Singing

1.Learning goal

In this course, we mainly learn to combine LED:bit programming blocks, micro:bit programming blocks for playing tones, and programming blocks for controlling RGB lights.

Use the buzzer on the Basic:bit to play music, while the LED:bit display shows the dynamic expression with a big mouth, just like singing.

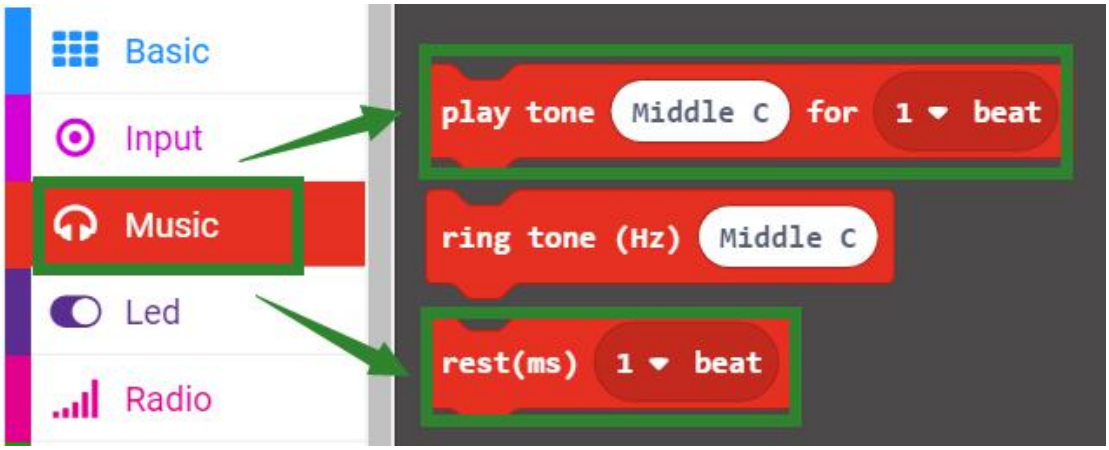
2.Programming method

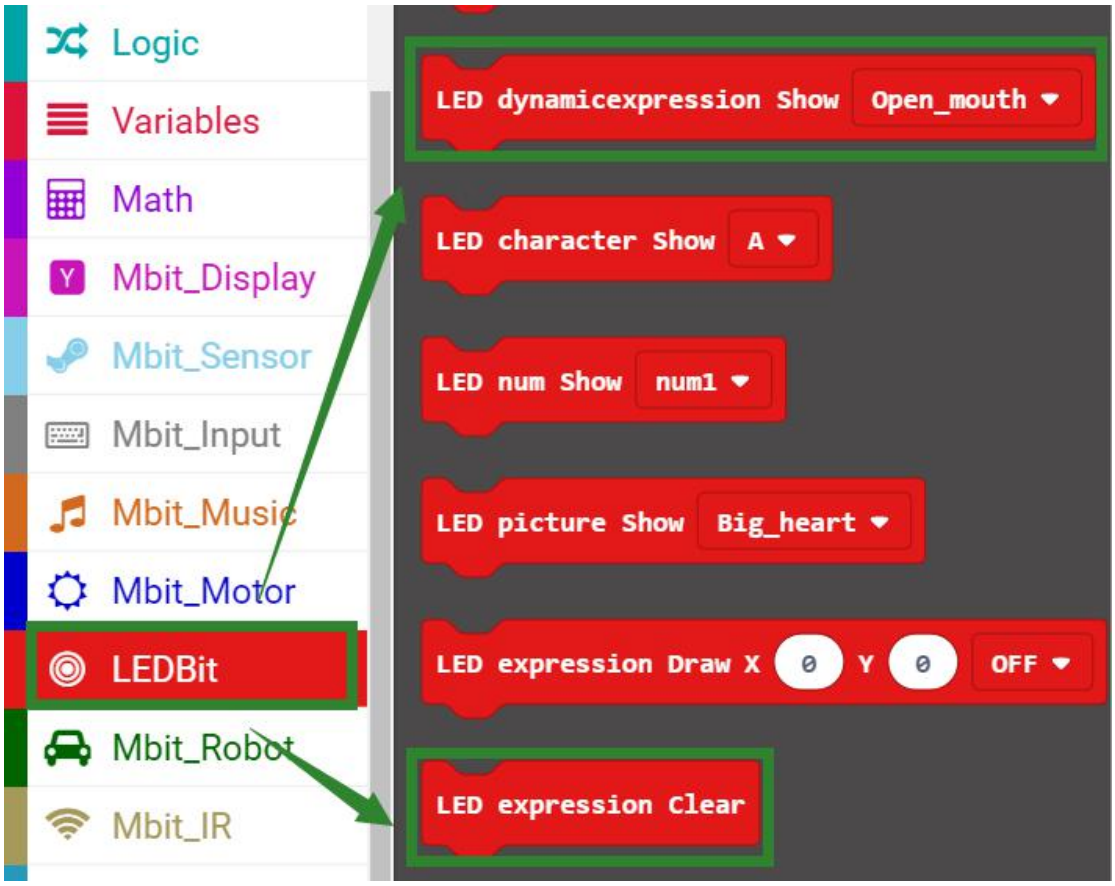
Mode 1 online programming: First, we need to connect the micro:bit to the computer by USB cable. The computer will pop up a USB flash drive and click on the URL in the USB flash drive: **http://microbit.org/** to enter the programming interface. Add the Yahboom package **https://github.com/lzty634158/LED-Bit** to program.

