6.Double watch interaction

1. Learning goals

In this lesson, we will learn to use micro:bit and Wrist:bit make Double watch interaction.

2.Code and analysis

```
from microbit import *
import radio
import neopixel
import microbit
watch = Image("00900:"
              "09990:"
              "09090:"
              "09990:"
              "00900")

Red = (255, 0, 0)
Orange = (255, 165, 0)
Yellow = (255, 255, 0)
Green = (0, 255, 0)
Blue = (0, 0, 255)
Violet = (148, 0, 211)
White = (255, 255, 255)
Black = (0, 0, 0)
color_lib = {'Red': Red, 'Orange': Orange, 'Yellow': Yellow, 'Green': Green,
             'Blue': Blue, 'Violet': Violet, 'White': White, 'Black': Black}

def RGBLight_more_show(first, num, color):
    global np
    np.clear()
    for i in range(first, first + num):
        np[i] = color_lib[color]
    np.show()


def send_control():
    global flag
    global send
    if button_a.is_pressed() is True and button_b.is_pressed() is False:
        microbit.sleep(100)
        if button_a.is_pressed() is True and button_b.is_pressed() is False:
            flag = flag + 1
            if flag > 5:
                flag = 0
    elif button_a.is_pressed() is False and button_b.is_pressed() is True:
        microbit.sleep(100)
        if button_a.is_pressed() is False and button_b.is_pressed() is True:
            send = 1
```

```
    elif button_a.is_pressed() is True and button_b.is_pressed() is True:
        microbit.sleep(100)
        if button_a.is_pressed() is True and button_b.is_pressed() is True:
            RGBLight_more_show(0, 1, "Black")

    x, y, z = accelerometer.get_values()
    if x+y+z > 900:
        microbit.sleep(1000)
        if flag == 5:
            radio.send('Z')

def display_send():
    global flag
    global send
    if flag == 1:
        display.show(Image.ARROW_N)
        if send == 1:
            radio.send('N')
            send = 0
    elif flag == 2:
        display.show(Image.ARROW_S)
        if send == 1:
            radio.send('S')
            send = 0
    elif flag == 3:
        display.show(Image.ARROW_E)
        if send == 1:
            radio.send('E')
            send = 0
    elif flag == 4:
        display.show(Image.ARROW_W)
        if send == 1:
            radio.send('W')
            send = 0
    elif flag == 5:
        display.show(Image.CHESSBOARD)
    elif flag == 0:
        display.show(watch)
```

```
81
82  flag = 0
83  send = 0
84  np = neopixel.NeoPixel(pin1, 1)
85  display.show(watch)
86  radio.on()
87  radio.config(group=1)
88
89  while True:
90      send_control()
91      display_send()
92      value = radio.receive()
93      if value == 'Z':
94          flag = 0
95          pin2.write_analog(1023)
96          microbit.sleep(1000)
97          pin2.write_analog(0)
98      elif value == "N":
99          flag = 1
100         RGBLight_more_show(0, 1, 'Red')
101     elif value == "S":
102         flag = 2
103         RGBLight_more_show(0, 1, 'Green')
104     elif value == "E":
105         flag = 3
106         RGBLight_more_show(0, 1, 'Blue')
107     elif value == "W":
108         flag = 4
109         RGBLight_more_show(0, 1, 'Violet')
110
```

send_control(): This function is mainly to send related functions. Set the value of flag through the anti-misdetection detection button A for the subsequent program to select the corresponding pattern. Set the send flag bit send through the anti-mistouch detection button B. Press A and B at the same time to turn off the RGB lights. When the flag is 5, detect the shaking by detecting the sum of the accelerations of the x, y, and z axes, and send the character Z to other watches.

display_send(): display the corresponding dot pattern according to the flag, determine the time to send the corresponding pattern to the other party's watch by judging the send flag, and reset the send flag.

Set your own pattern by calling the above two functions in the loop, and send your own pattern to the other party when you judge. Receive the characters sent by the other party's watch through value, and make corresponding settings through the value of value.

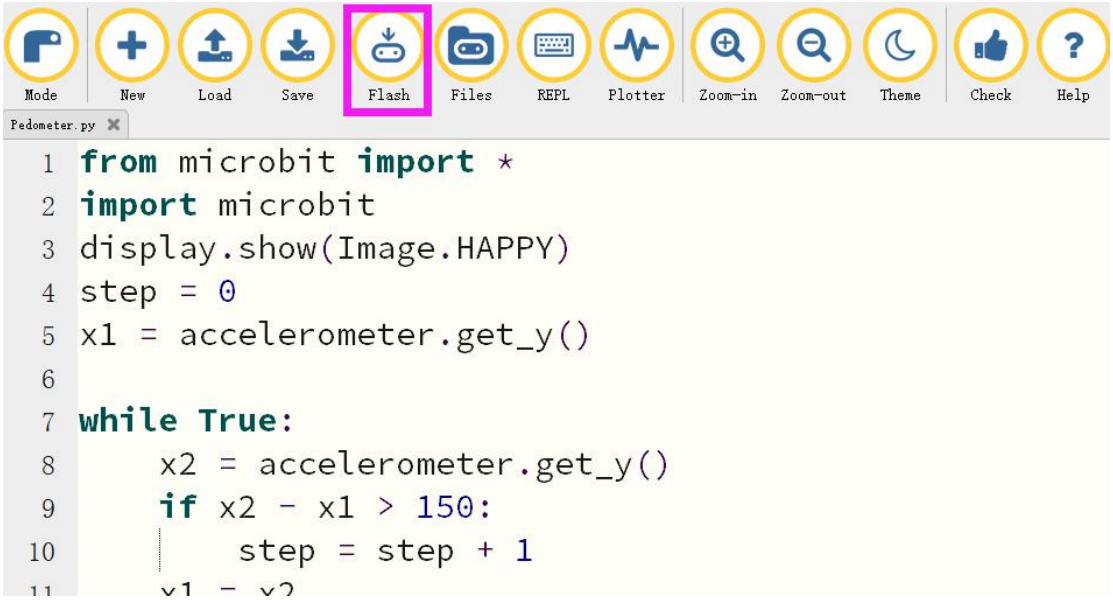
3. Programming and downloading

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

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

3.2 As shown in Figure, 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.

3.3 You need to connect the micro data cable to micro:bit and the computer, then click the Flash button to download the program to micro:bit as shown in Figure 2-3.



4. Experimental phenomena

After downloading the program, the micro:bit dot matrix displays the watch pattern. Press the A key to switch different direction and chess board pattern.

When we press B key, the direction pattern can be sent to the another wrist:bit and be display on dot matrix. And RGB light of another watch will be light up.

When your wrist:bit display chess board pattern, if you shaking wrist:bit, another wrist:bit will shock.