Temperature-humidity measurement

Note: Please use the double-headed data cable provided by us to connect the Micro:bit board and expansion board to the computer, otherwise it will not be possible to drive the servo due to insufficient power.

1. Learning target

In this lesson, we will use the micro:bit board, building blocks, and temperature and humidity modules to build a temperature and humidity measurement.

The temperature and humidity of the current environment can be measured and displayed on the digital tube.
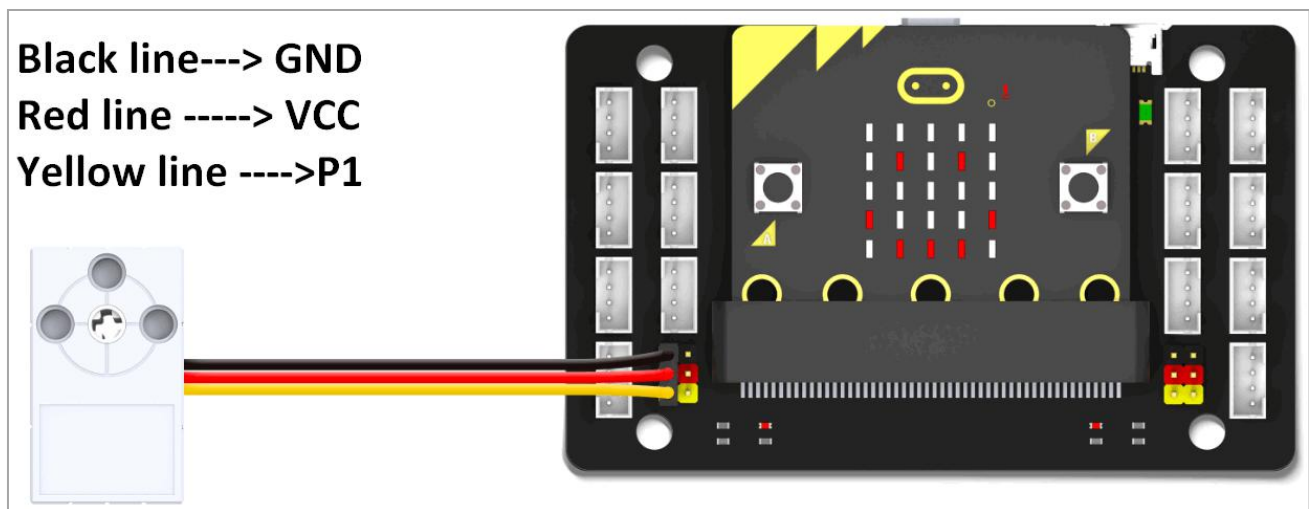
2. Servo calibration

Before assembling the building blocks, we need to use code to calibrate the servo to a fixed angle. If servo is not calibrated before using, it is easy to jam the servo during use and cause the servo to stall and damage the servo.

Calibration method:

2.1 Connect the brown line of the servo to GND (black), the red line of the servo to VCC (red), and the yellow line of the servo to IO on expansion board.

The left servo is connected to P1. As shown below.

2.2 Then connect the computer to the Micro:bit board and expansion board through the double-head micro USB cable we provided.

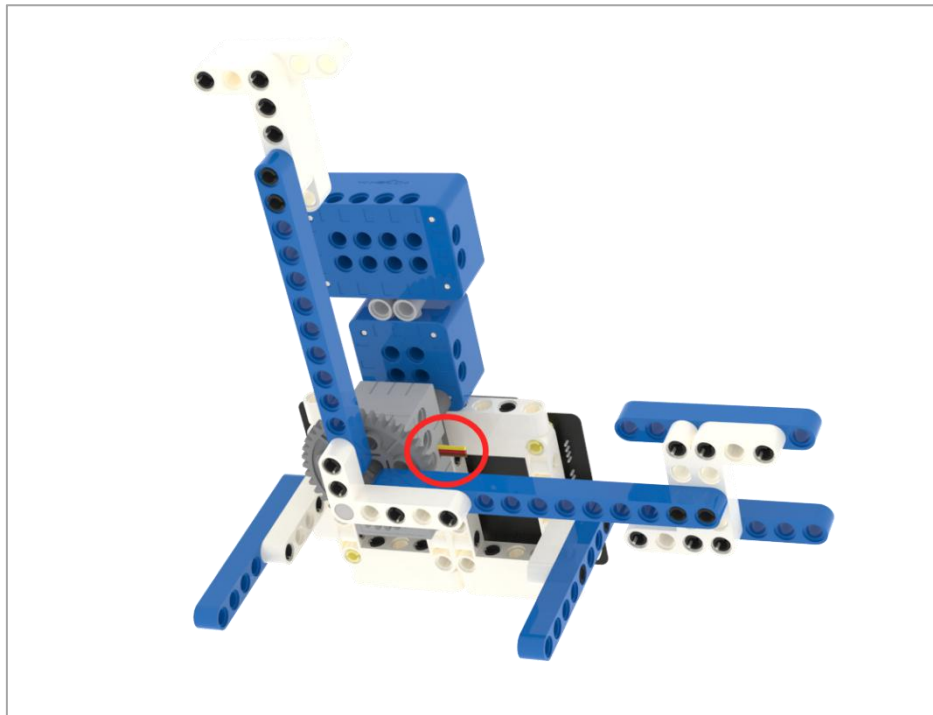2.3 Download the servo calibration code (Servo-calibration-TH-measure.hex) to the micro:bit board.

