Control all RGB lights

1. Learning objectives

In this course, we mainly learn how to control and light up all the RGB lights on the superbit expansion board through MakeCode graphical programming.

The 4 RGB lights are located on the expansion board as shown in the figure below.
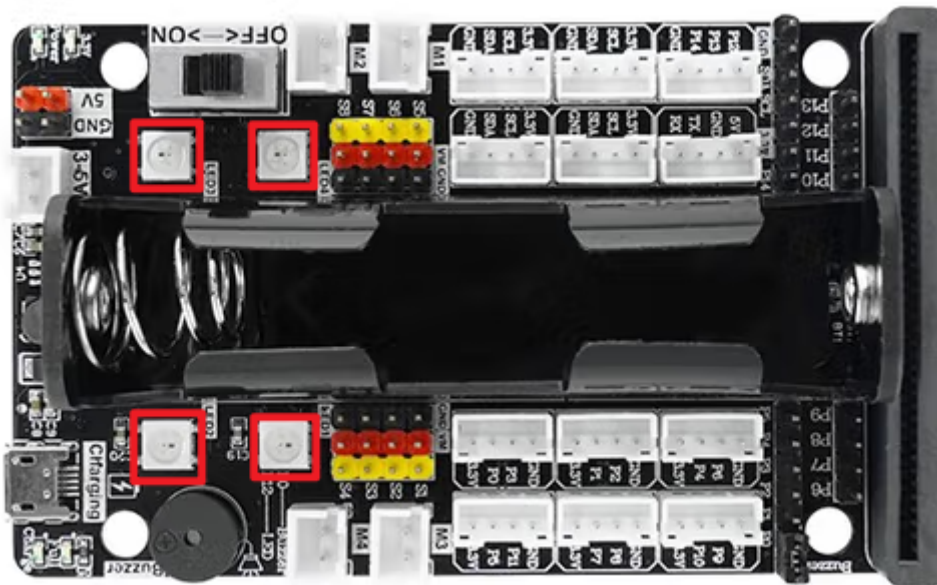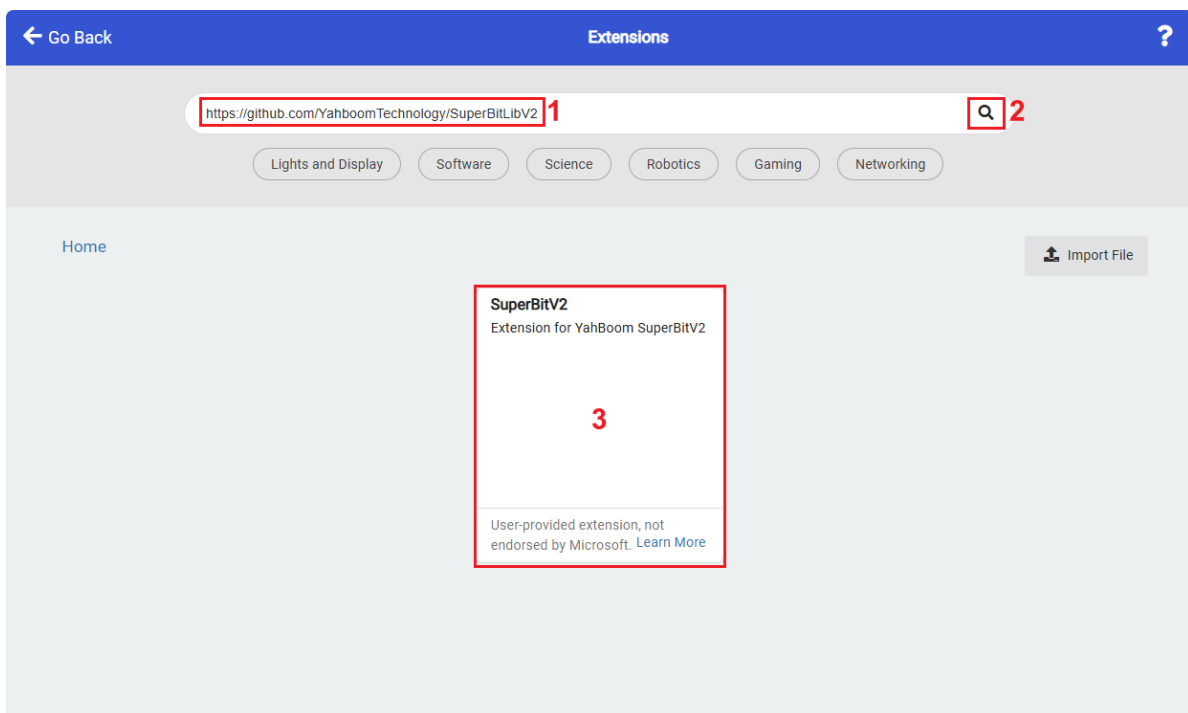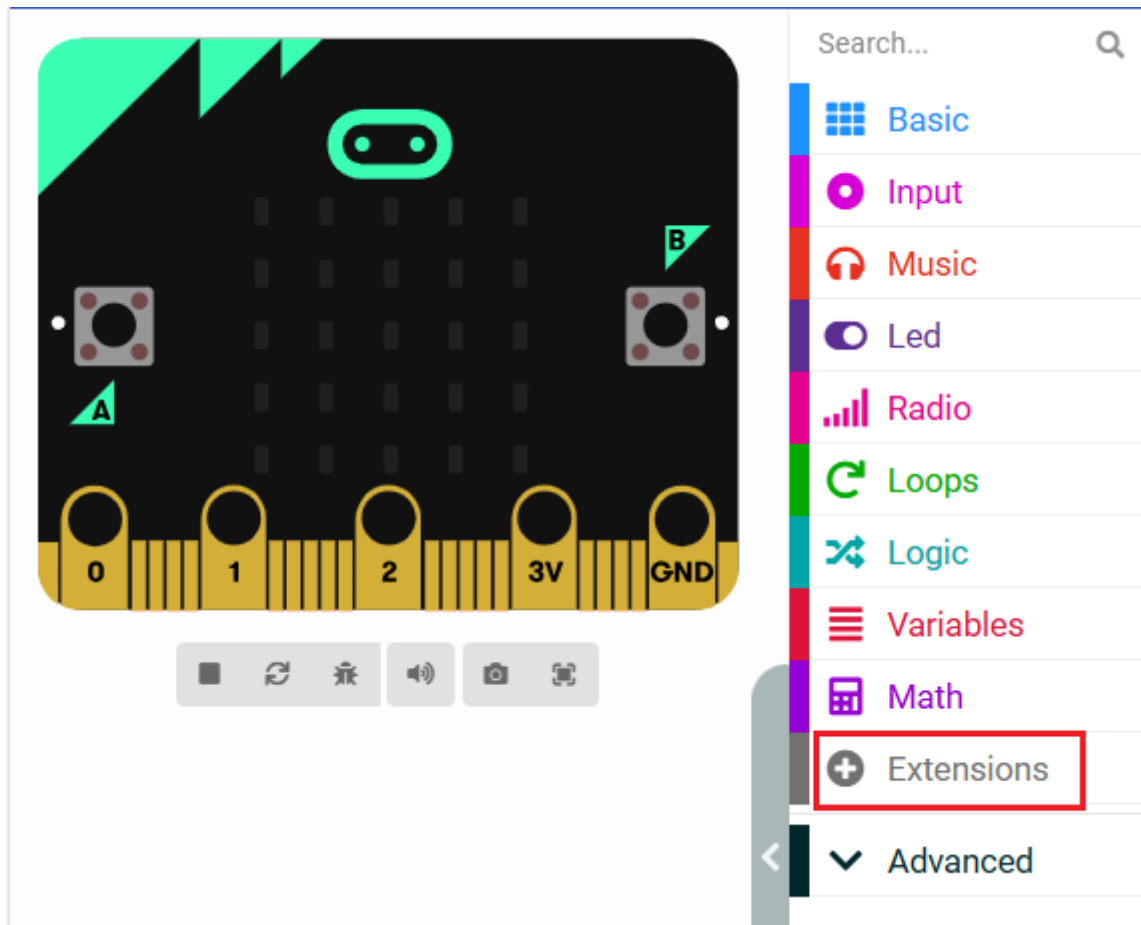