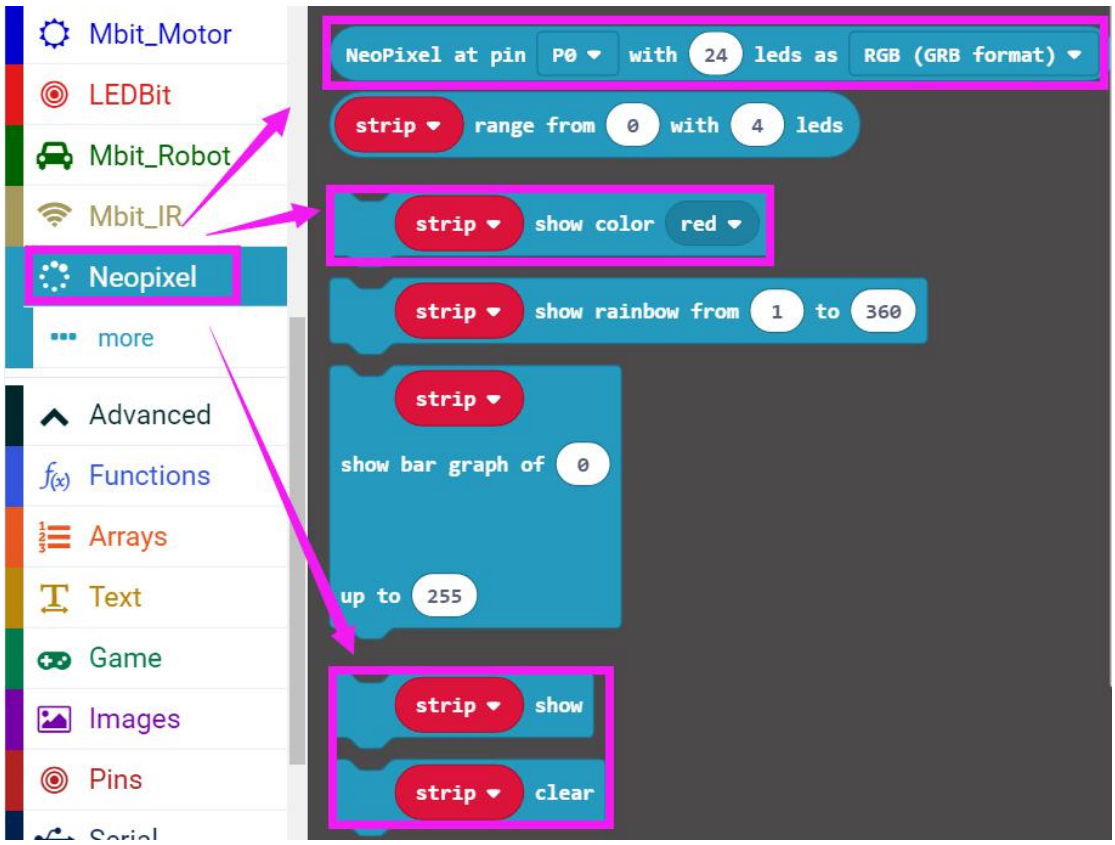
Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click【New Project】, add Yahboom package: **https://github.com/lzty634158/LED-Bit**, you can program.

