Music door

1. Learning Objectives

In this course, we mainly learn how to use MakeCode graphical programming to realize that the automatic door gradually opens and closes, the buzzer plays the song "Ode to Joy", and the RGB light switches to different colors.
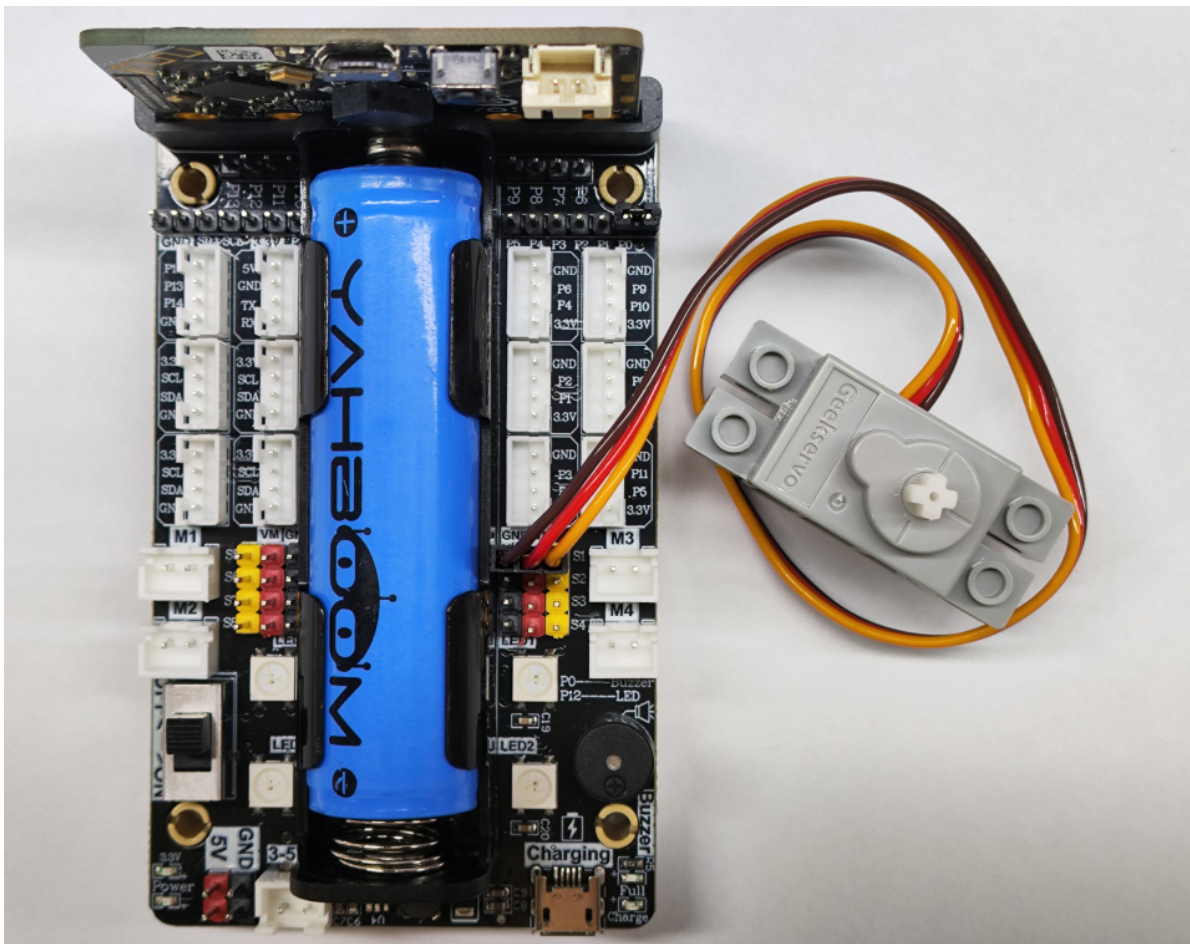
2. Building Blocks

For the steps of building blocks, please refer to the installation drawings of **[Assembly course]-[Auto-door]** in the materials or the building block installation album.

