

The Education University of Hong Kong

2021-2022 Quality Education Fund Thematic Network – Tertiary Institutes

STEM Project Team

SCHOOL: LOK WAH CATHOLIC PRIMARY (P5)

TOPIC: AUTOMATIC WINDOW CONTROL SYSTEM

智能窗口

= 落雨開窗

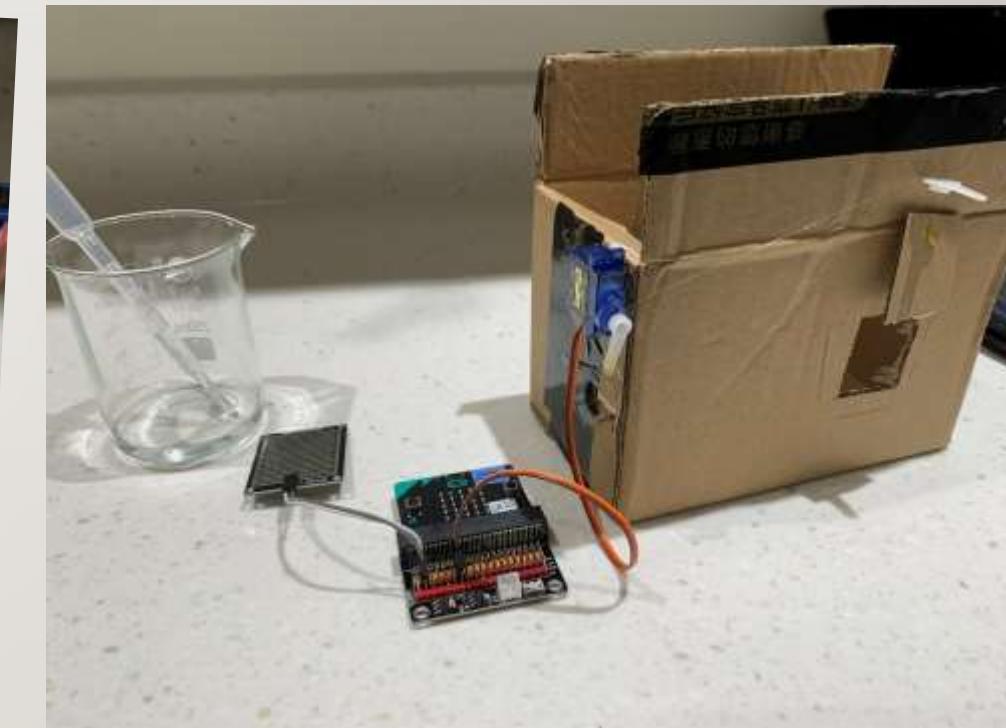
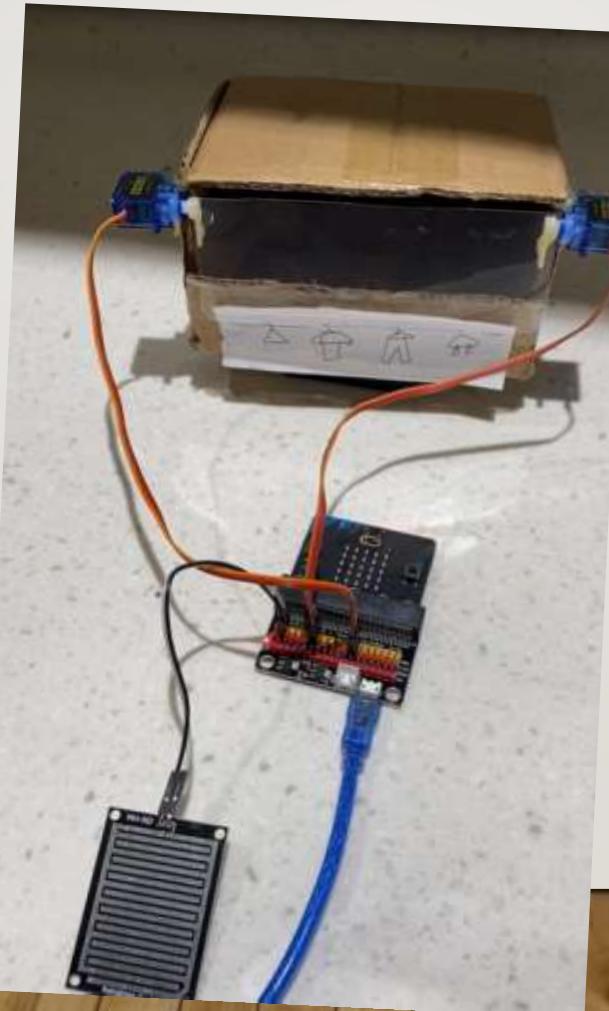
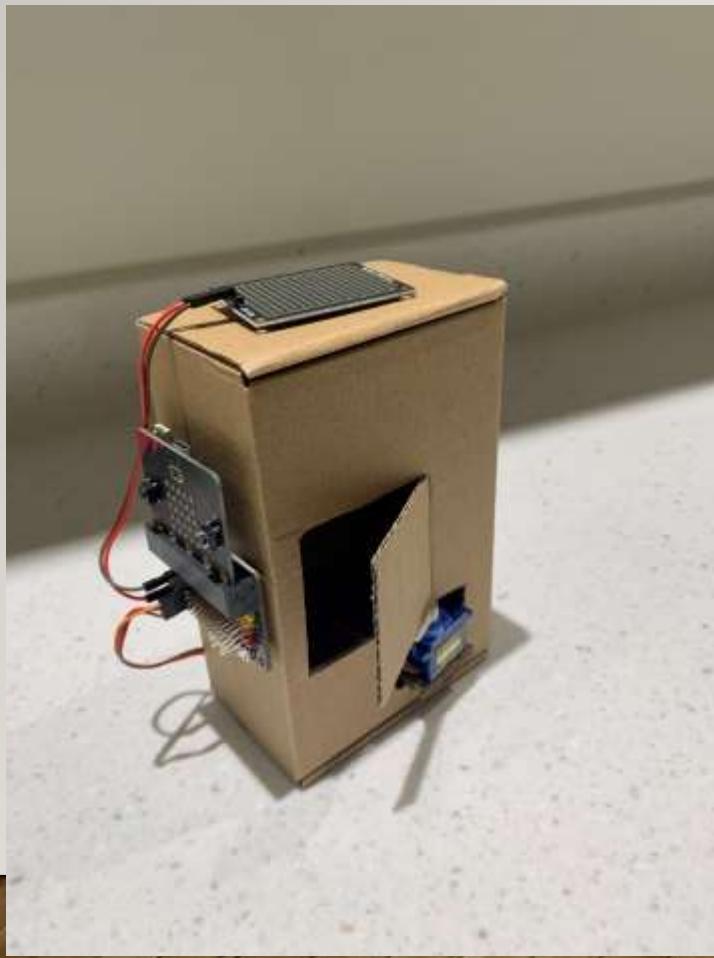