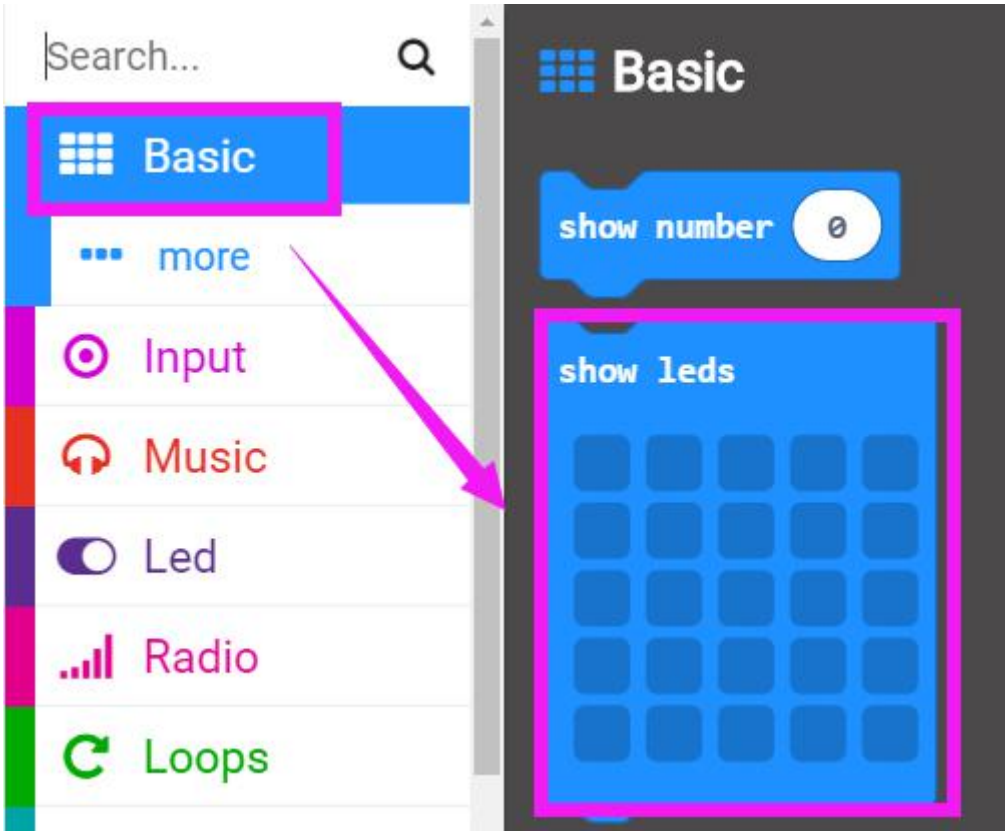
3.Looking for blocks

The following is the location of the building blocks required for this programming.



