4.Temperature detector

1. Learning goals

In this lesson, we will learn to use micro:bit and Wrist:bit make temperature detector.

2.Code and analysis

```
1    from microbit import *
2    import microbit
3    import music
4
5
6    while True:
7        value = temperature()
8        microbit.sleep(500)
9        if value > 10 and value < 30:
10            pin2.write_analog(0)
11            display.scroll(str(value))
12        elif value >= 30 or value <= 10:
13            pin2.write_analog(1023)
14            music.play(music.ENTERTAINER)
15            display.scroll(str(value))
16
17
18
```

from microbit import *
This code is to import everything from the microbit library, and any program need to uses import this library.
import music: Import music library.
temperature(): Return the temperature of the current micro:bit detection,unit is ℃.
write_analog(value): Outputs a PWM signal on the pin, whose duty cycle is proportional to the value provided.

Tips: The value can be an integer or a floating point number between 0 (0% duty cycle) and 1023 (100% duty cycle).
Because the vibration motor on the hardware circuit is connected to the P2 pin of the micro:bit board, we need to set P2 pin in program.

display.scroll() scrolls horizontally on the display. If the value is an integer or a floating-point number, the integer is first converted to a string.

Note:
1 - The capital letter/lowercase letters must be distinguished！

2 - Correct spelling!

3 - Keywords such as # need a space between the content.

4 - You can only use the Tab key (tabulation key) for indentation.

3. Programming and downloading

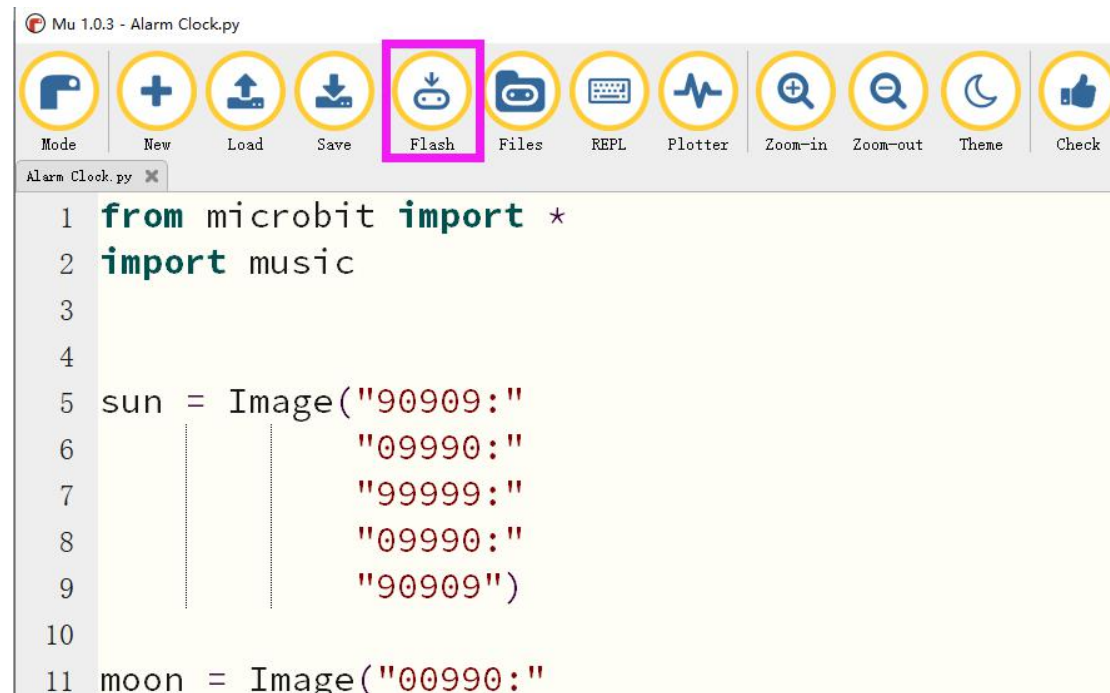3.1 You should open the Mu software, and enter the code in the edit window, , as shown in figure .