Raindrop Sensor Module
– Water Sensor

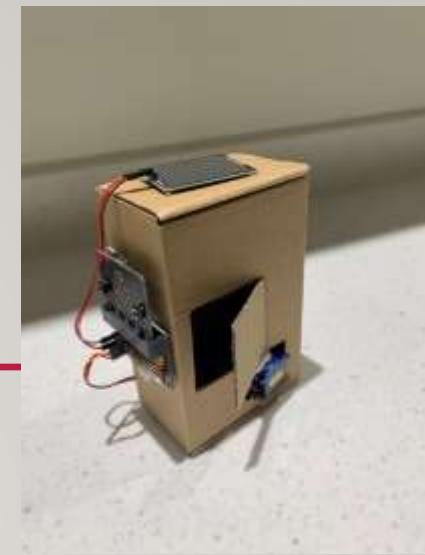
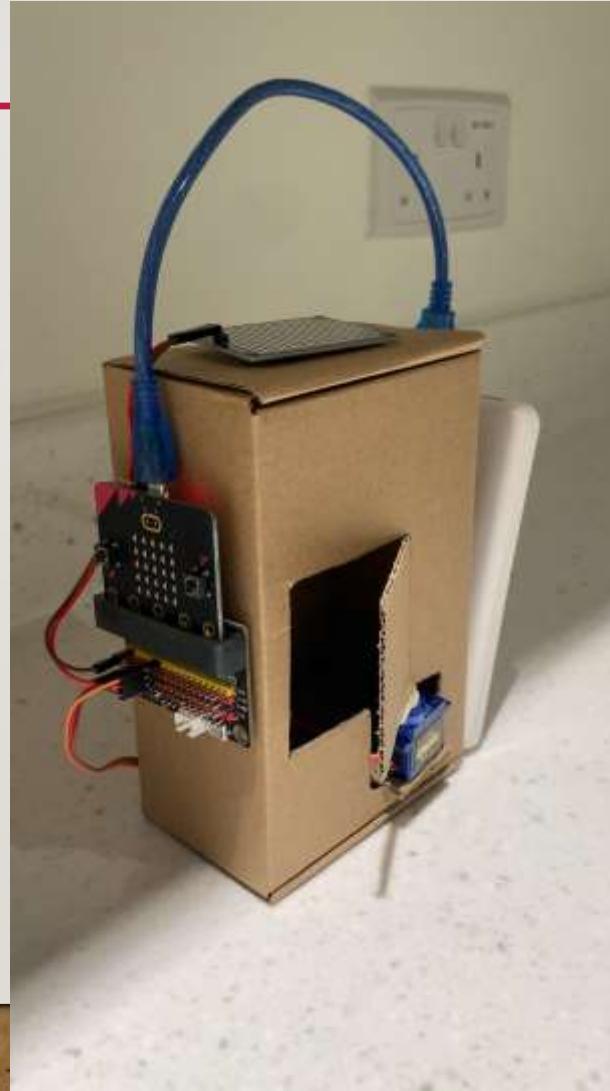


