Emergency light

1. Learning objectives

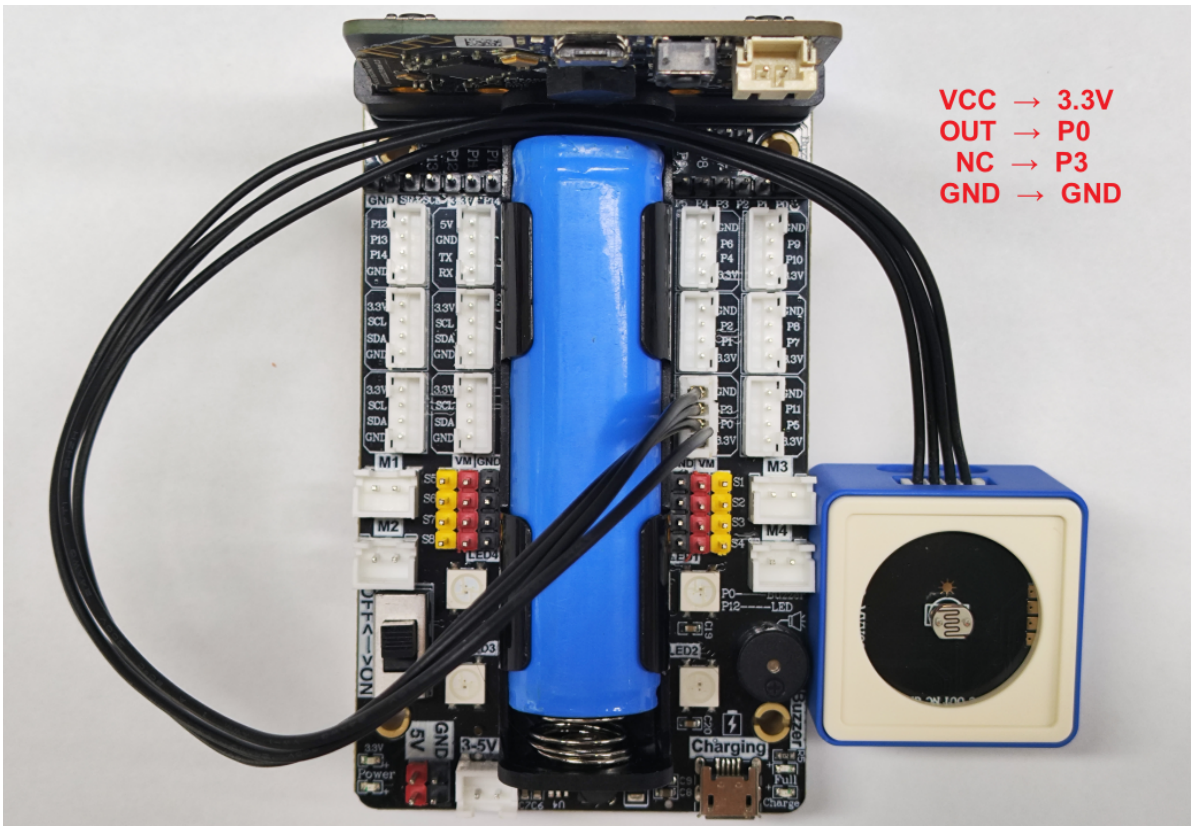
In this course, we mainly learn how to use Python programming to display the switch of lights according to the external light intensity.

2. Building blocks

For the building blocks steps, please refer to the installation drawings of [Assembly Course]--[Photosensitive emergency light] or the building blocks installation album in the materials.

3. Sensor wiring

The photosensitive module is connected to the P0P3 interface.



4. Code analysis

For the program of this course, please see the **Emergency-light.py** file.

```
from microbit import *
import neopixel
import WOM_Sensor_Kit
```

First, import the libraries needed for this lesson from microbit: WOM_Sensor_Kit library is used for sensors; neopixel is used to control RGB lights.

```
np = neopixel.NeoPixel(pin12, 4)
np.clear()
np.show()
```

