Colorful Windmill

1. Learning Objectives

In this course, we mainly learn how to use MakeCode graphical programming to make the oscillating fan rotate at different speeds, while the micro:bit dot matrix displays the dynamic picture of the windmill rotating, and the RGB light switches to different colors.

2. Building Blocks

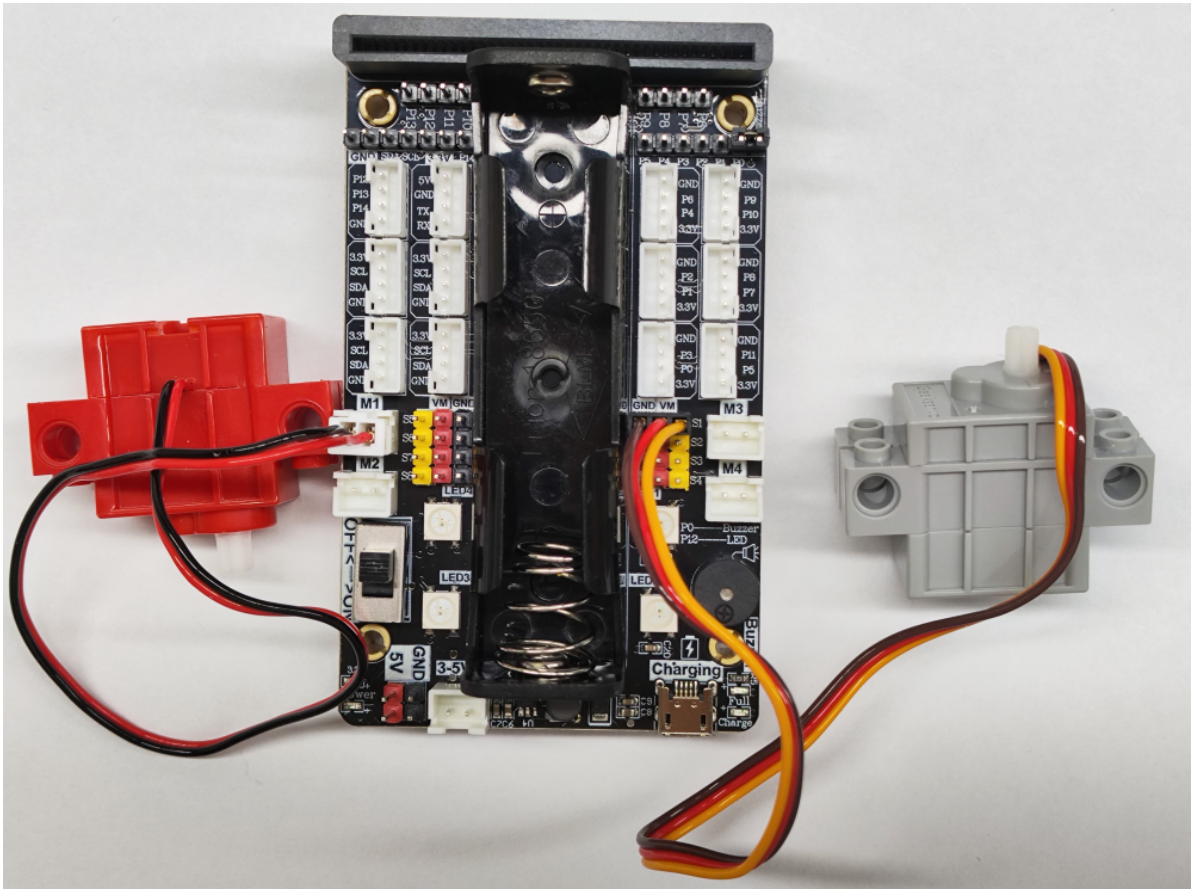
For the steps of building blocks, please refer to the installation drawings of **[Assembly Course]--[Oscillating fan]** in the materials or the building block installation album.