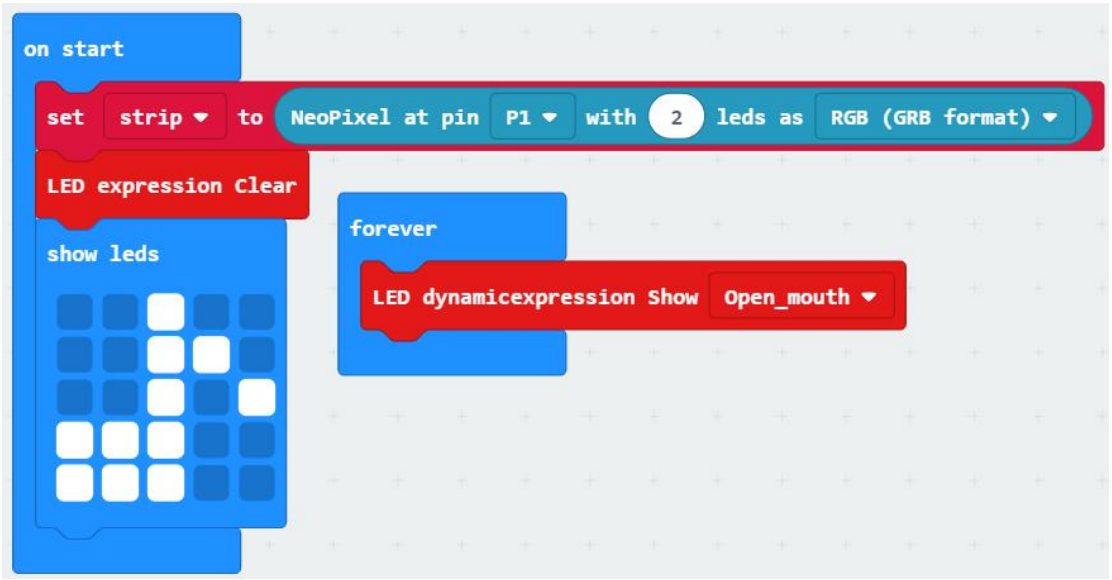

Logic
Variables
Math
Mbit_Display
Mbit_Sensor
Mbit_Input
Mbit_Music
Mbit_Motor
LEDBit
Mbit_Robot
Mbit_IR
LED dynamicexpression Show Open_mouth
LED character Show A
LED num Show num1
LED picture Show Big_heart
LED expression Draw X 0 Y 0 OFF
LED expression Clear