Micro Servo 9g
SG90 ANALOG

3 DESIGN

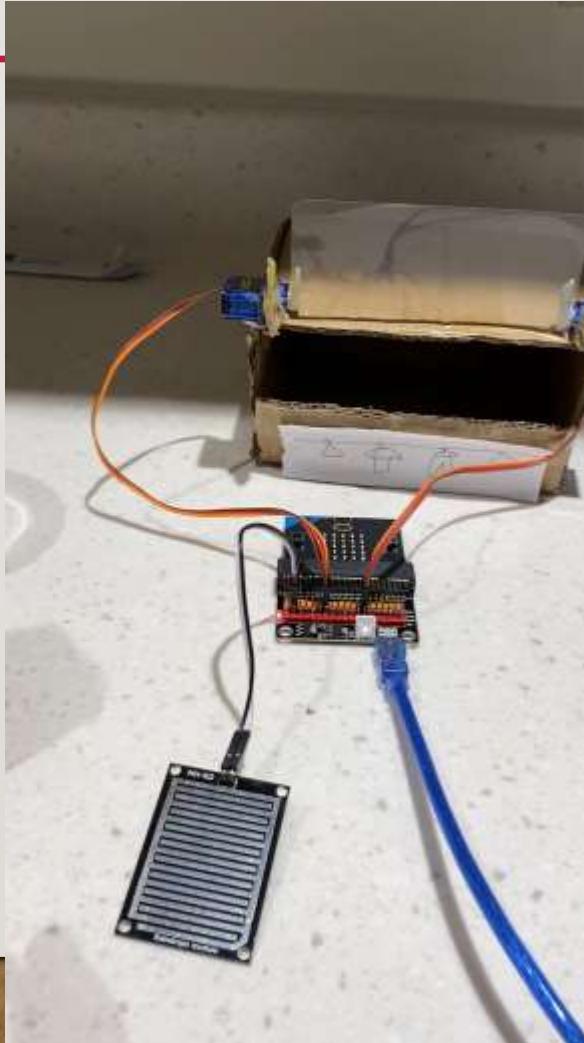


BASIC



