

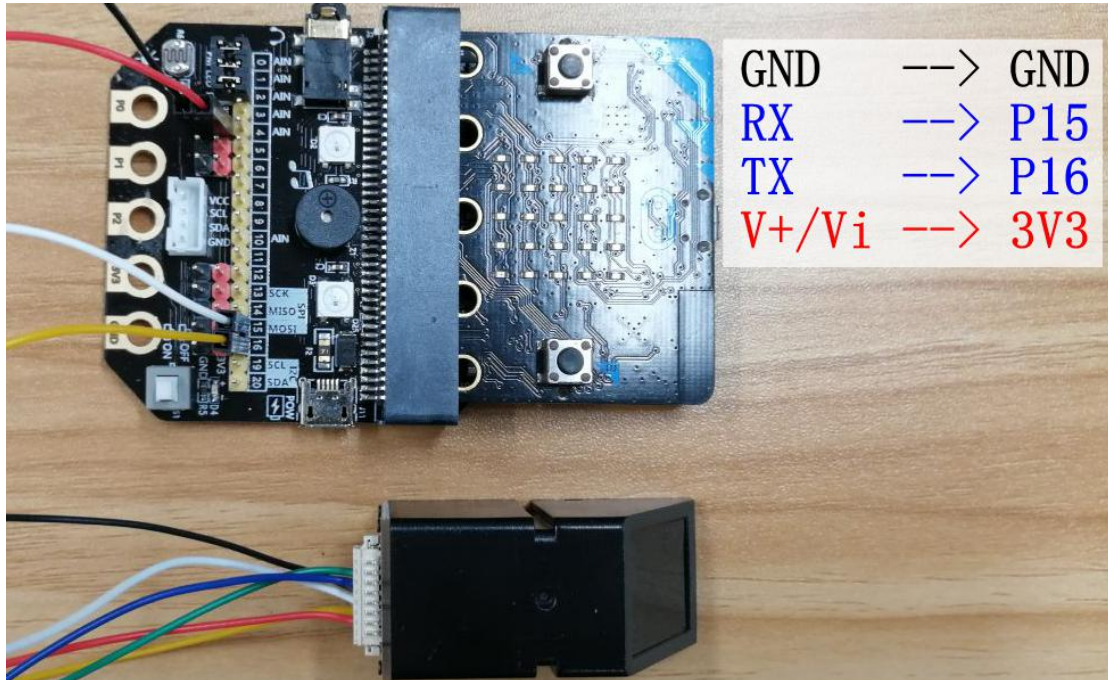
Fingerprint control light

1. Learning target

In this course, we will learn how to use Micro:bit, fingerprint recognition module and Basic:bit GPIO board to achieve fingerprint control music.

2. Preparation

Connect the module to Micro:bit board by expansion board, as shown below.



3. 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/YahboomTechnology/Fingerprint> to program.

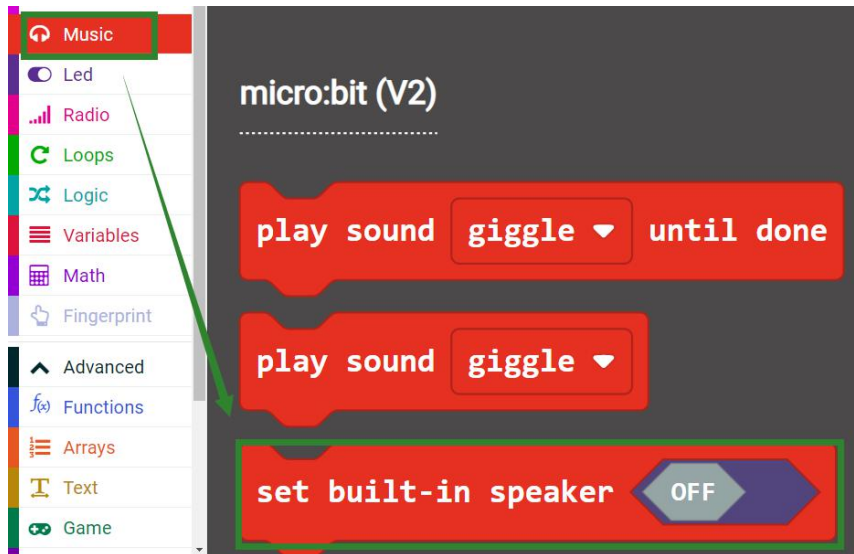
Mode 2 offline programming: We need to open the offline programming software. After the installation is complete, enter the programming interface, click 【New Project】, add Yahboom package: <https://github.com/YahboomTechnology/Fingerprint>, you can start programming.