2.4 When a "2" pattern is displayed on the dot matrix of the Micro:bit board, it means the servo be calibrated successfully.
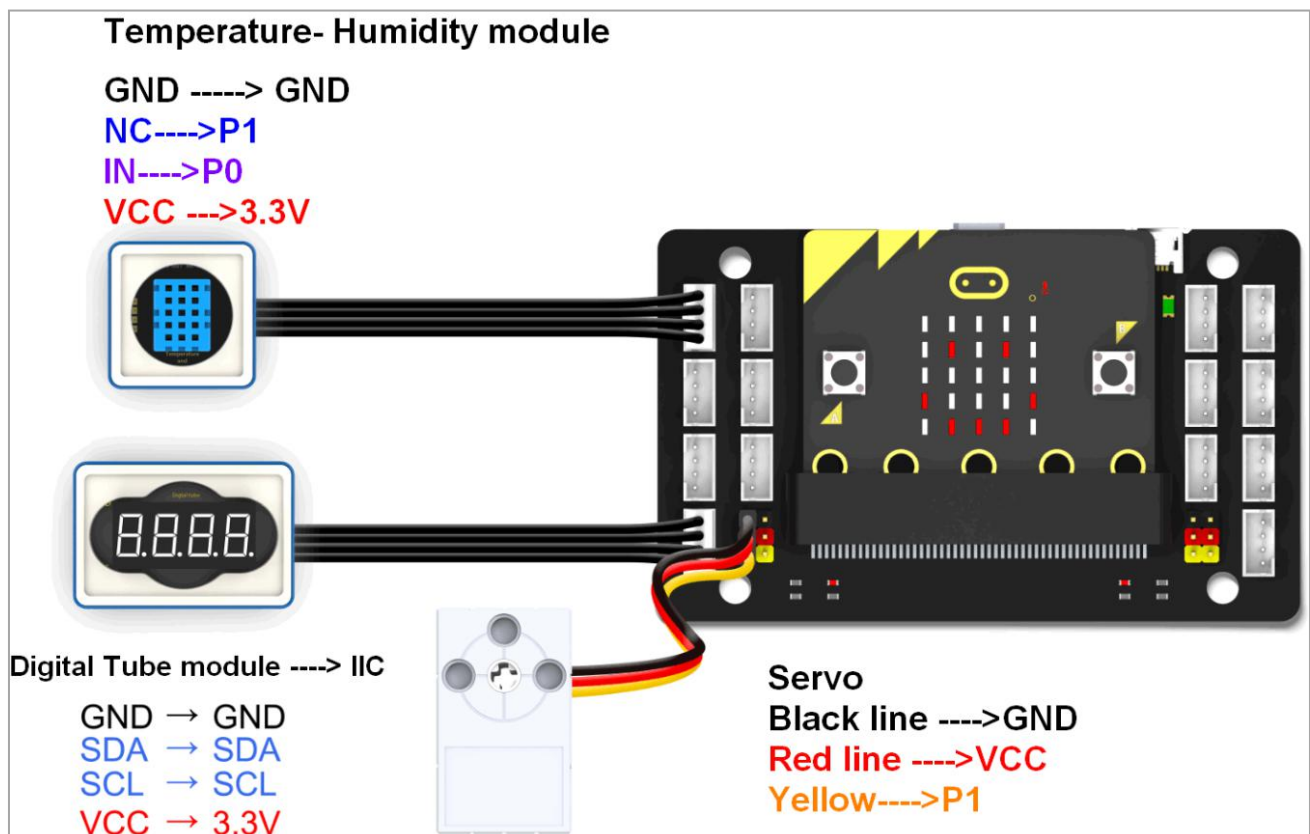
3. Building blocks assembly

Please follow the steps we provide to assemble the building block models.

Pay attention to the installation direction of the servo when assembling, otherwise the servo will be damaged due to the wrong angle of the servo after running the program.

After the assembly is completed, please check the wiring of the servo as shown below.