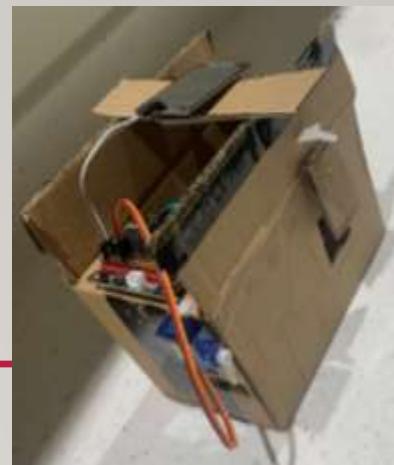
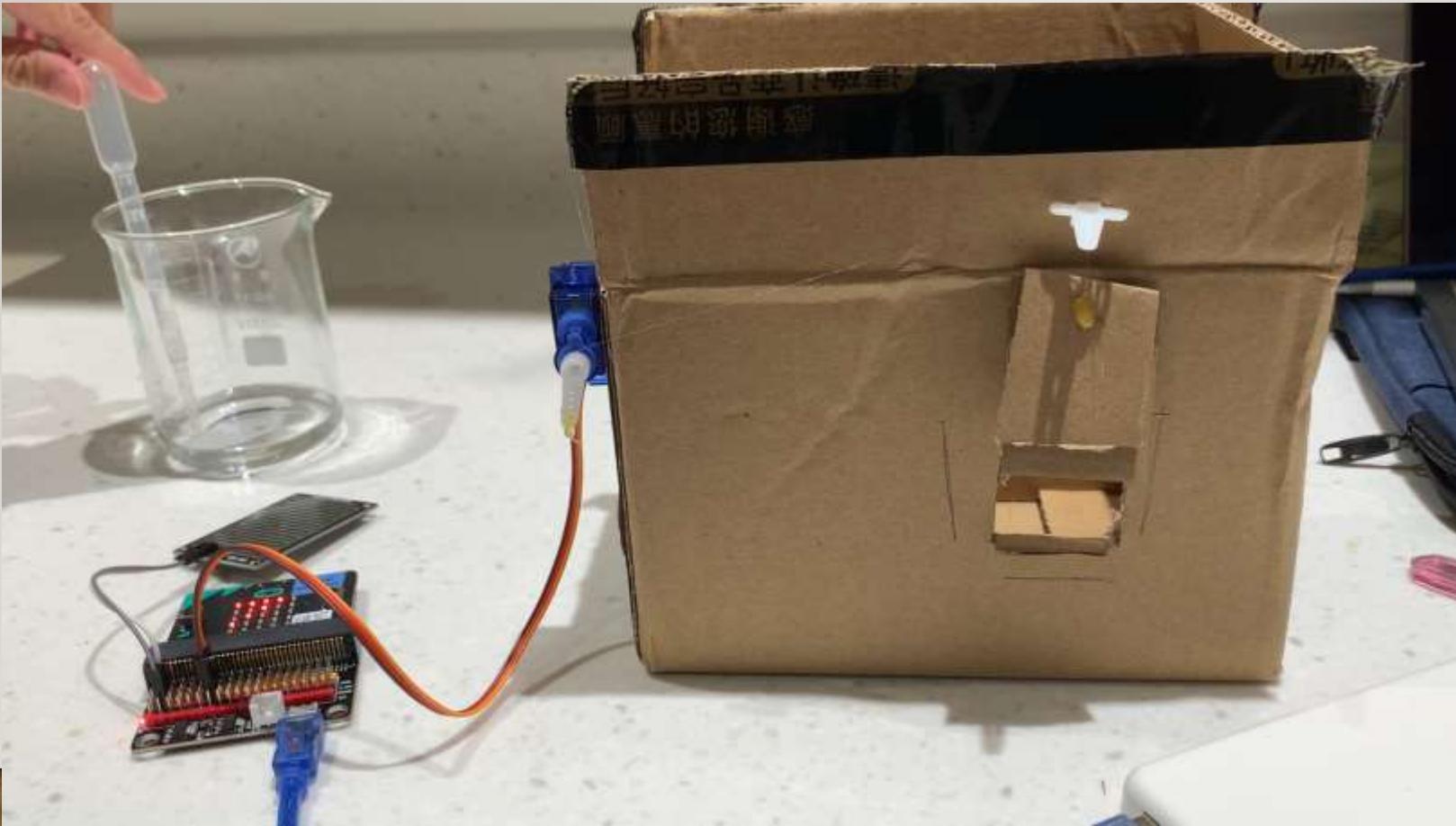
基礎：
閉合電路、編程、
Sensor基本應用