3. Motor Wiring

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

As shown in the figure below:

! Notes:

When taking a course related to the building block servo for the first time, we need to remove the blue building block installed on the servo and upload the program of this course to the micro:bit; then turn on the power switch of the Super:bit expansion board and wait for the building block servo to turn to the initial position; then, we can turn off the power, adjust the security automatic door to the open state, as shown in the figure below, and then install the blue building block. (If you have used the security automatic door and servo related programs before, you can skip this step)
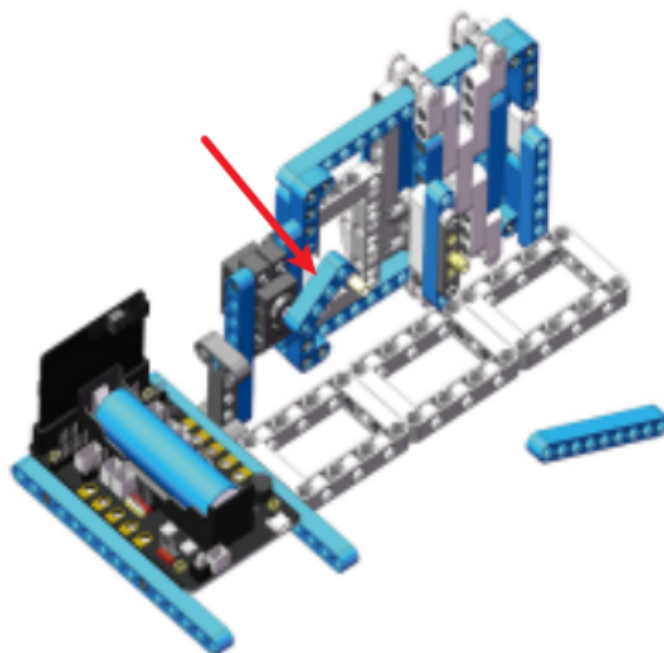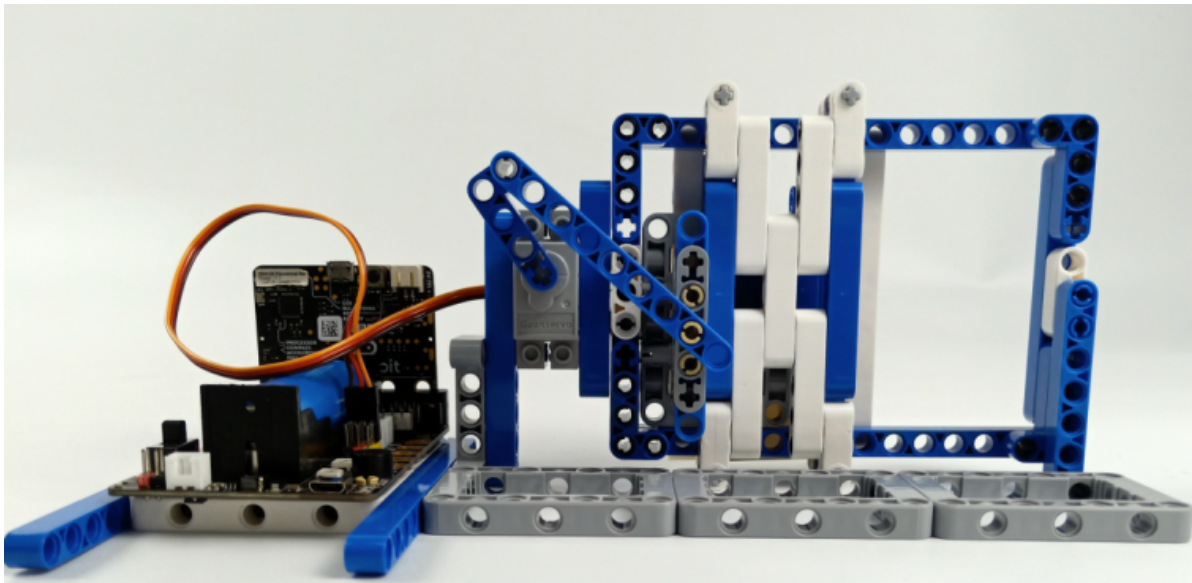
4. Programming