4. About wiring

Temperature- Humidity module

GND -----> GND
NC---->P1
IN---->P0
VCC --->3.3V

Digital Tube module ----> IIC

GND → GND
SDA → SDA
SCL → SCL
VCC → 3.3V

Servo
Black line ---->GND
Red line ---->VCC
Yellow---->P1

5.Programming method

Mode 1 online programming: First, we need to connect the micro:bit to the computer by USB cable. The computer will pop up a USB flash drive and click on the URL in the USB flash drive:

http://microbit.org/ to enter the programming interface. Add the Yahboom package https://github.com/YahboomTechnology/Module-World to program.

Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click 【New Project】, add Yahboom package: https://github.com/YahboomTechnology/Module-World , you can start programming.

6. Code
The summary program is shown below.
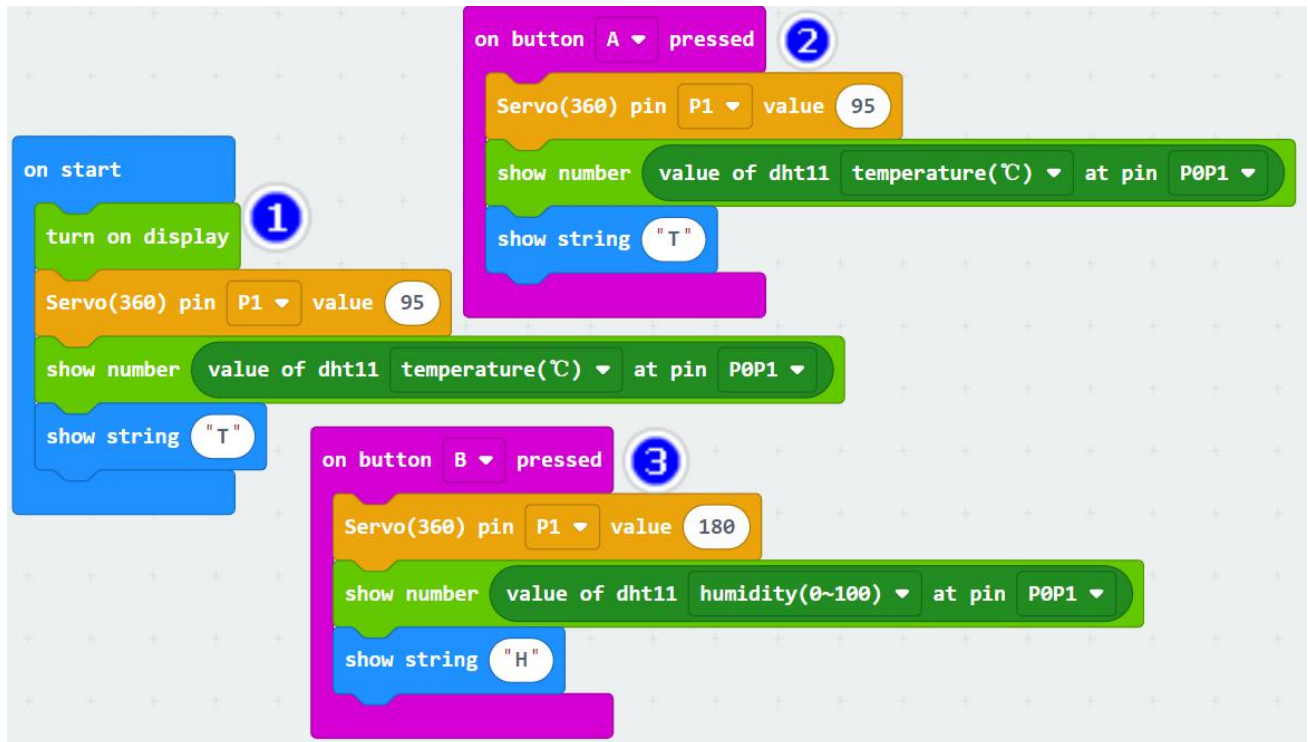
Code-① Indicating initialization, the servo will uphold the letter "T-shape", the digital tube displays the current temperature, and the Micro:bit displays "T".

Code-②Press the B button on the Micro:bit board, the servo will uphold the letter "H-shape", the digital tube will display the current humidity, and the Micro:bit displays"H".

Code-②Press the A button on the Micro:bit board, the servo will uphold the letter "T-shape", the digital tube will display the current temperature, and the Micro:bit displays"T".

7. Experimental phenomena
After the program is downloaded successfully. The servo will uphold the letter "T-shape", the digital tube displays the current temperature, and the Micro:bit displays "T".
When we press the B button on the Micro:bit board, the servo will uphold the letter "H-shape", the digital tube will display the current humidity, and the Micro:bit displays"H".
When we press the B button on the Micro:bit board, the servo will uphold the letter "T-shape", the digital tube will display the current temperature, and the Micro:bit displays"T".