

Python Basic course15 --- Servo control

Learning goals:

This lesson we will learn how to drive servo by Python programming.

Code :

```
# -*- coding: utf-8-*-# Encoding cookie added by Mu Editor
from microbit import display, Image, button_a, button_b, sleep
import buildingbit

servoID = 1

display.show(Image.HEART)
buildingbit.servo(servoID, 90)
a = 90

while True:
    if button_a.is_pressed():
        a = a + 1
        sleep(1)
        if a > 180:
            a = 180
        buildingbit.servo(servoID, a)
    elif button_b.is_pressed():
        a = a - 1
        sleep(1)
        if a < 0:
            a = 0
        buildingbit.servo(servoID, a)
```

- 1) First, we need to import Yahboom buildingbit library: **import buildingbit** and others library we need to use.
- 2) **servoID = 1** define servo number.
- 3) **buildingbit.servo(servoID, 90)** set angle of servo
Parameter 1: servo number range:1~3
Parameter 2: servo angle range:0~180
Parameter 3: blue value range:0~255
- 4) Use button A and button B to modify the servo angle.

Programming and downloading:

1. You should open the Mu software, and enter the code in the edit window, , as shown below.

Note! All English and symbols should be entered in English, Tab key for indentation, and the last line must be a space.

```

1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display, Image, button_a, button_b, sleep
3 import buildingbit
4
5 servoID = 1
6
7 display.show(Image.HEART)
8 buildingbit.servo(servoID, 90)
9 a = 90
10
11 while True:
12     if button_a.is_pressed():
13         a = a + 1
14         sleep(1)
15         if a > 180:
16             a = 180
17         buildingbit.servo(servoID, a)
18     elif button_b.is_pressed():
19         a = a - 1
20         sleep(1)
21         if a < 0:
22             a = 0
23         buildingbit.servo(servoID, a)
24

```

2. You need to click the “Check” button to check if our code has an error. If a line appears with a cursor or an underscore, the program indicating this line is wrong. If there is no cursor or underline, it means that the code is correct, and the bottom left will prompt that the check is OK.

```

1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
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4
5 servoID = 1
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11 while True:
12     if button_a.is_pressed():
13         a = a + 1
14         sleep(1)
15         if a > 180:
16             a = 180
17         buildingbit.servo(servoID, a)
18     elif button_b.is_pressed():
19         a = a - 1
20         sleep(1)
21         if a < 0:
22             a = 0
23         buildingbit.servo(servoID, a)
24

```

Awesome! Zero problems found.

3. You need to connect the micro data cable to micro:bit and the computer and **download buildingbit library into micro:bit**. Then, click “REPL” button to import “Yahboom buildingbit library”. As shown below.

```

Mu 1.1.0.alpha.2 - 红外避障传感器.py
Mode New Load Save Flash Files REPL Plotter Zoom-in Zoom-out Theme Check Tidy Help Quit
红外避障传感器.py ×
1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display
3 import buildingbit
4 import music
5
6 display.off()
7 avoid = False
8

BBC micro:bit REPL
File "__main__", line 11, in <module>
KeyboardInterrupt:
MicroPython for Building:bit V1.0 modified by Yahboom Team
Type "help()" for more information.
>>>
MicroPython for Building:bit V1.0 modified by Yahboom Team
Type "help()" for more information.
>>> |

```

4. Click “Flash” to download program to micro:bit board.

```

Mode New Load Save Flash Files REPL Plotter Zoom-in Zoom-out Theme Check Tidy Help Quit
红外避障传感器.py ×
1 # -*- coding: utf-8-*# Encoding cookie added by Mu Editor
2 from microbit import display
3 import buildingbit
4 import music
5
6 display.off()
7 avoid = False
8
9
10 while True:
11     avoid = buildingbit.avoid_sensor()
12     if avoid is True:
13         music.pitch(266)
14     else:
15         music.pitch(0)
16

```

Experimental phenomena

After download is complete. We can see micro:bit dot matrix display a “smile”. Press and hold button A to increase the servo angle. Press and hold button B to decrease the servo angle.