3. Motor Wiring

The building block motor wiring is inserted into the M1 interface of the Super:bit expansion board, and the black wiring is inserted into the side close to the battery.

The building block servo wiring is inserted into the S1 interface of the Super:bit expansion board, and the orange servo wiring is inserted into the yellow pin of S1.

As shown below:



4. Programming

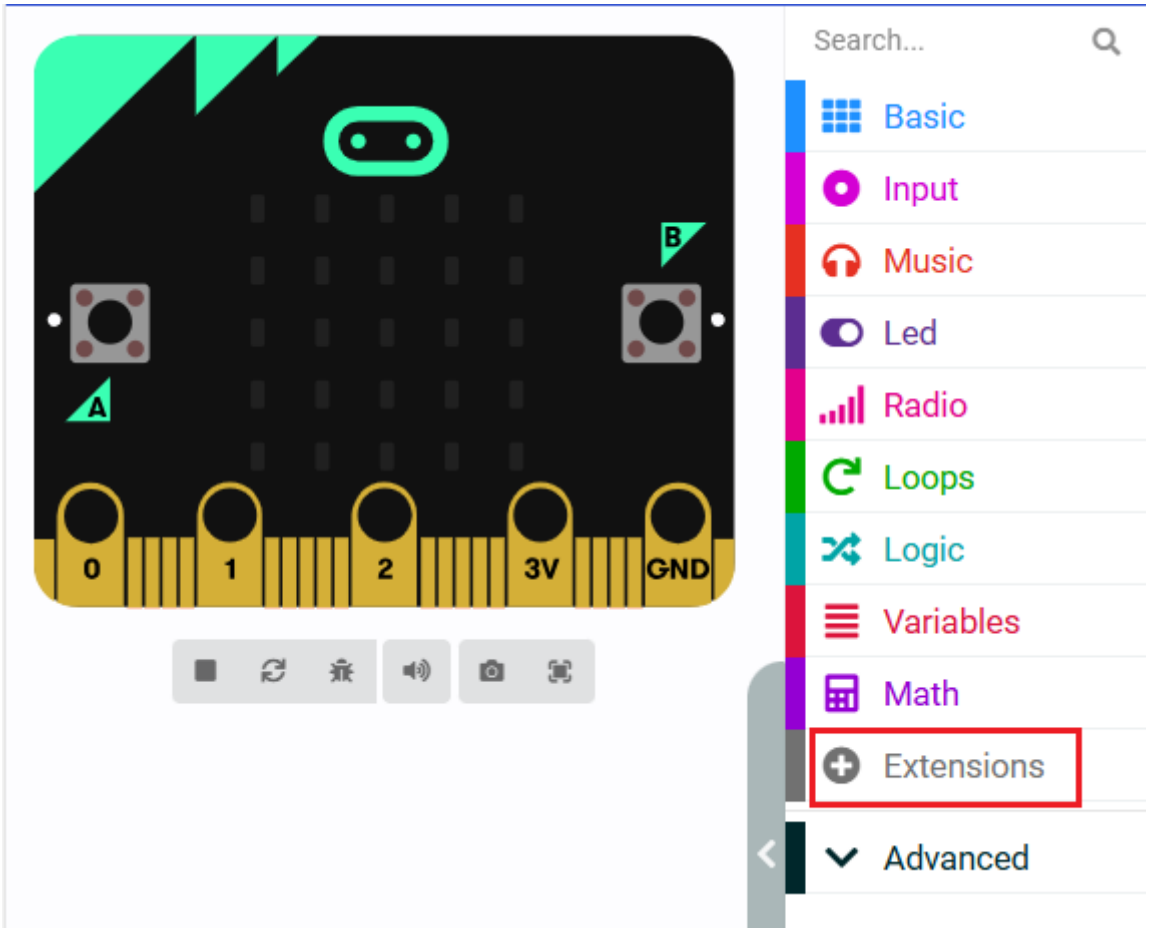
Method 1 Online Programming:

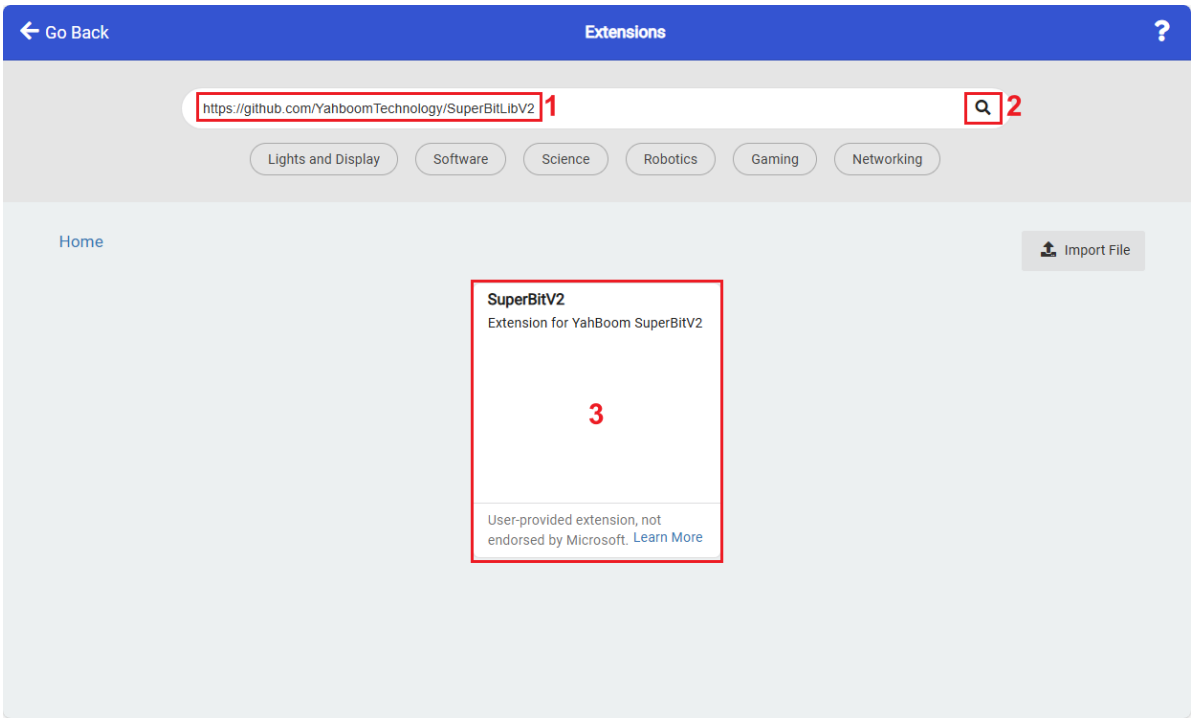
First, connect micro:bit to the computer via a USB data cable. The computer will pop up a U disk. Click the URL in the U disk: https://makecode.microbit.org/ to enter the programming interface. Then, add the Yahboom smart software package **https://github.com/YahboomTechnology/SuperBitLibV2** to start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

Method 2 Offline Programming:

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

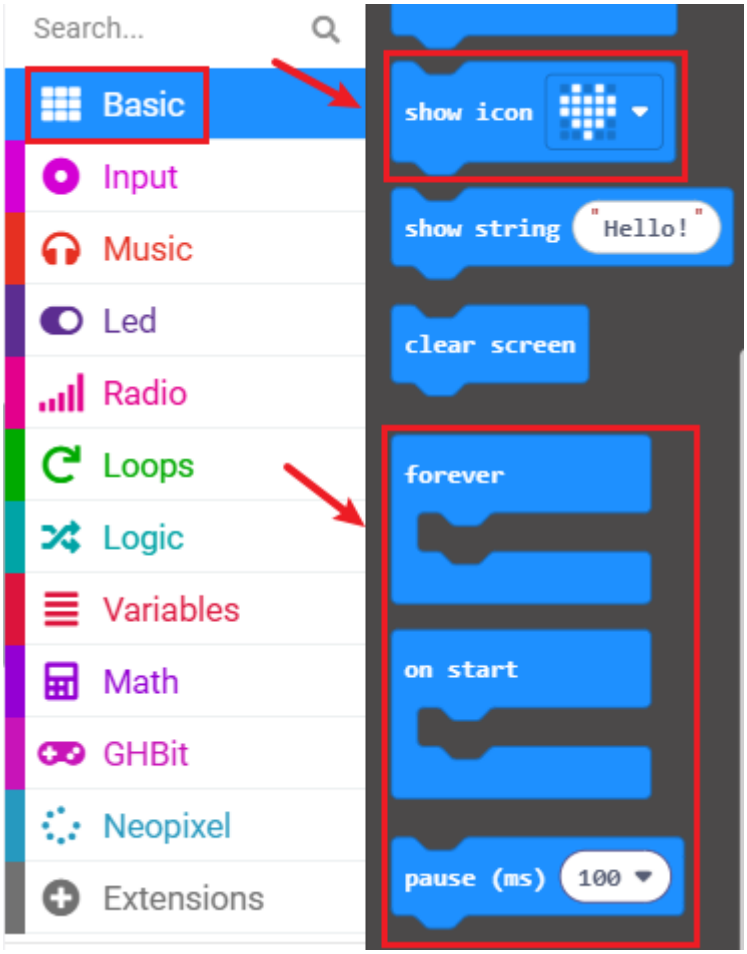
4.1 Adding extension packs

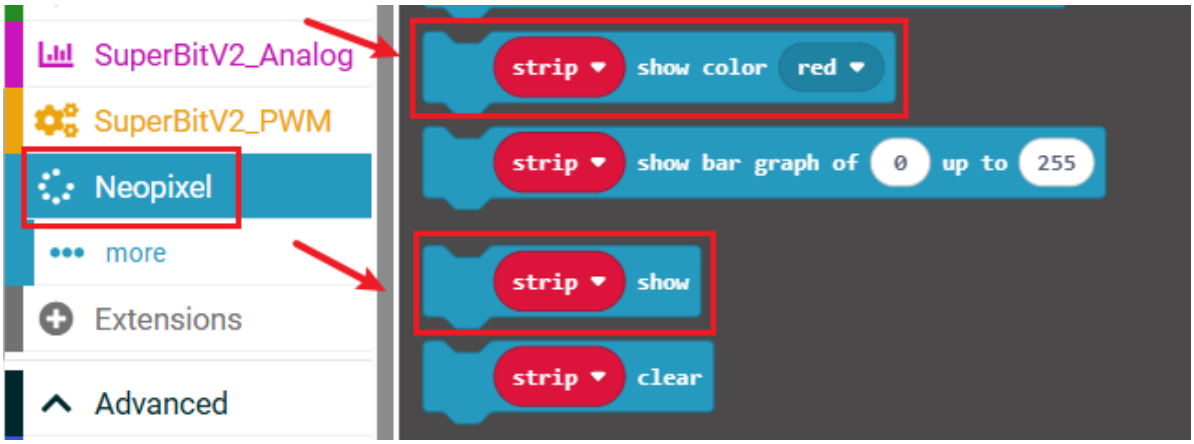