2. Programming

Method 1 Online programming:

First, connect micro:bit to the computer via a USB data cable. The computer will pop up a U disk. Click the URL in the U disk: https://makecode.microbit.org/ to enter the programming interface. Then, add the Yahboom smart software package **https://github.com/YahboomTechnology/SuperBitLibV2** to start programming.

Method 2 Offline programming:

Open the offline programming software MakeCode and enter the programming interface. Click [New] and add the Yahboom smart software package **https://github.com/YahboomTechnology/SuperBitLibV2** to start programming.

2.1 Adding expansion packs

2.2 Blocks used

The locations of the blocks required for this programming are shown in the figure below.
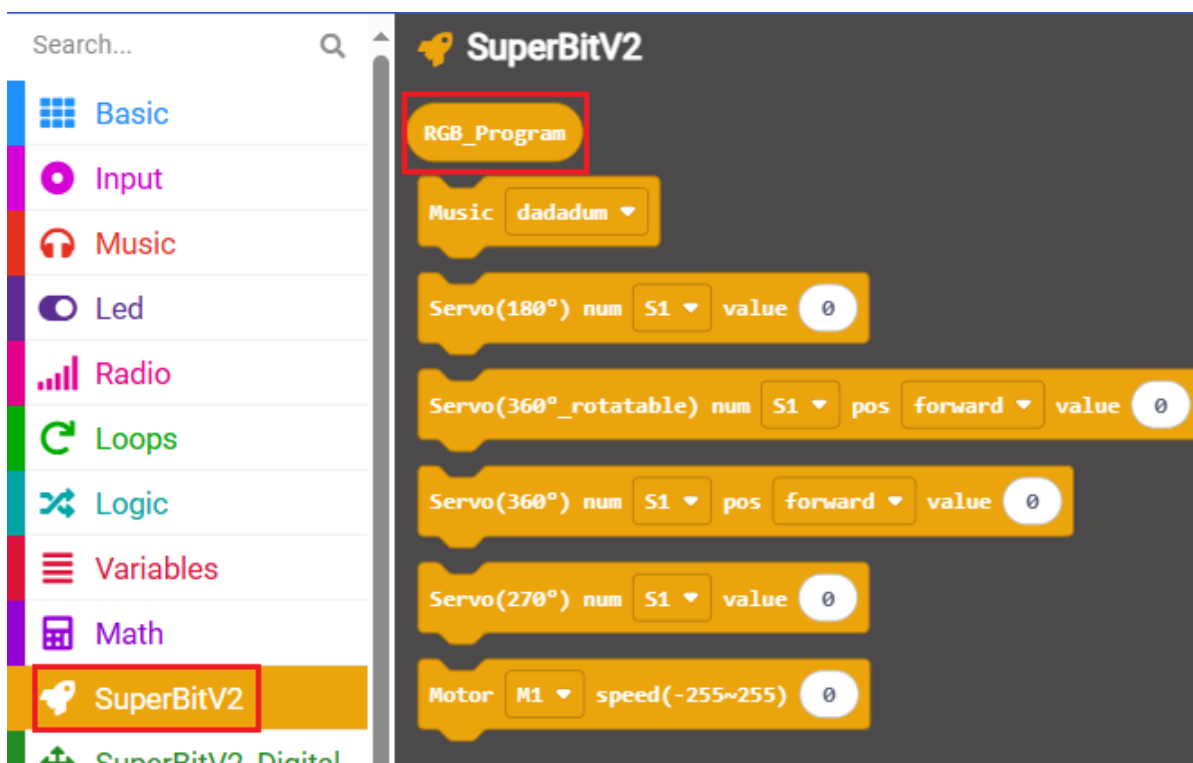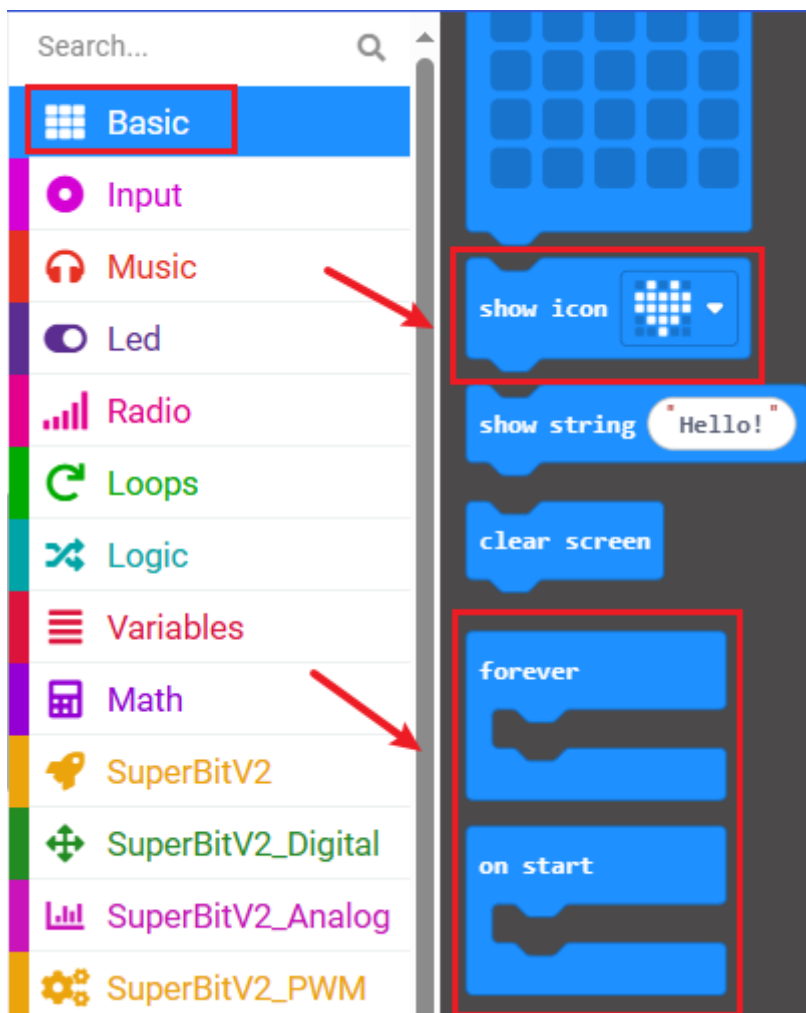
There are 4 RGB lights on the Super:bit expansion board, numbered from 0 to 3. If we need to control all RGB lights at the same time, we can use the building blocks shown in the figure below.

2.3 Combined building blocks

The summary program is shown in the figure below.