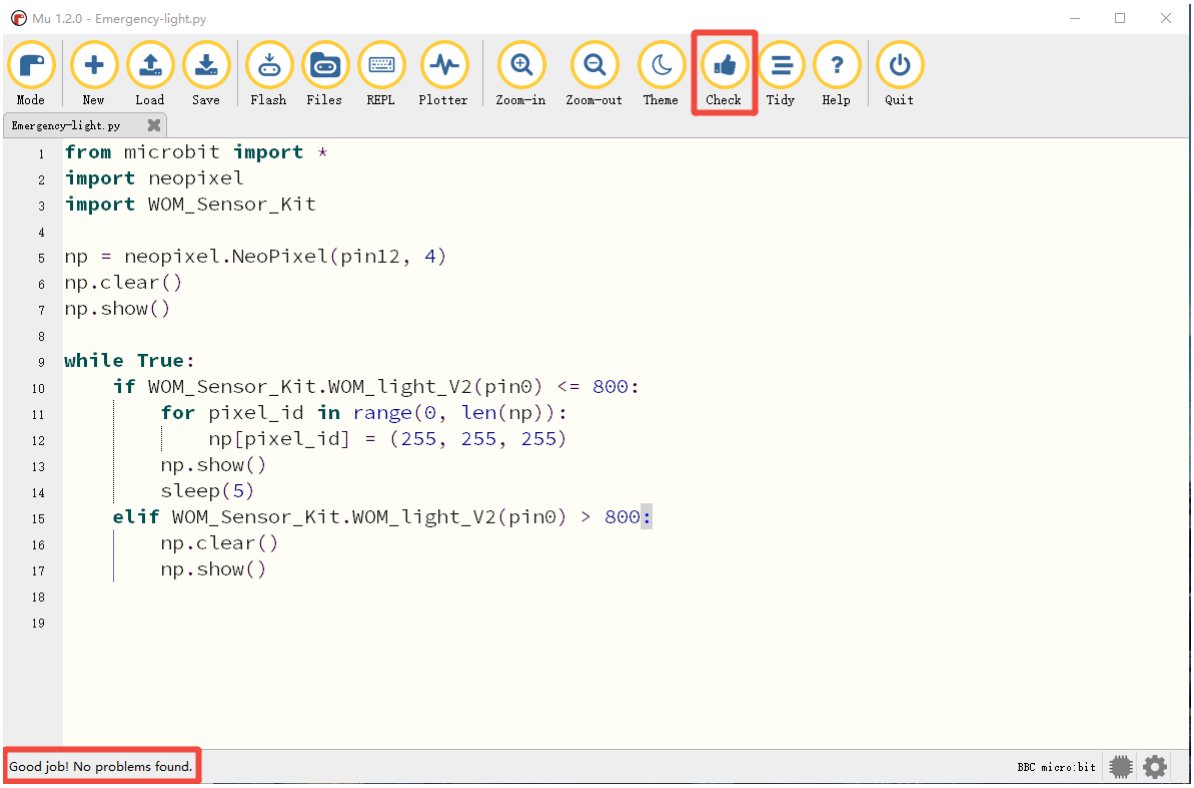
RGB light initialization settings, there are 4 RGB lights, connected to the P12 pin of the microbit motherboard (you can check the hardware interface manual); `np.clear()` is used to clear all the lamp beads (black), and `np.show()` will update the clearing operation to the actual light strip.

```
while True:
if WOM_Sensor_Kit.WOM_light_V2(pin0) <= 800:
for pixel_id in range(0, len(np)):
np[pixel_id] = (255, 255, 255)
np.show()
sleep(5)
elif WOM_Sensor_Kit.WOM_light_V2(pin0) > 800:
np.clear()
np.show()
```

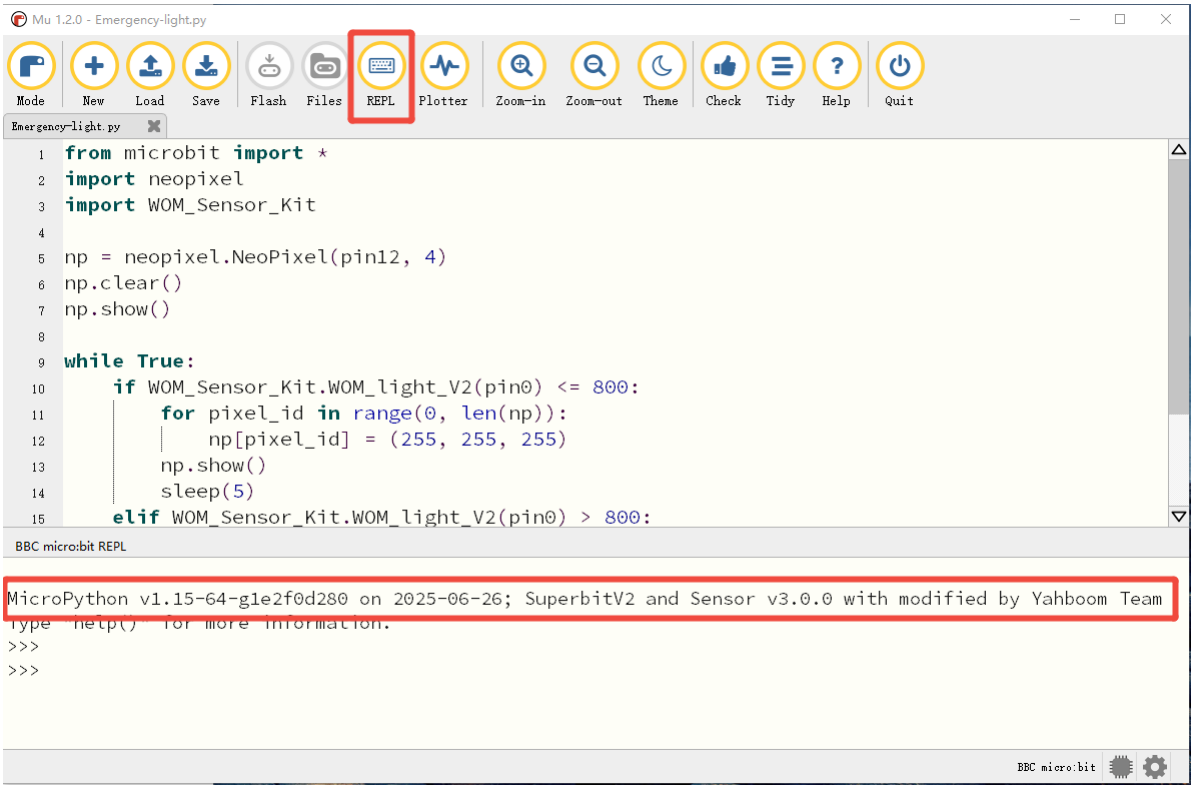
Read the value of the light sensor connected to pin0 in an infinite loop. If the light is dim (≤800), all the lamp beads will be lit white at the same time; otherwise, clear the light when the light becomes brighter, so that the light strip will go out.