WITH CLOTHES



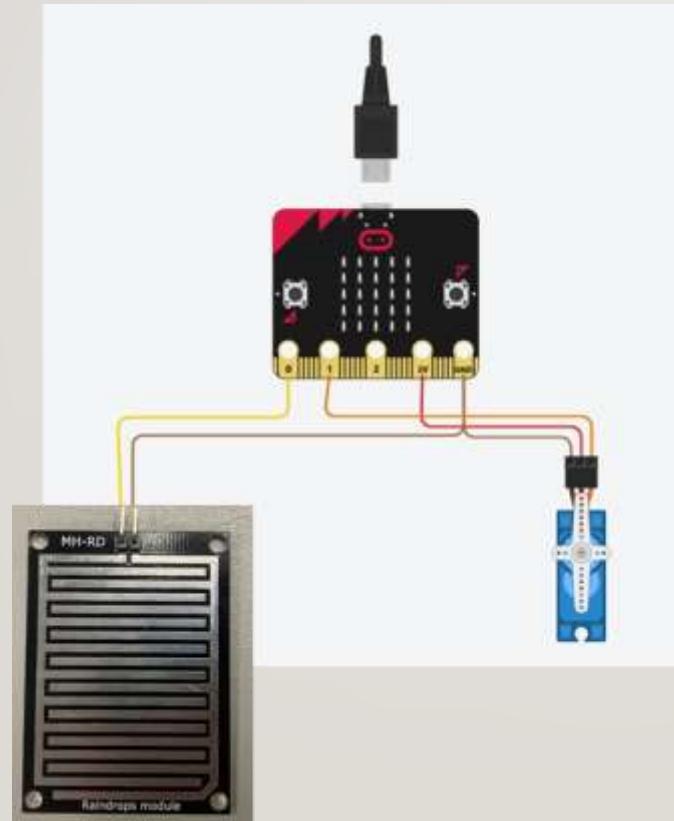
引入情景、
應用於現實
生活

BY ROPE



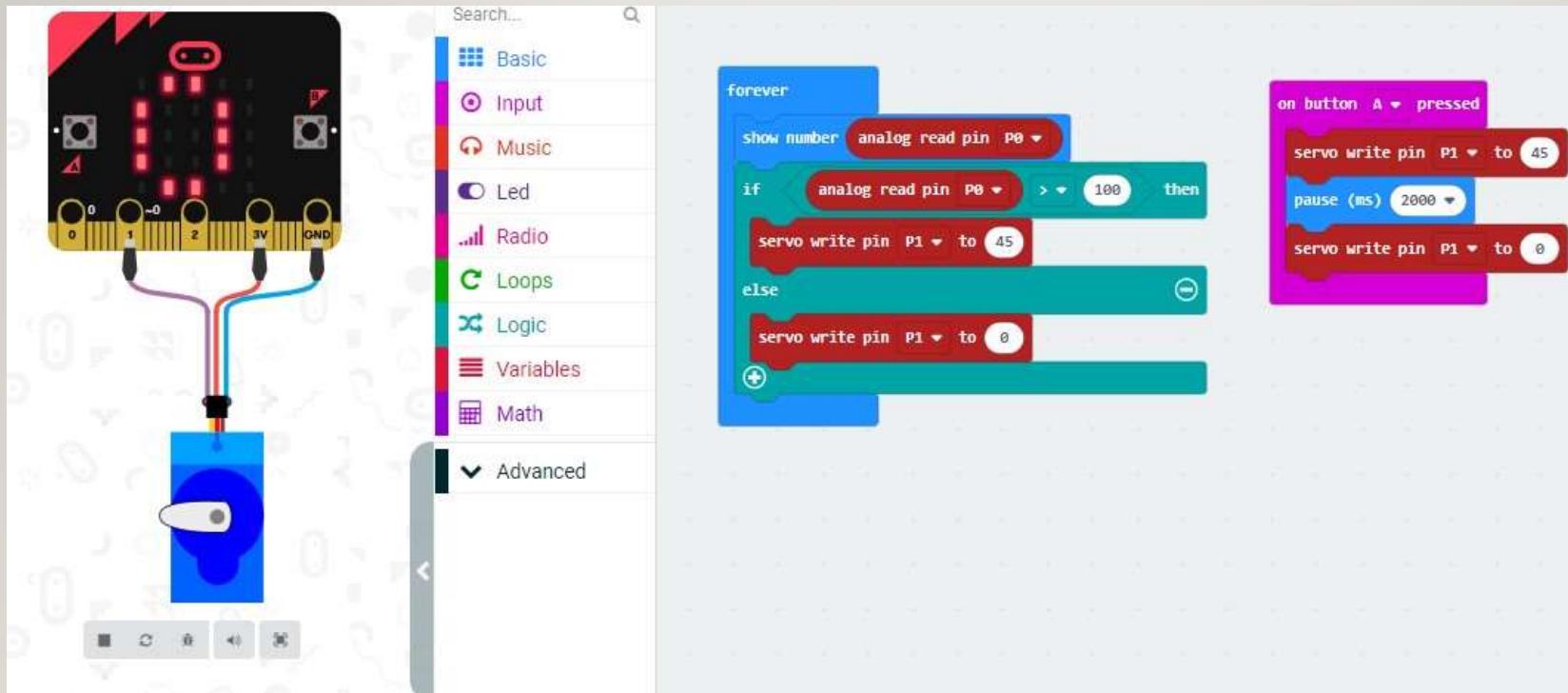
進階：
可應用不同的原理如：
槓桿原理、齒輪、滑輪等

CIRCUIT



P0 = Raindrop Sensor
P1 = Micro Servo

CODE (BASIC)