**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 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 Add expansion package
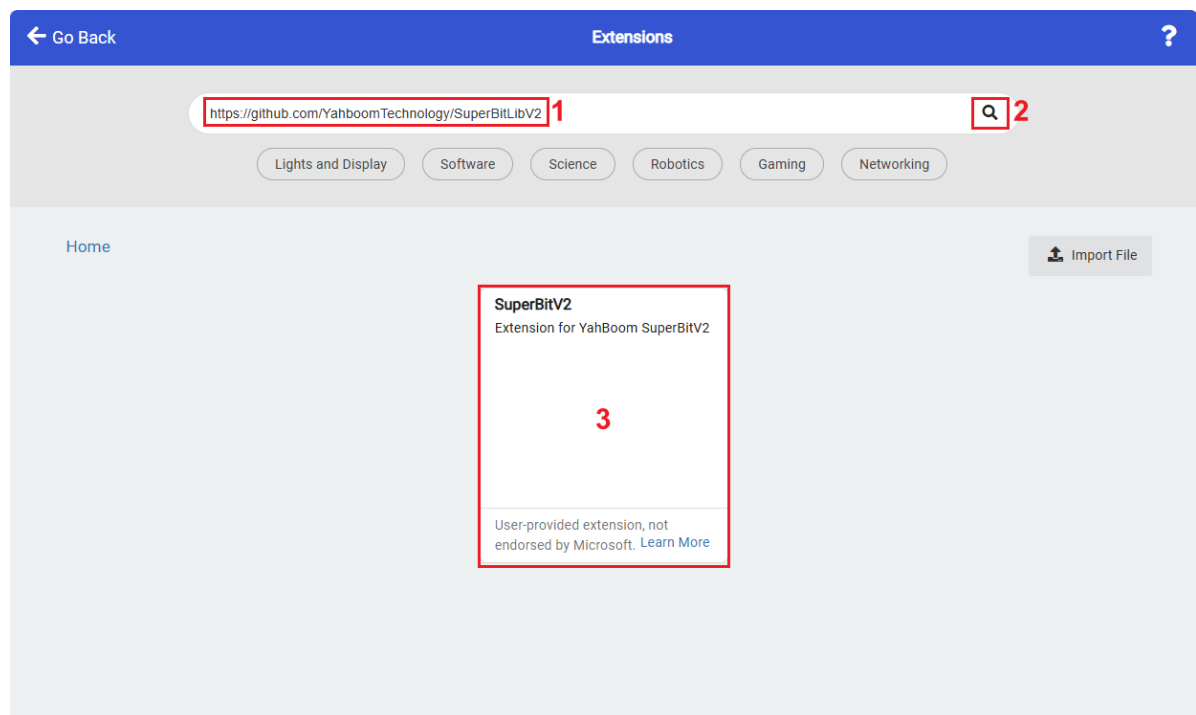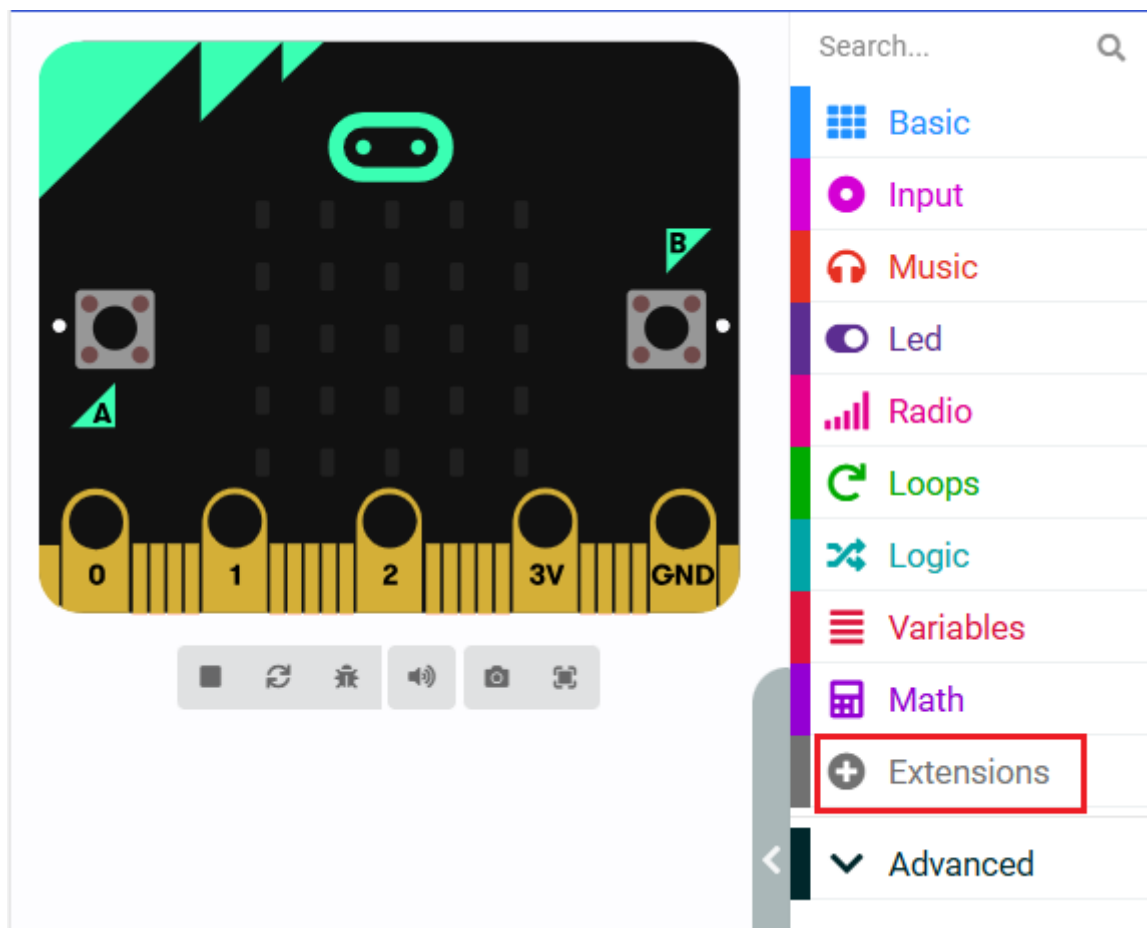
4.2 Blocks used