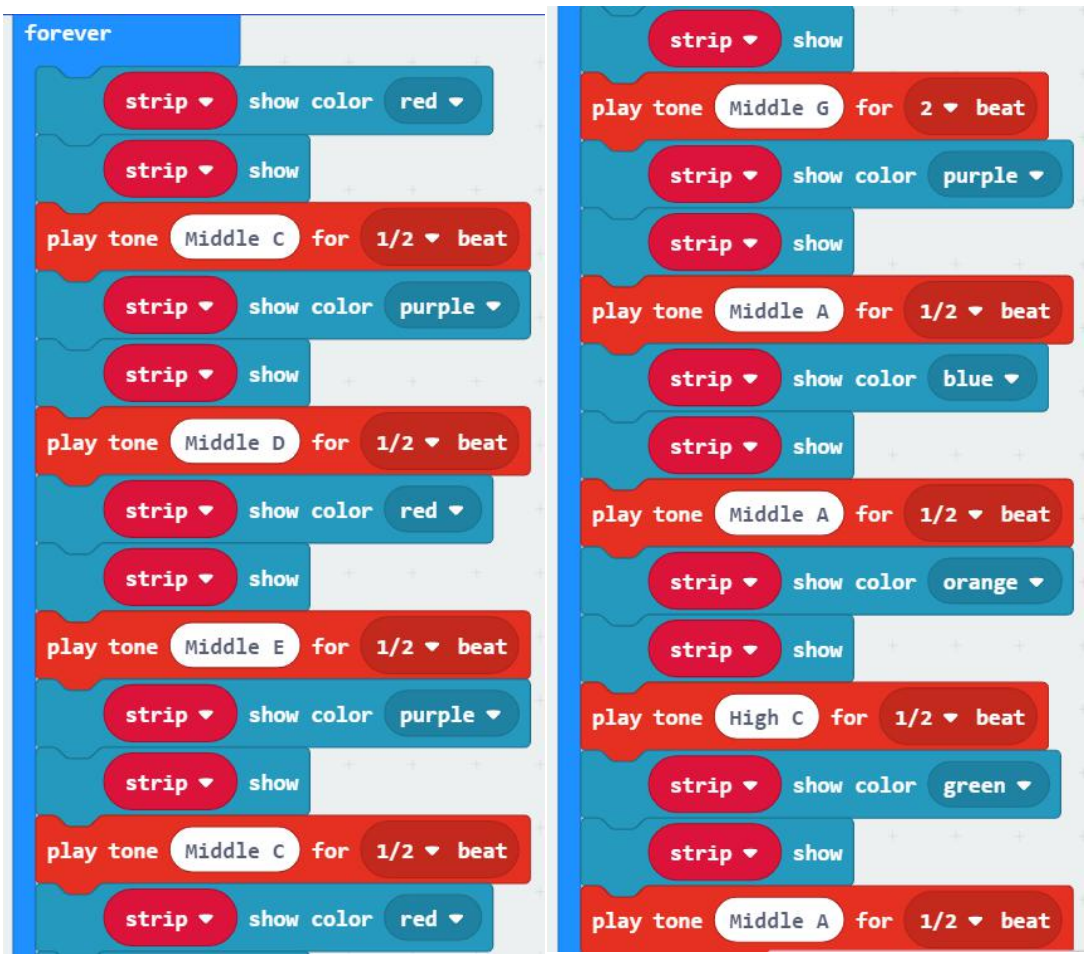

Mbit_Motor
LEDBit
Mbit_Robot
Mbit_IR
Neopixel
more
Advanced
Functions
Arrays
Text
Game
Images
Pins
NeoPixel at pin P0 with 24 leds as RGB (GRB format)
strip range from 0 with 4 leds
strip show color red
strip show rainbow from 1 to 360
strip
show bar graph of 0
up to 255
strip show
strip clear