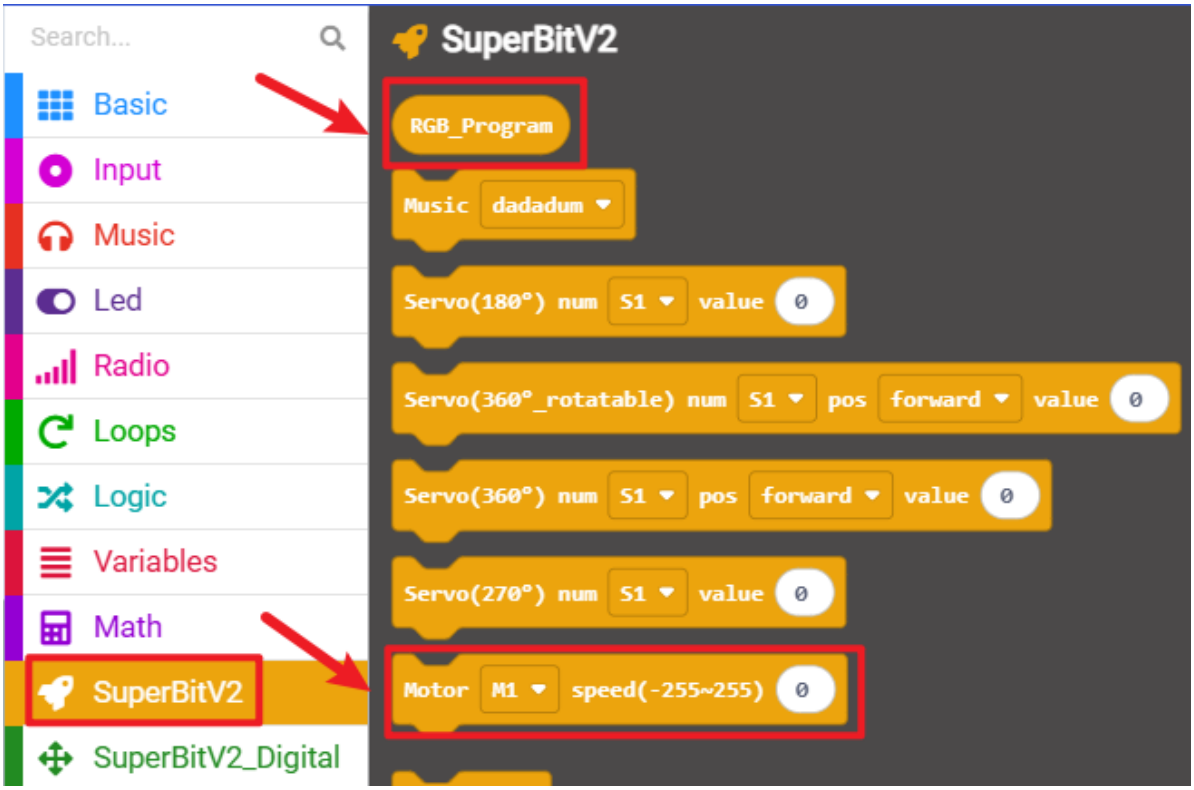


4.2 Building blocks used

The locations of the building blocks required for this programming are shown in the figure below.