The location of the blocks required for this programming is shown in the figure below.

Search...

Basic

Input

Music

Led

Radio

Loops

Logic

Variables

Math

SuperBitV2

SuperBitV2_Digital

SuperBitV2_Analog

SuperBitV2_PWM

Neopixel

Extensions

Advanced

show icon

show string "Hello!"

clear screen

forever
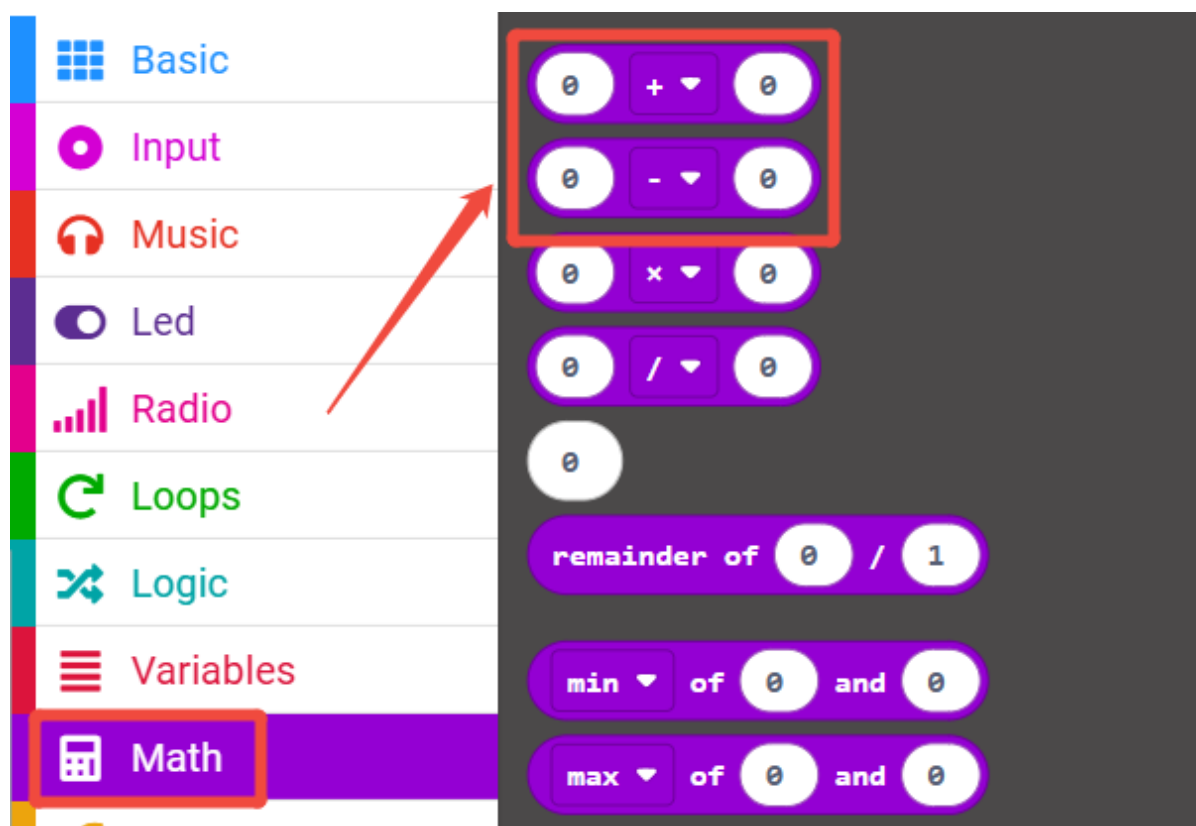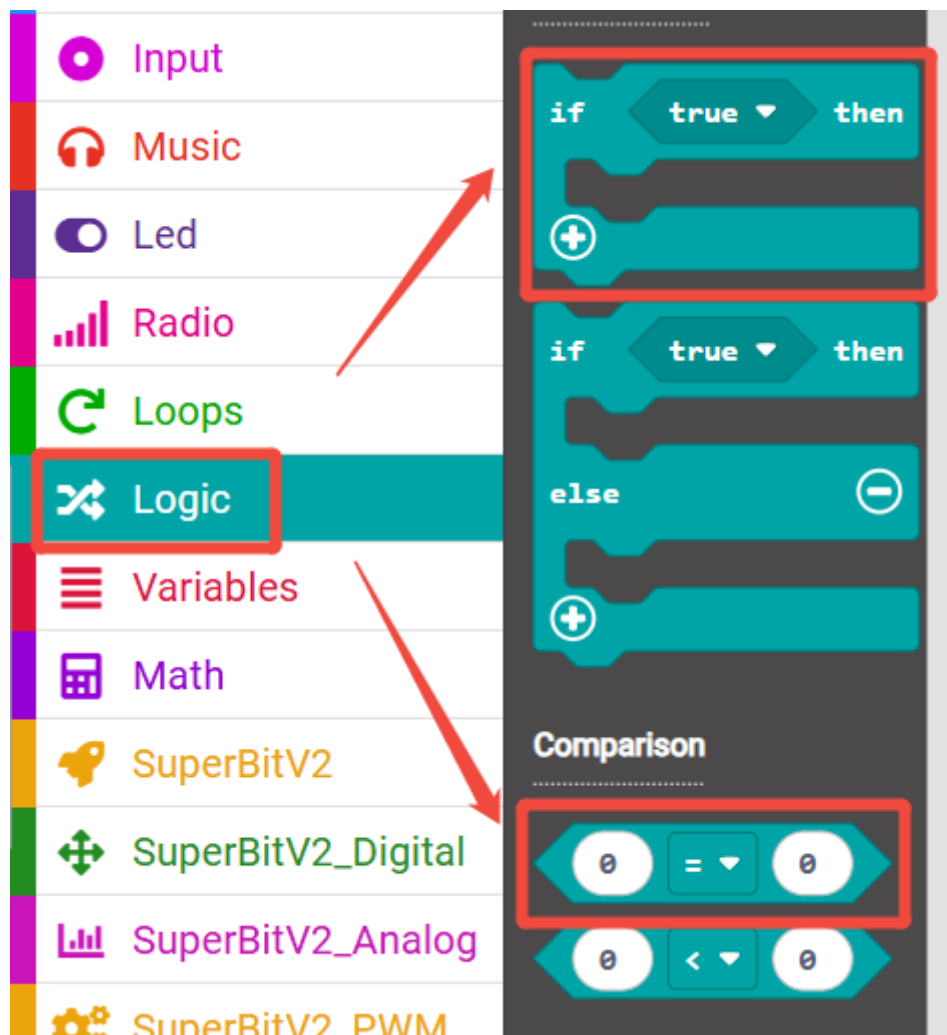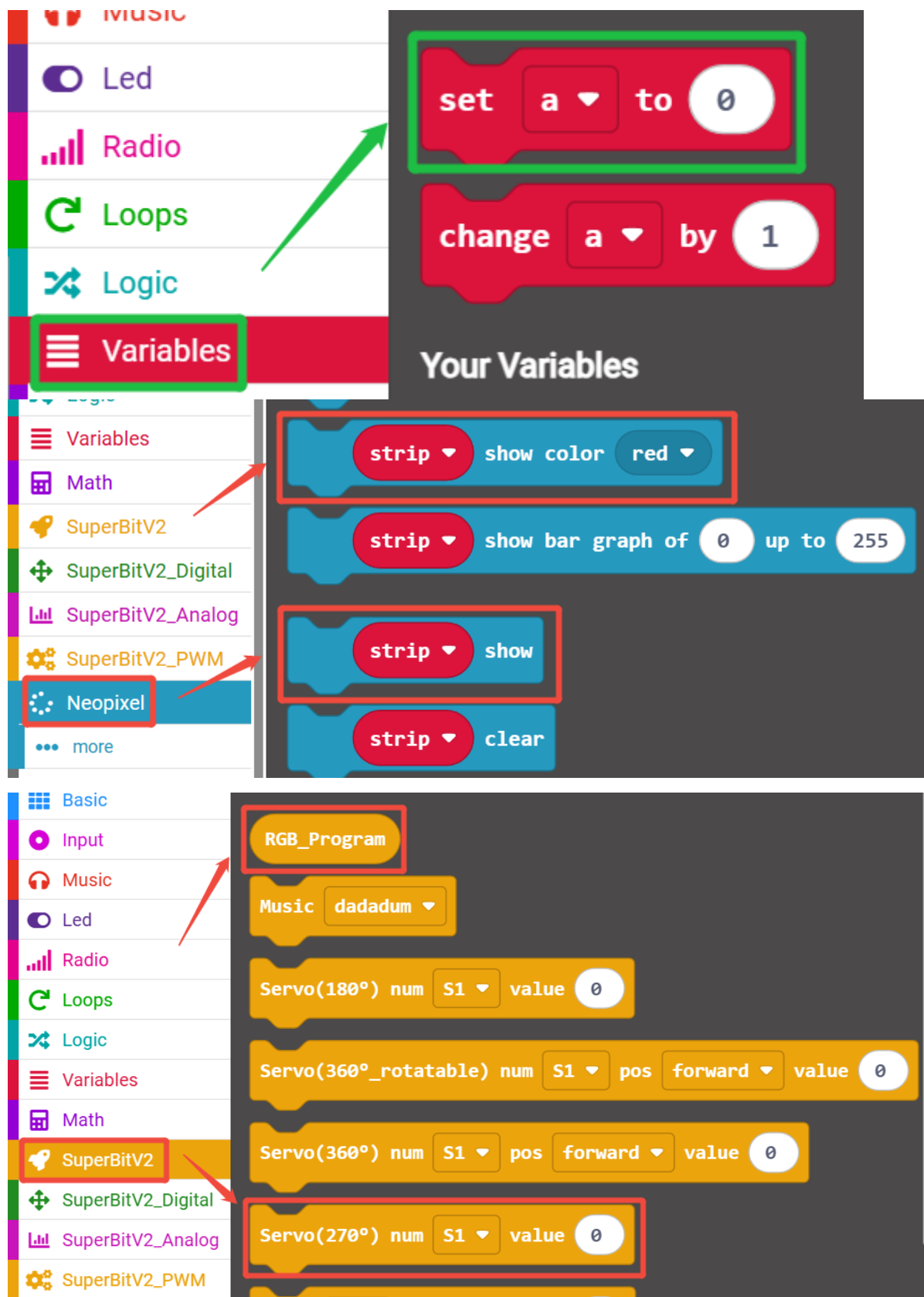
on start