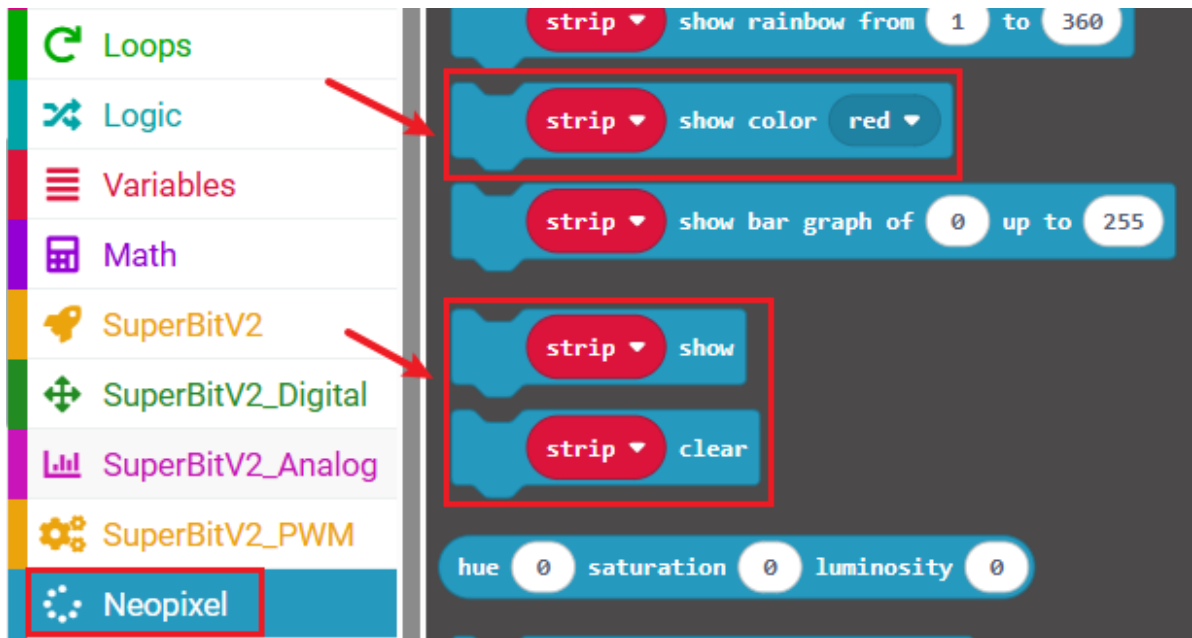**Play method 1: All 4 RGB lights are lit**

on start
show icon [icon]