5. Write and download the program

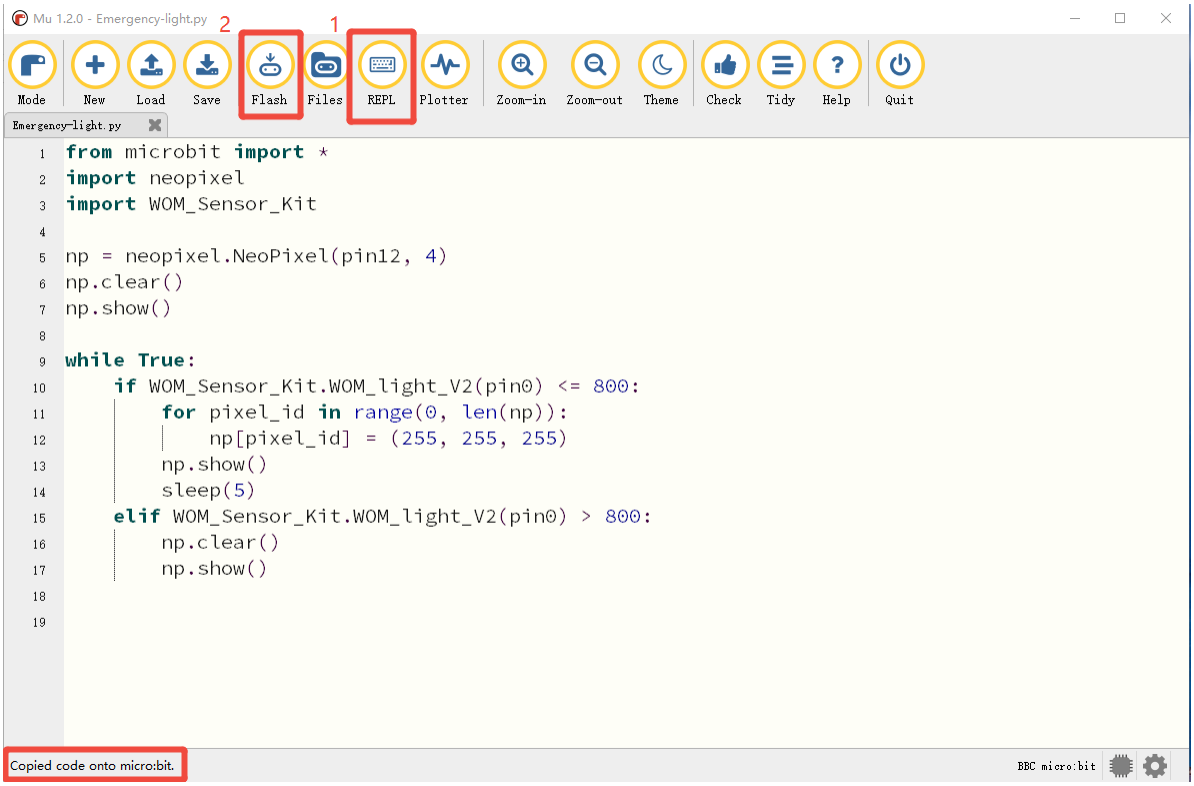
1. Open the Mu software and enter the code in the editing window. **Note! All English and symbols should be entered in English mode, use the Tab key for indentation, and the last line ends with a blank program.**
2. Click the thumb 'Check' button to check whether there are any errors in our code. If a cursor or underline appears in a line, it means a syntax error. Please check and modify it. If there is no error, the lower left corner will prompt that there is no problem with the detection.



3. Click the 'REPL' button to check whether the Superbit library has been downloaded. If not, please refer to [Preparation before class] --> [2.4 Python Programming Guide].



4. After the program is written, connect the computer and microbit mainboard with a microUSB data cable, click the 'Flash' button to download the program to the micro:bit mainboard. **(You need to click the 'REPL' button again to turn off the import library file function before you can download the program normally).**



5. If the download fails, please confirm whether the microbit is connected to the computer normally via the microUSB data cable and the Superbit Python library has been imported.

6. Experimental phenomenon

After the program runs successfully, cover the photosensitive module with your hand, and the RGB light on the expansion board will turn on, otherwise the RGB light will turn off.