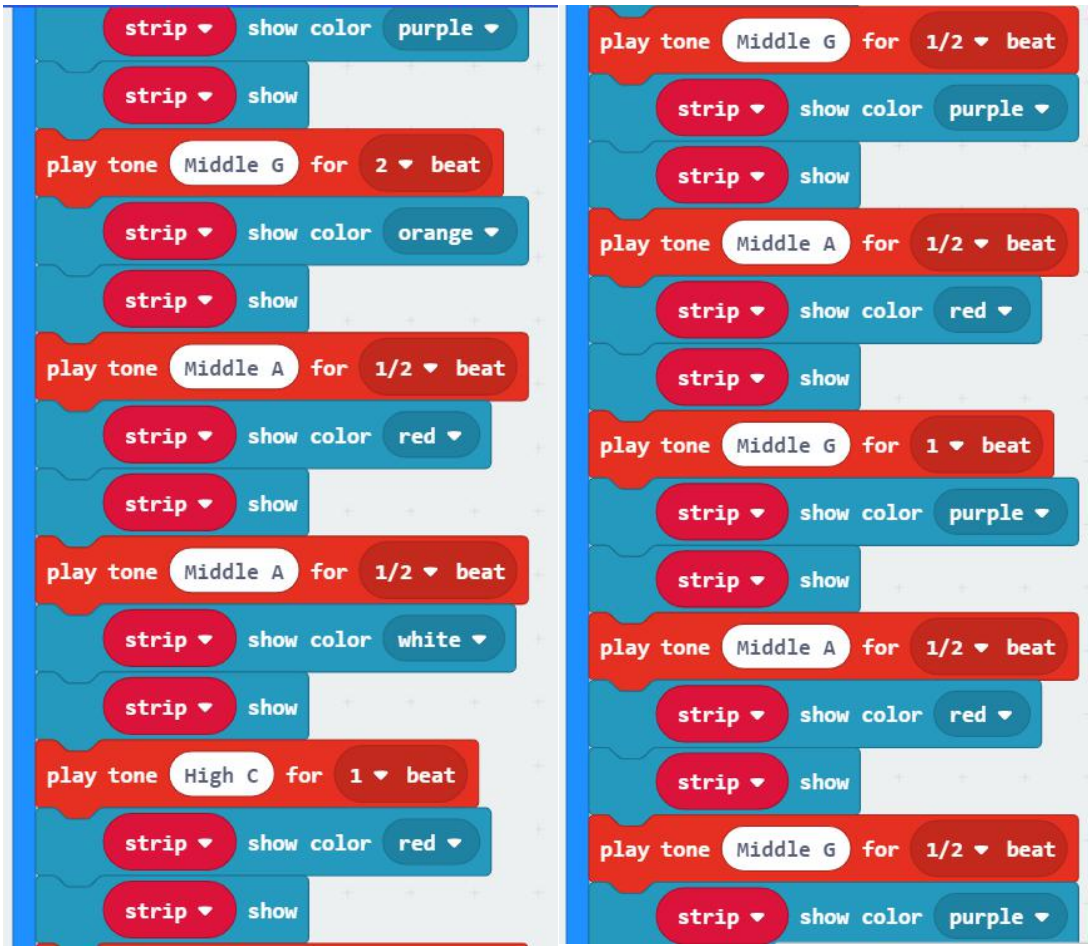


4.Combine building block

The summary program is shown below:




forever
strip show color red
strip show
play tone Middle C for 1/2 beat
strip show color purple
strip show
play tone Middle D for 1/2 beat
strip show color red
strip show
play tone Middle E for 1/2 beat
strip show color purple
strip show
play tone Middle C for 1/2 beat
strip show color red
strip show
play tone Middle G for 2 beat
strip show color purple
strip show
play tone Middle A for 1/2 beat
strip show color blue
strip show
play tone Middle A for 1/2 beat
strip show color orange
strip show
play tone High C for 1/2 beat
strip show color green
strip show
play tone Middle A for 1/2 beat

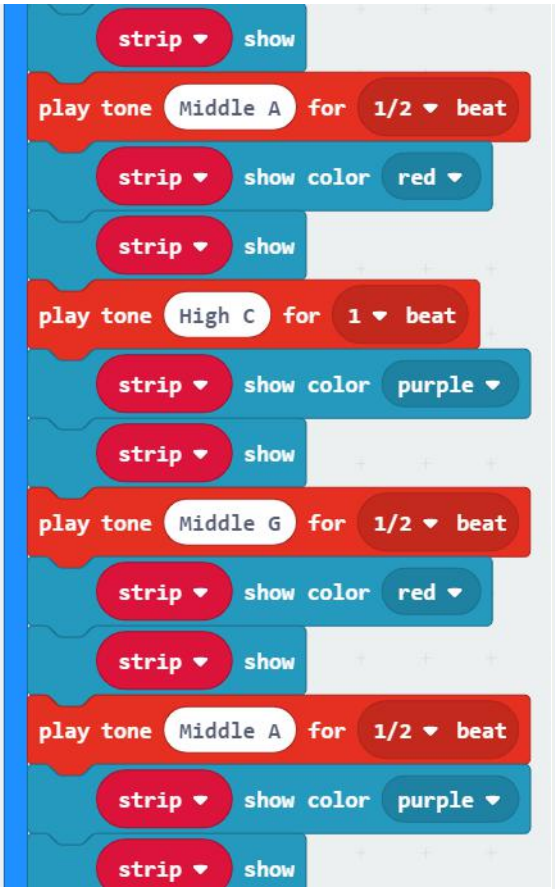

strip show color purple
strip show
play tone Middle G for 2 beat
strip show color orange
strip show
play tone Middle A for 1/2 beat
strip show color red
strip show
play tone Middle A for 1/2 beat
strip show color white
strip show
play tone High C for 1 beat
strip show color red
strip show
play tone Middle G for 1/2 beat
strip show color purple
strip show
play tone Middle A for 1/2 beat
strip show color red
strip show
play tone Middle G for 1 beat
strip show color purple
strip show
play tone Middle A for 1/2 beat
strip show color red
strip show
play tone Middle G for 1/2 beat
strip show color purple

