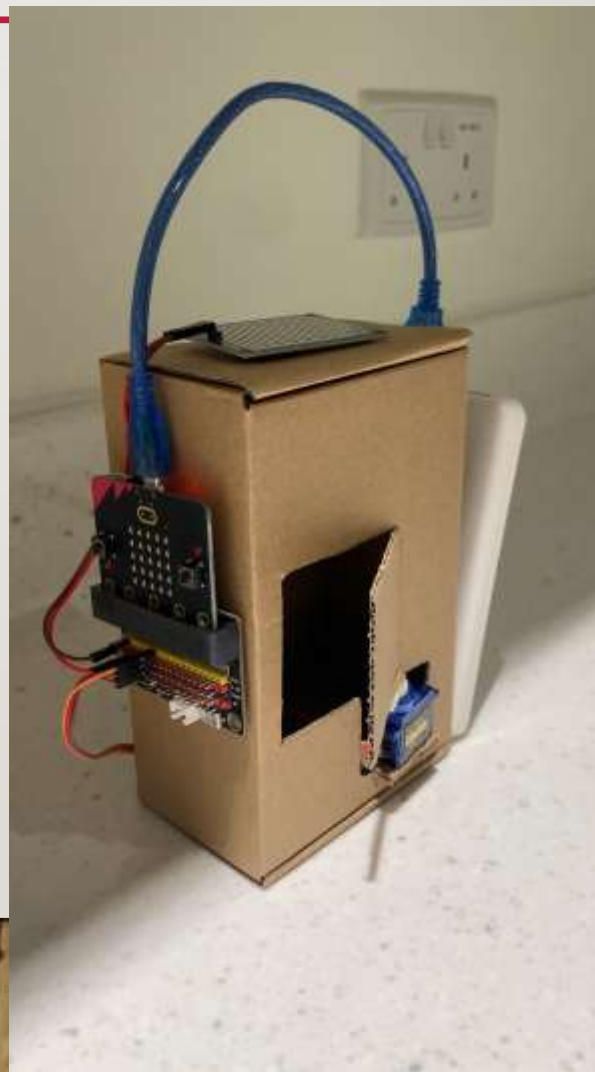
水滴濕度 (RAINDROP SENSOR)



Raindrop Sensor Module
– Water Sensor

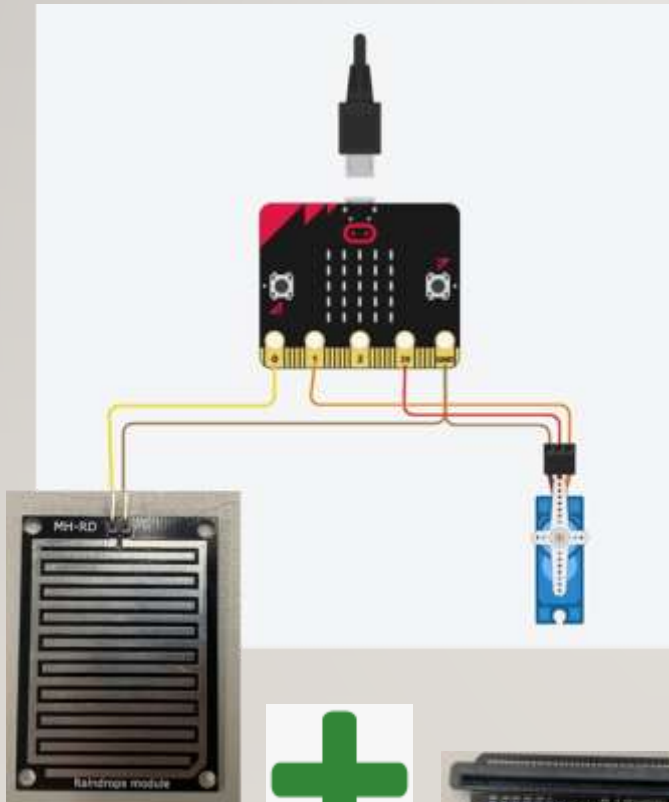


Micro Servo 9g
SG90 ANALOG



Reading < 100

水滴濕度 (RAINDROP SENSOR) : 智能窗口 電路圖 + MICRO:BIT 編程



Search...