forever
RGB_Program show color red
RGB_Program show
pause (ms) 1000
RGB_Program show color green
RGB_Program show
pause (ms) 1000
RGB_Program show color blue
RGB_Program show
pause (ms) 1000
RGB_Program show color white
RGB_Program show
pause (ms) 1000
RGB_Program clear
RGB_Program show
pause (ms) 1000
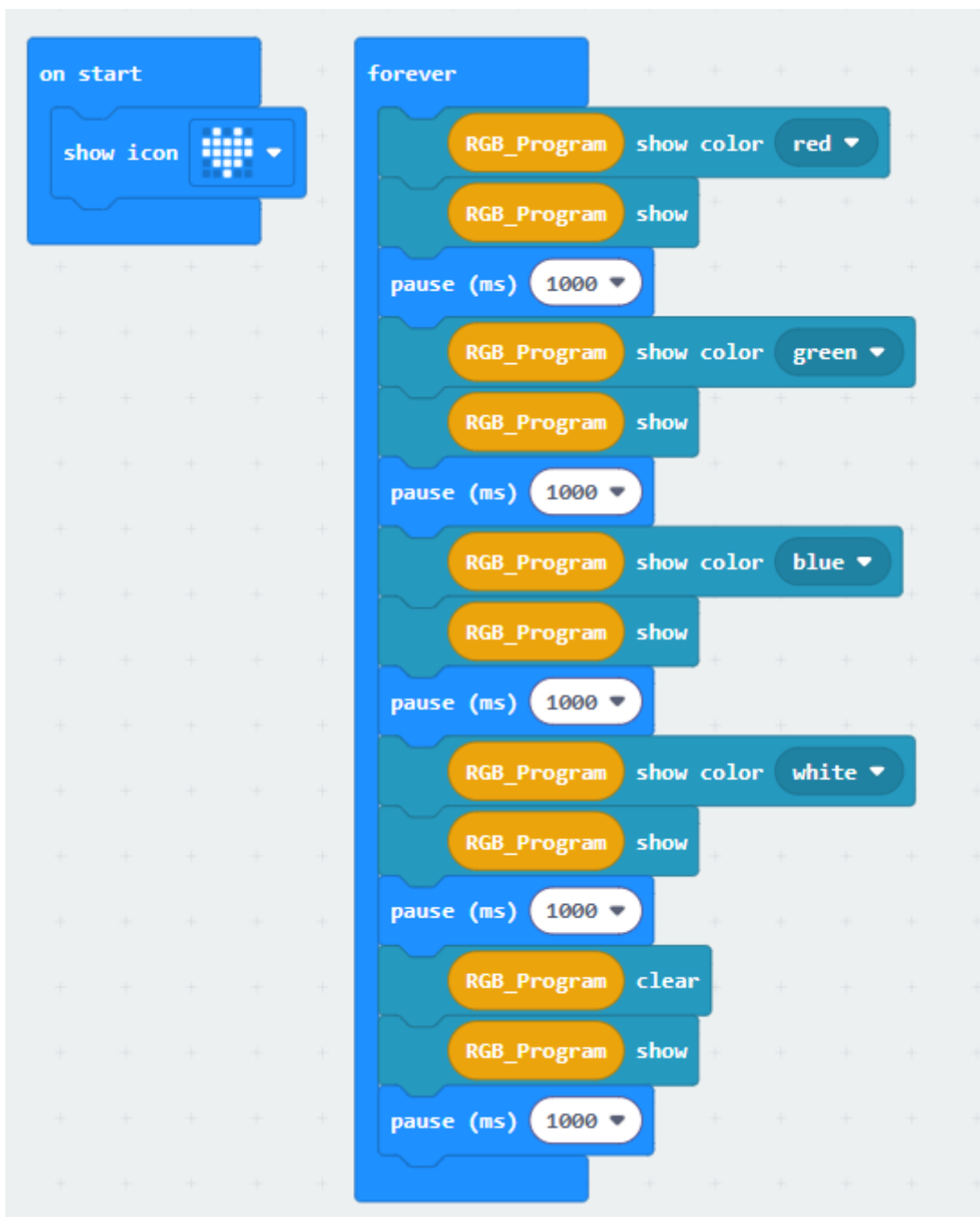
Play method 2: FlowingLight
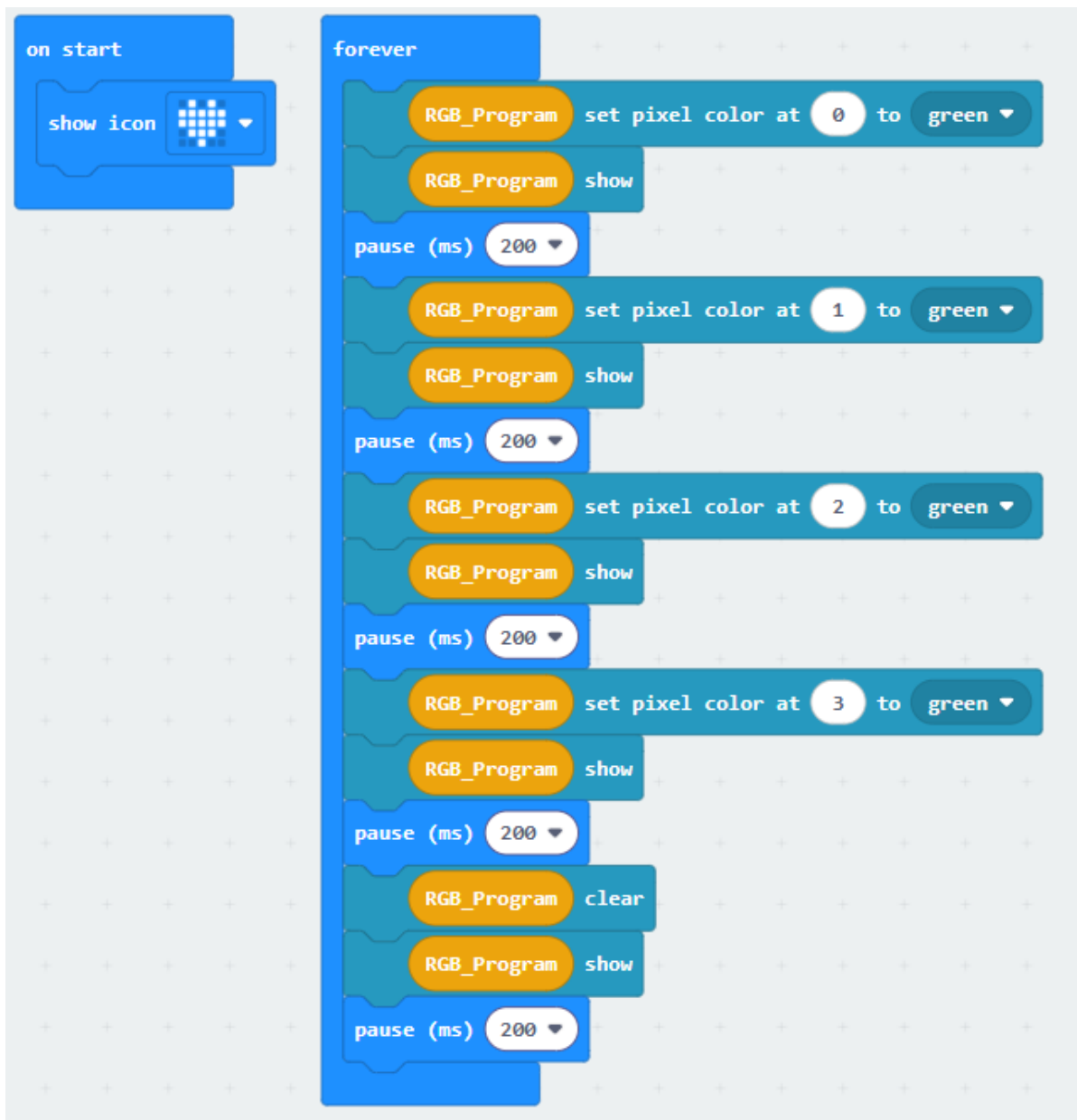
Play method 3: MarqueeLight