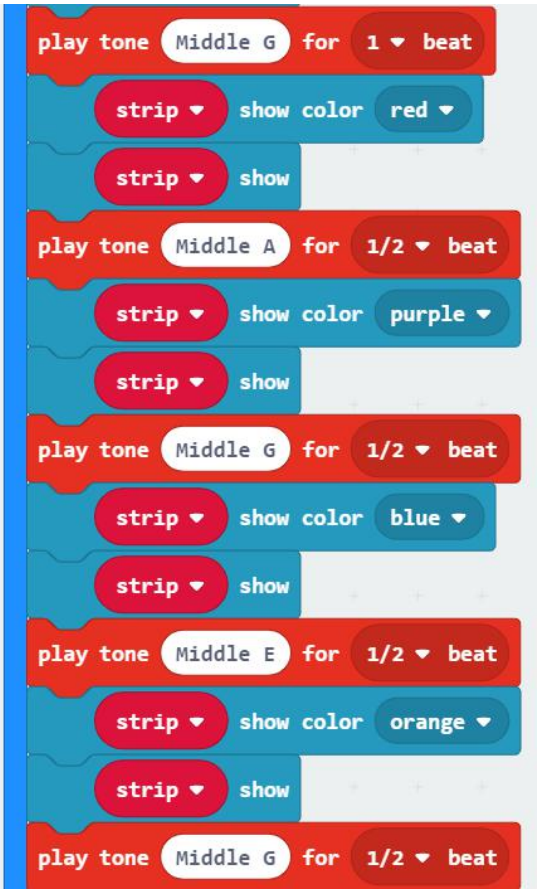

strip show
play tone Middle E for 1/2 beat
strip show color blue
strip show
play tone Middle G for 1/2 beat
strip show color orange
strip show
play tone Middle E for 1/2 beat
strip show color green
strip show
play tone Middle C for 1/2 beat
strip show color purple
strip show
play tone Middle D for 1/2 beat


strip show color orange
strip show
play tone Middle E for 1/2 beat
strip show color blue
strip show
play tone Middle C for 2 beat
strip show color orange
strip show
rest(ms) 1 beat
play tone Middle C for 1/2 beat
strip show color orange
strip show
play tone Middle D for 1/2 beat
strip show color green

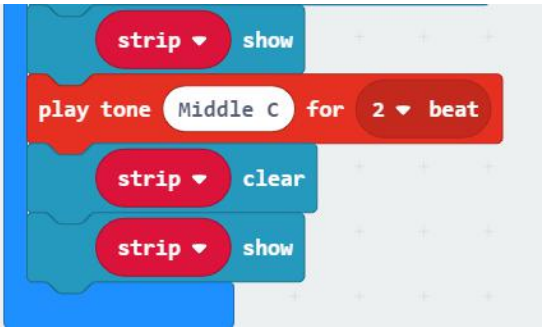

strip show
play tone Middle E for 1/2 beat
strip show color purple
strip show
play tone Middle C for 1/2 beat
strip show color blue
strip show
play tone Middle G for 2 beat
strip show color red
strip show
play tone Middle A for 1/2 beat
strip show color orange
strip show
play tone Middle A for 1/2 beat


strip show color green
strip show
play tone High C for 1/2 beat
strip show color purple
strip show
play tone Middle A for 1/2 beat
strip show color orange
strip show
play tone Middle G for 2 beat
strip show color red
strip show
play tone Middle A for 1/2 beat
strip show color white