Note! All English and symbols should be entered in English, and the last line must be a space.
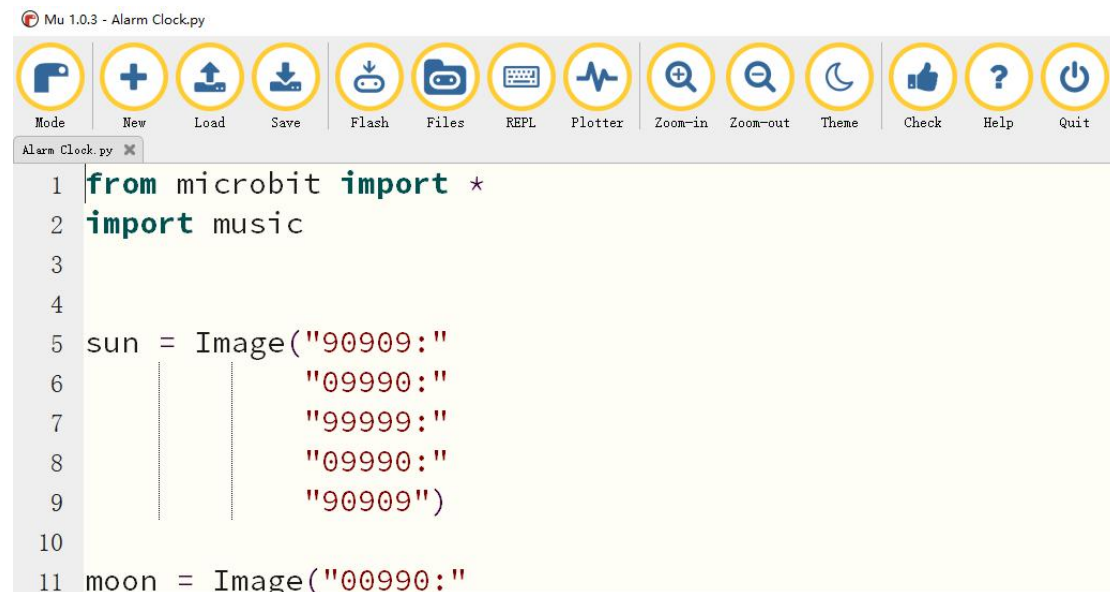
3.2 As shown in Figure, you need to click the Check button to check if our code has an error. If a line appears with a cursor or an underscore, the program indicating this line is wrong.
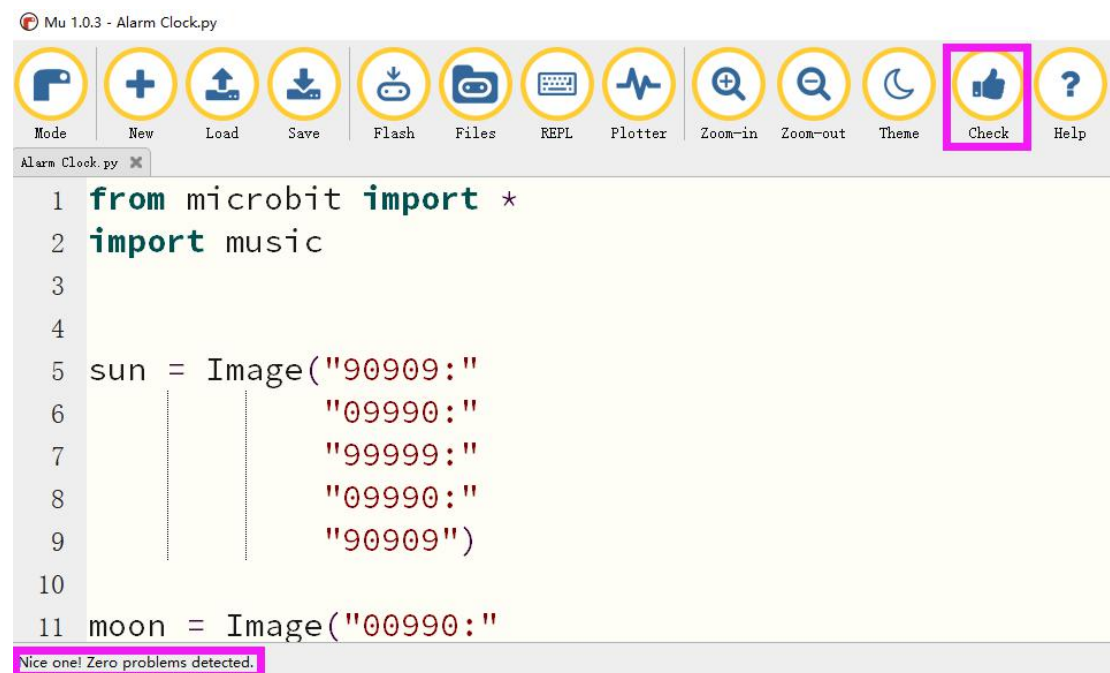
3.3 You need to connect the micro data cable to micro:bit and the computer, then click the Flash button to download the program to micro:bit.

```
Mu 1.0.3 - Alarm Clock.py

Mode   New   Load   Save   Flash   Files   REPL   Plotter   Zoom-in   Zoom-out   Theme   Check

Alarm Clock.py  ✖

 1  from microbit import *
 2  import music
 3
 4
 5  sun = Image("90909:"
 6              "09990:"
 7              "99999:"
 8              "09990:"
 9              "90909")
10
11  moon = Image("00990:"
```

4. Experimental phenomena

After the program is successfully downloaded. Micro:bit dot matrix will scroll display temperature data.

When the ambient temperature is higher than 30℃ or lower than 10℃, buzzer will play music and the vibration motor will rotate.

When the ambient temperature is between 10℃and 30℃, music and vibration motors will stop.