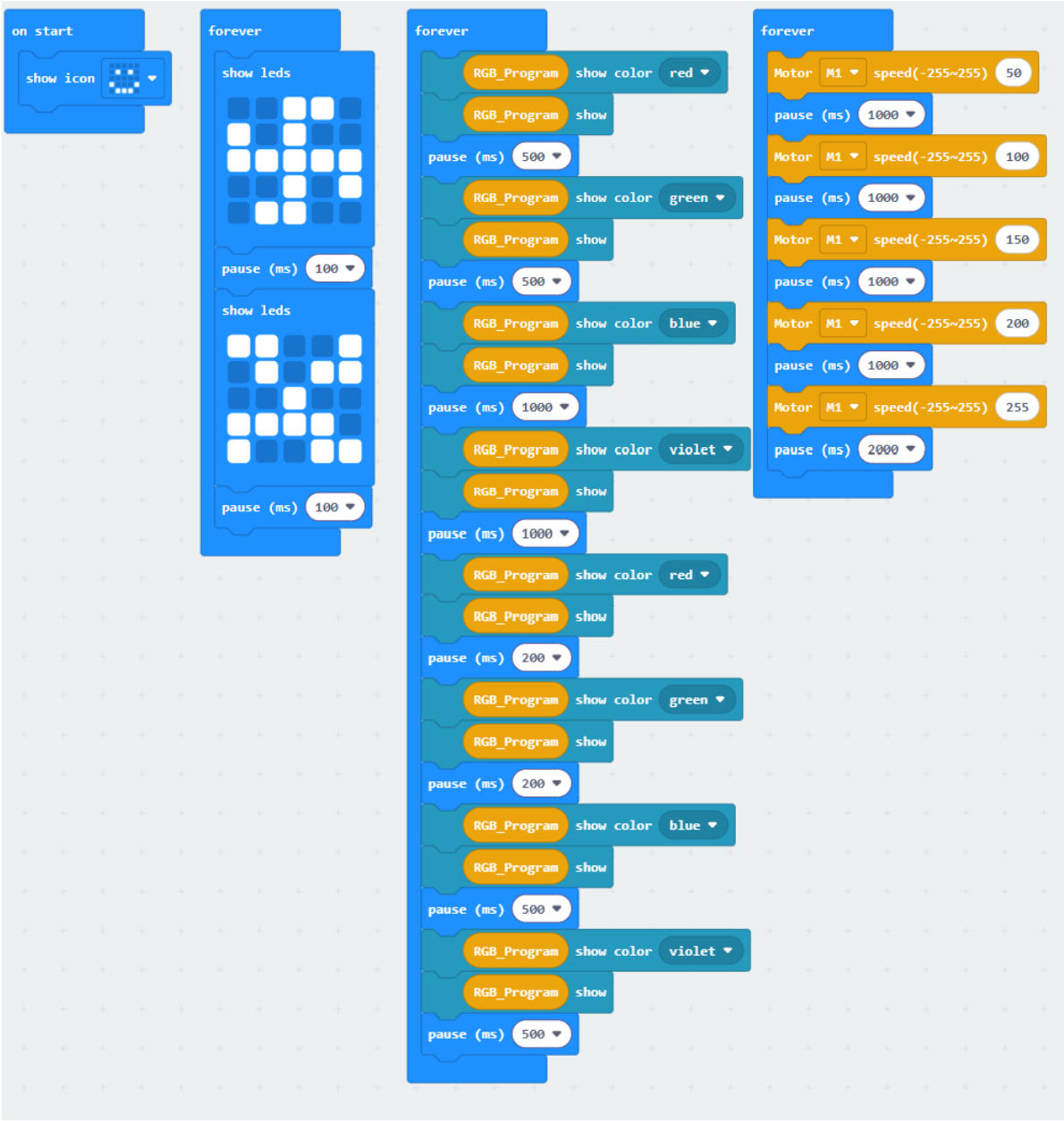

Search...
Basic
Input
Music
Led
Radio
Loops
Logic
Variables
Math
GHBit
Neopixel
Extensions
show icon
show string "Hello!"
clear screen
forever
on start
pause (ms) 100


SuperBitV2_Analog
SuperBitV2_PWM
Neopixel
more
Extensions
Advanced
strip show color red
strip show bar graph of 0 up to 255
strip show
strip clear



4.3 Combining blocks

The summary program is shown in the figure below.



You can also directly open the **microbit-Colorful-windmill.hex** file provided in this experiment and drag it into the browser that opens the URL, and the program diagram of this project source code will be automatically opened

5. Experimental phenomenon

After the program is successfully downloaded, turn on the power switch, and a smiley face pattern will be displayed on the micro:bit dot matrix. Then the oscillating fan starts to rotate at different speeds, 50 speed for 1 second -> 100 speed for 1 second -> 150 speed for 1 second -> 200 speed for 1 second -> 255 speed for 2 seconds, and keep looping in this state. At the same time, we can see that the dynamic windmill rotation pattern will be displayed on the micro:bit dot matrix, and RGB will also switch different colors.

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