on start

show icon [icon]

forever

RGB_Program	set pixel color at 0 to red
RGB_Program	set pixel color at 1 to orange
RGB_Program	set pixel color at 2 to green
RGB_Program	set pixel color at 3 to blue
RGB_Program	show

pause (ms) 200

RGB_Program	set pixel color at 0 to blue
RGB_Program	set pixel color at 1 to red
RGB_Program	set pixel color at 2 to orange
RGB_Program	set pixel color at 3 to green
RGB_Program	show

pause (ms) 200

RGB_Program	set pixel color at 0 to green
RGB_Program	set pixel color at 1 to blue
RGB_Program	set pixel color at 2 to red
RGB_Program	set pixel color at 3 to orange
RGB_Program	show

pause (ms) 200

RGB_Program	set pixel color at 0 to orange
RGB_Program	set pixel color at 1 to green
RGB_Program	set pixel color at 2 to red
RGB_Program	set pixel color at 3 to blue
RGB_Program	show

pause (ms) 200

Play method 4: BreathingLight
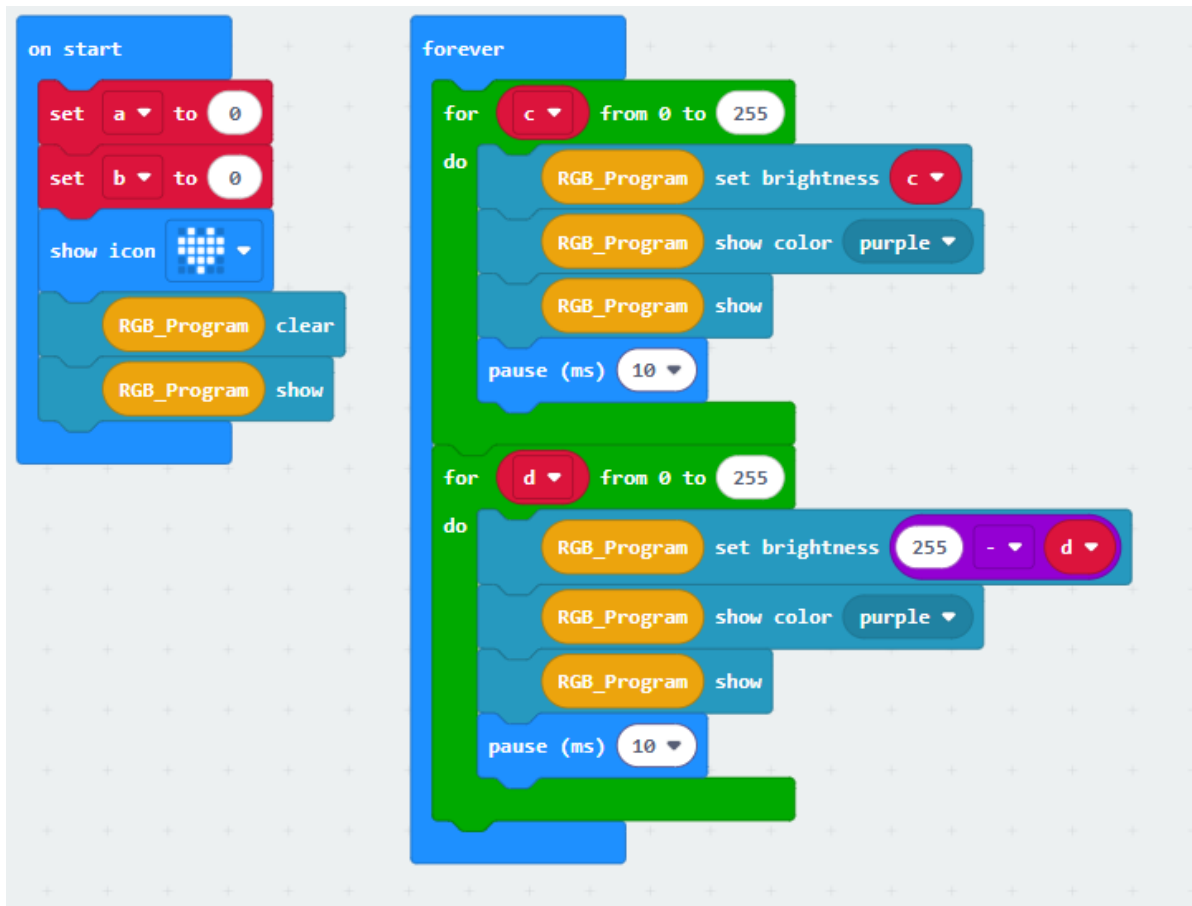
You can also directly open the **microbit-RgbAllController.hex, microbit-BreathingLight.hex, microbit-FlowingLight.hex, microbit-MarqueeLight.hex** files provided in this experiment and drag them into the browser that opens the URL, and the program diagram of this project source code will be automatically opened

3. Experimental phenomenon

After the program is downloaded successfully, the micro:bit dot matrix will display a heart pattern, as shown in the figure below.

![image.png](1588043803663636.png)

Play method 1: We can see that all RGB lights will switch colors every 1 second, red-->green-->blue-->white-->off, and keep looping in this state.

Play method 2: We can see that 4 RGB lights turn on green in turn, with a time interval of 200ms, and keep looping in this state.

Play method 3: We can see that 4 RGB lights will turn on different colors in turn, with a time interval of 200ms, and keep looping in this state.

Play method 4: We can see that all RGB lights gradually go from off to on, then from on to off, and keep looping in this state.

If you need to restart, please press the reset button on the back of the micro:bit motherboard.