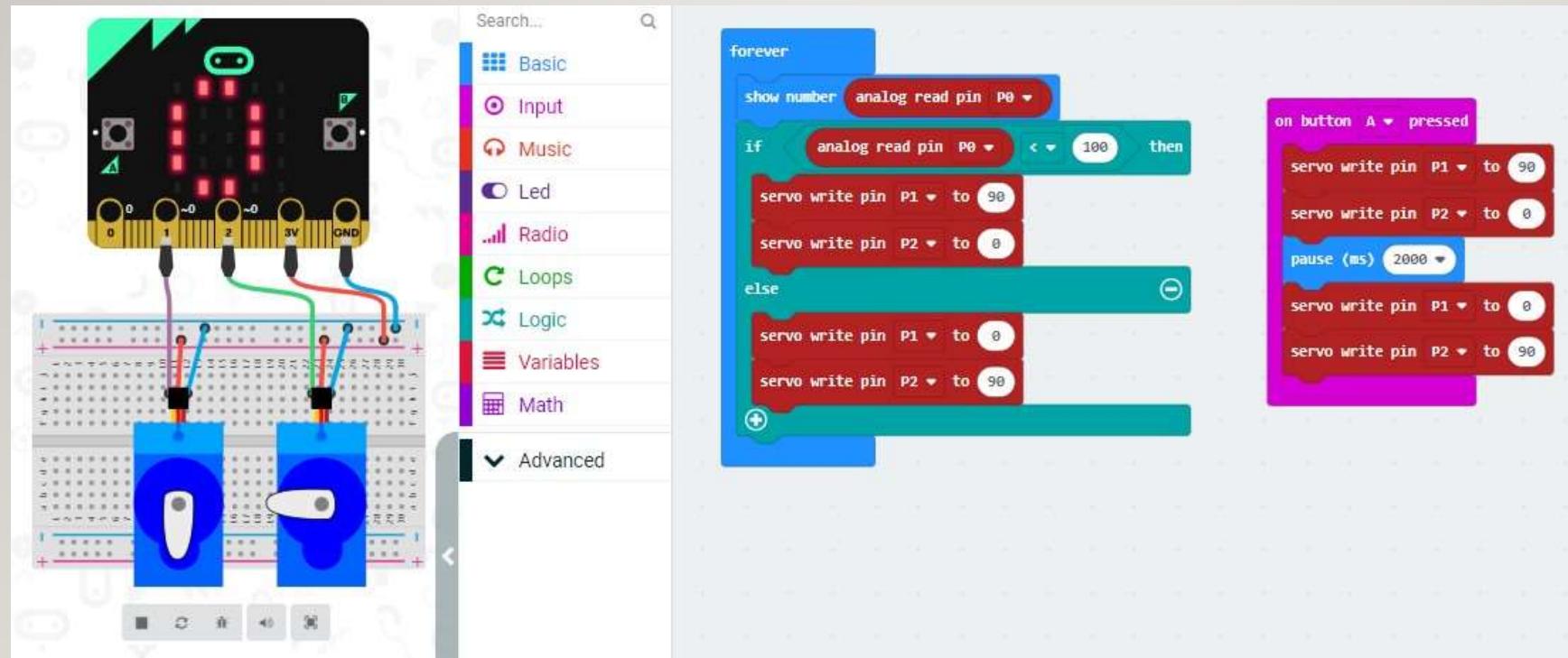


The image shows the Scratch programming environment. On the left, a microcontroller (likely an Arduino) is connected to a breadboard. The breadboard has a raindrop sensor (P0) connected to pin 0, a servo motor (P1) connected to pin 1, and a button A connected to pin 2. The microcontroller is also connected to 3V, GND, and a digital pin. On the right, the Scratch script window displays the following code:

```
forever
  show number (analog read pin P0)
  if (analog read pin P0 > 100) then
    servo write pin P1 to 45
  else
    servo write pin P1 to 0
  end
on button A pressed
  servo write pin P1 to 45
  pause (2000 ms)
  servo write pin P1 to 0
```

P0 = Raindrop Sensor
P1 = Micro Servo

CODE (AUTO_CLOTHES_WINDOW)