pause (ms) 100

show arrow North

Music

Led

Radio

Melody Advanced

play melody dadadum in background

Input	if (true ▼) then
Music	
Led	⊕
Radio	
Loops	if (true ▼) then
Logic	
Variables	else ⊖
Math	
SuperBitV2	⊕
SuperBitV2_Digital	
SuperBitV2_Analog	**Comparison**
SuperBitV2_PWM	(0) = ▼ (0)
	(0) < ▼ (0)

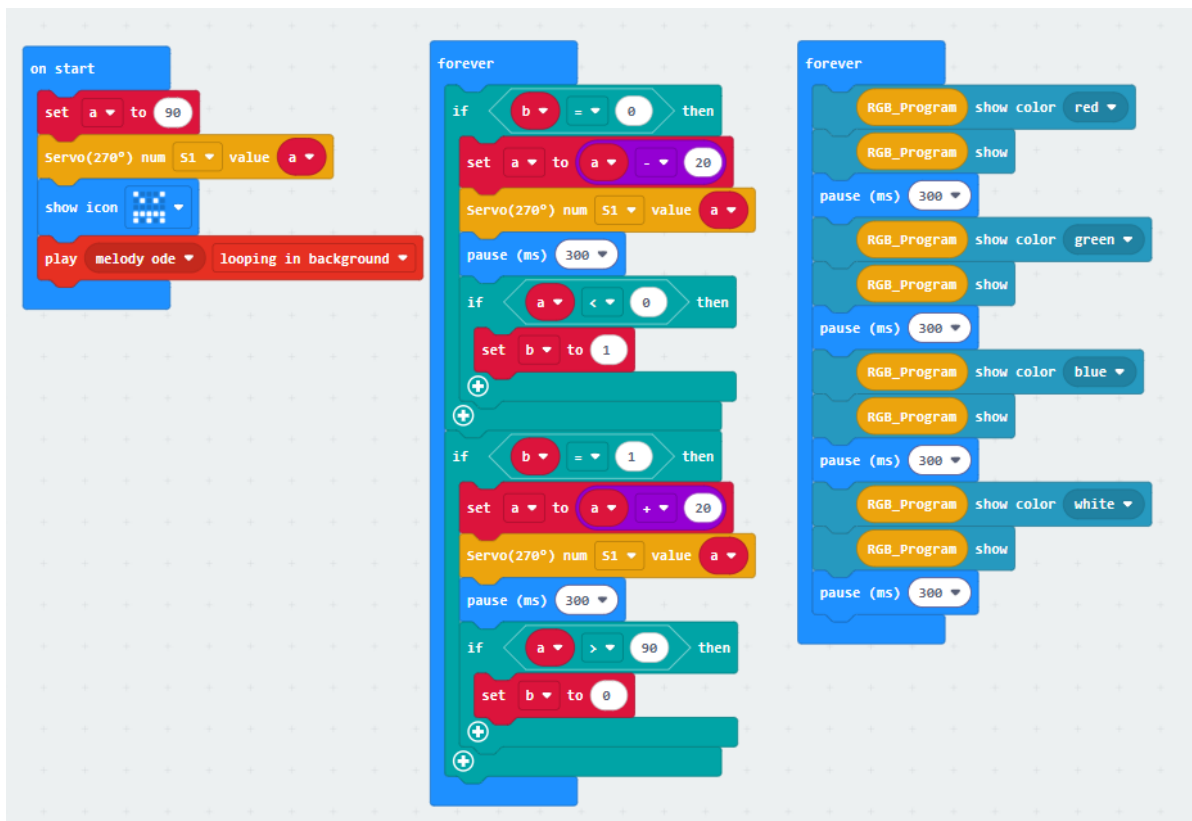|	
Basic	(0) + ▼ (0)
Input	(0) - ▼ (0)
Music	(0) × ▼ (0)
Led	(0) / ▼ (0)
Radio	(0)
Loops	remainder of (0) / (1)
Logic	min ▼ of (0) and (0)
Variables	max ▼ of (0) and (0)
Math	

4.3 Combining blocks

The summary program is shown in the figure below.

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

5. Experimental phenomenon

After the program is successfully downloaded, the micro:bit dot matrix will display a heart. Turn on the power switch, the automatic door gradually opens and closes, the buzzer plays the song "Ode to Joy", and the RGB light switches to different colors, and keeps looping in this state.

Six patterns are written in this program. You can modify the program to add more patterns.