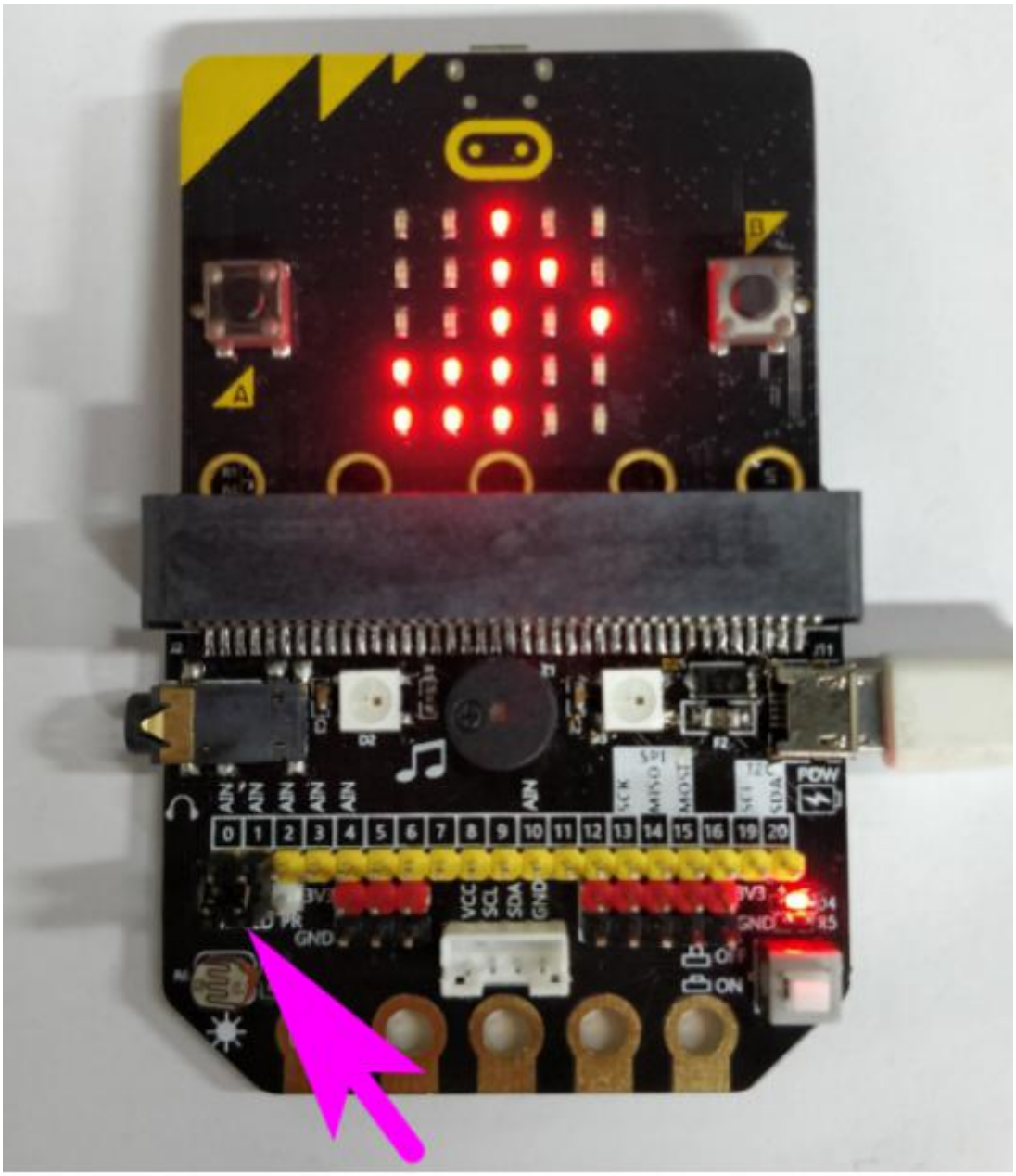

strip show
play tone Middle A for 1/2 beat
strip show color red
strip show
play tone High C for 1 beat
strip show color purple
strip show
play tone Middle G for 1/2 beat
strip show color red
strip show
play tone Middle A for 1/2 beat
strip show color purple
strip show


play tone Middle G for 1 beat
strip show color red
strip show
play tone Middle A for 1/2 beat
strip show color purple
strip show
play tone Middle G for 1/2 beat
strip show color blue
strip show
play tone Middle E for 1/2 beat
strip show color orange
strip show
play tone Middle G for 1/2 beat


strip show color green
strip show
play tone Middle E for 1/2 beat
strip show color purple
strip show
play tone Middle C for 1/2 beat
strip show color orange
strip show
play tone Middle D for 1/2 beat
strip show color blue
strip show
play tone Middle E for 1/2 beat
strip show color red


strip show
play tone Middle C for 2 beat
strip clear
strip show

Note: The jumper cap needs to be connected to the P1 and LED pins, P2 and PR pins on the Basic:bit expansion board. As shown below.



5. Experimental phenomena

After the program is successfully downloaded, the micro:bit dot matrix displays a music pattern, then the buzzer on the Basic:bit expansion board starts to play the music "Song of School", and the RGB lights will change different colors. At the same time, we can see a dynamic expression open_mouth on the LED: bit.