- Basic
- Input
- Music
- Led
- Radio
- Loops
- Logic
- Variables
- Math
- Advanced
- Functions
- Arrays
- Text

```
forever
  show number analog read pin P0
  if analog read pin P0 > 100 then
    servo write pin P1 to 90
  else
    servo write pin P1 to 0

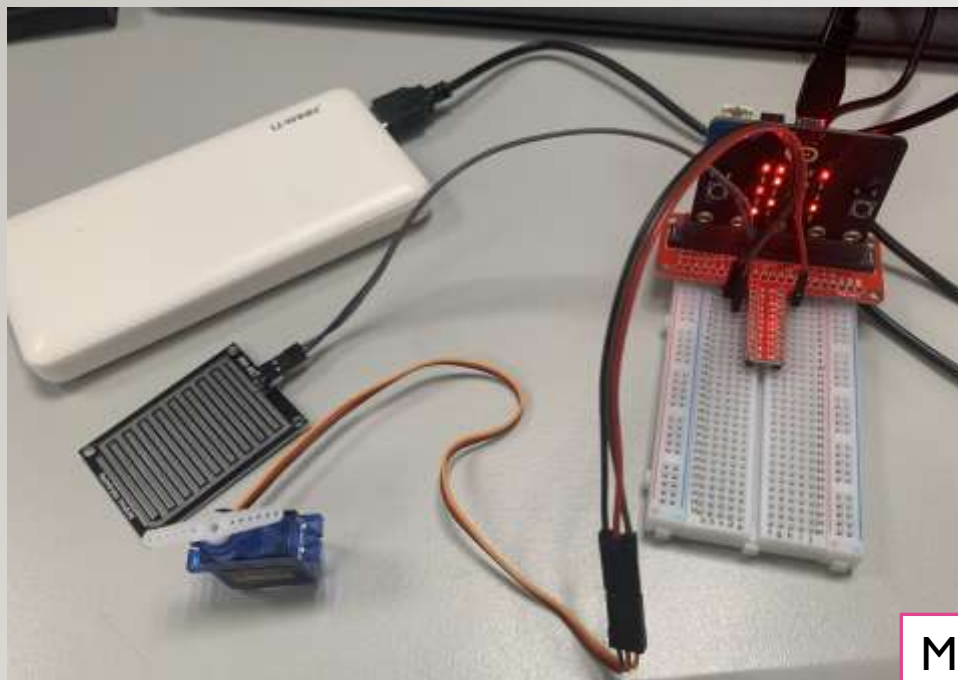
on button A pressed
  servo write pin P1 to 90
  pause (ms) 2000
  servo write pin P1 to 0
```

P0 = Raindrop Sensor
P1 = Micro Servo

Sensor:
VCC = positive(+)
DATA = Signal
GND = negative(-)

水滴濕度 (RAINDROP SENSOR) : 智能窗口 電路圖 + MICRO:BIT 編程

Engineering Design



```
forever
  show number analog read pin P0
  if analog read pin P0 > 100 then
    servo write pin P1 to 90
  else
    servo write pin P1 to 0

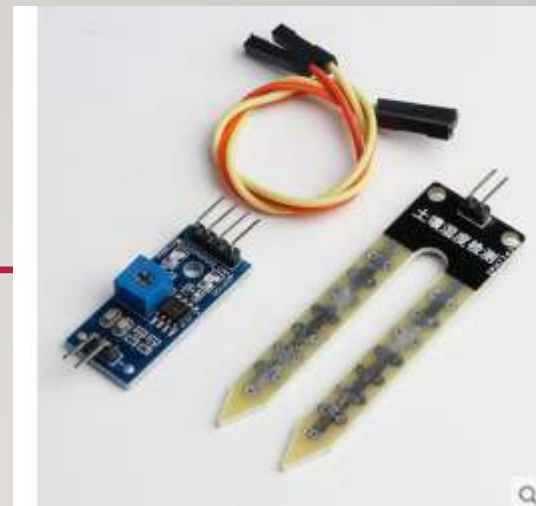
on button A pressed
  servo write pin P1 to 90
  pause (ms) 2000
  servo write pin P1 to 0
```

P0 = Raindrop Sensor
P1 = Micro Servo

Micro Servo 9g = 0 - 180

Raindrop sensor: 0-1023
Water drop: <100

土壤濕度 (MOISTURE SENSOR)



用途

土壤濕度 (Moisture Sensor)
&
水滴濕度 (Raindrop Sensor)