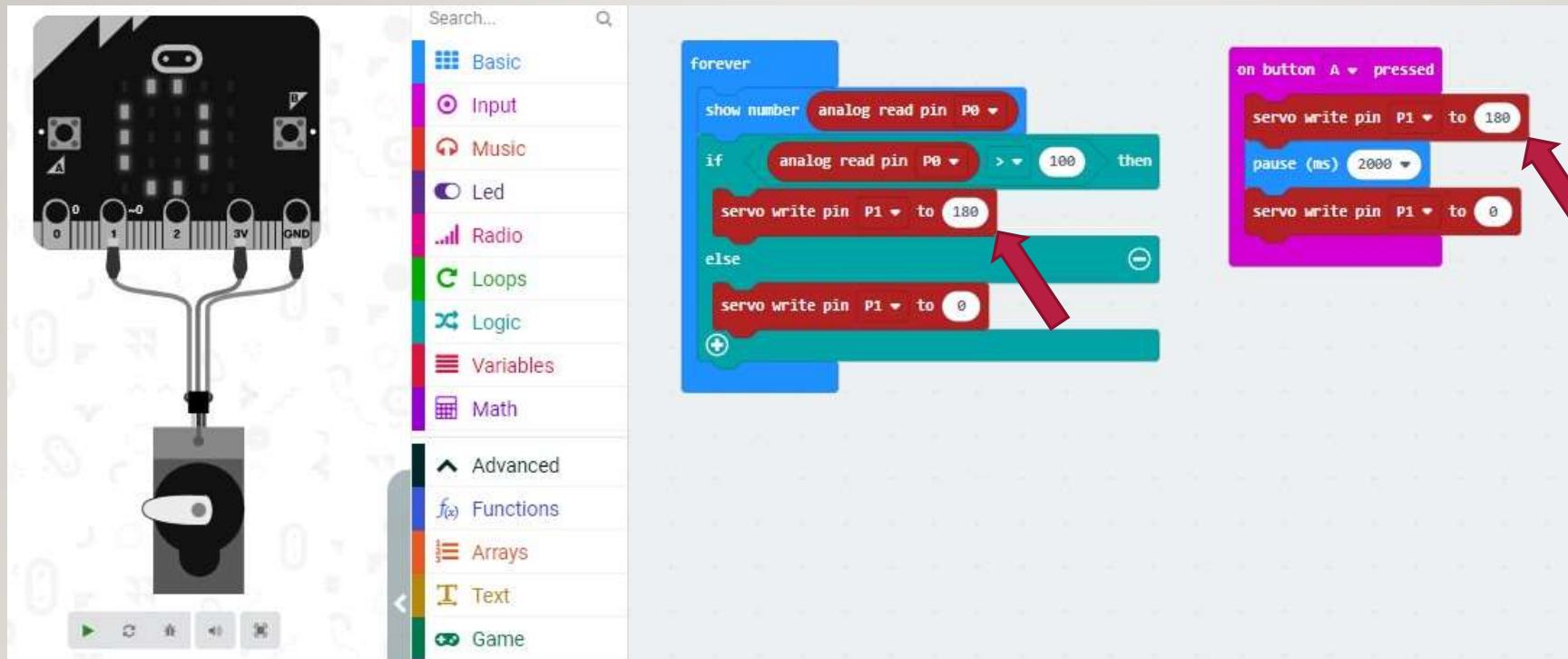


The image shows the Scratch programming environment. On the left, there is a visual representation of a microcontroller board (likely a BBC Microbit) connected to two servos and a raindrop sensor. The servos are mounted on a frame. On the right, the Scratch script consists of two main parts:

- forever loop:** This loop displays the analog reading from pin P0 and performs actions based on the value.
 - If the value is less than 100, it moves servo P1 to 90 degrees and servo P2 to 0 degrees.
 - If the value is greater than or equal to 100, it moves servo P1 to 0 degrees and servo P2 to 90 degrees.
- on button A pressed:** This event triggers a sequence of movements:
 - Moves servo P1 to 90 degrees and servo P2 to 0 degrees.
 - Pauses for 2000ms.
 - Moves servo P1 to 0 degrees and servo P2 to 90 degrees.

P0 = Raindrop Sensor
P1&2 = Micro Servo

CODE (AUTO_ROPE_WINDOW)



P0 = Raindrop Sensor
P1 = Micro Servo

90 or 180

學生探索 計分裝置比較