4. Looking for blocks

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

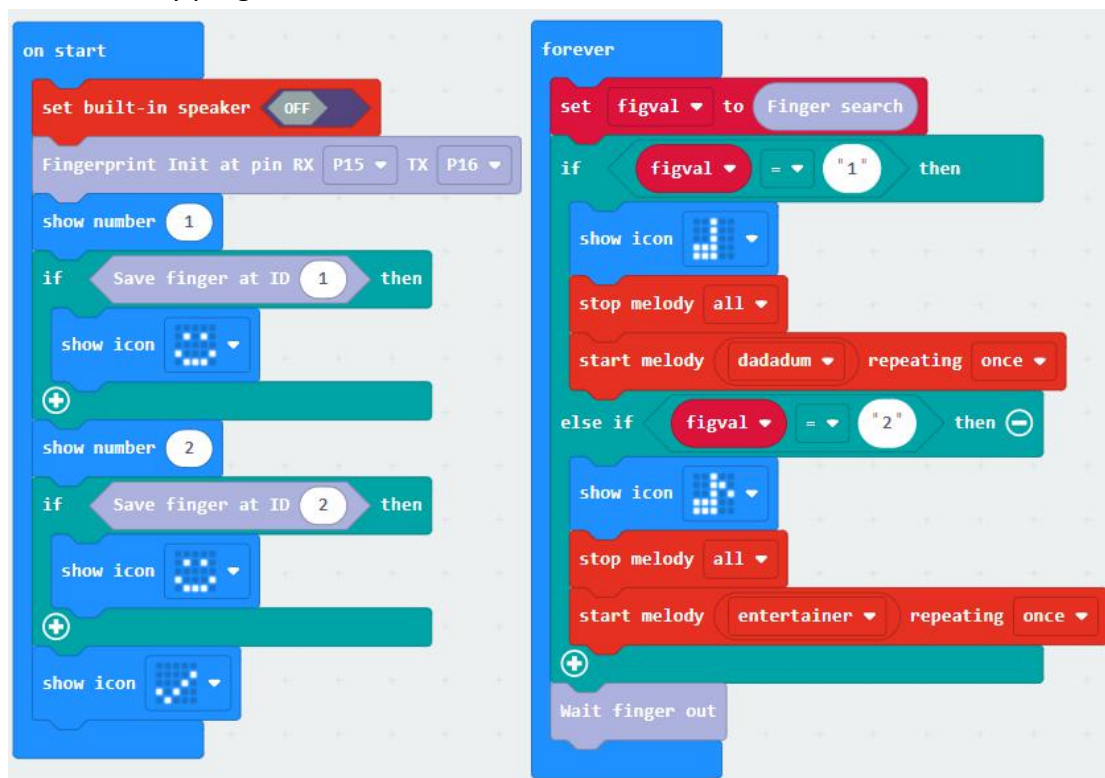
The image displays four screenshots of the Scratch IDE, each highlighting a different category in the left-hand menu and showing the corresponding code blocks in the workspace.

- Basic:** The 'Basic' category is highlighted in the menu. The workspace shows a 'show icon' block with a 4x4 grid of small squares.
- Fingerprint:** The 'Fingerprint' category is highlighted in the menu. The workspace shows a 'Fingerprint Init at pin RX' block with 'P0' selected for both RX and TX pins. Below it are 'Finger search', 'Wait finger out', 'Save finger at ID' (with '0' in the input field), and 'Delete finger at ID' (with '0' in the input field) blocks.
- Logic:** The 'Logic' category is highlighted in the menu. The workspace shows an 'if' block with 'true' selected in the dropdown, followed by a 'then' block containing a '+' block.
- Music:** The 'Music' category is highlighted in the menu. The workspace shows a 'Melody Advanced' block with 'start melody' (with 'dadadum' in the dropdown), 'repeating' (with 'once' in the dropdown), and 'stop melody' (with 'all' in the dropdown) blocks.



5. Combine block

The summary program is shown below.



6. Experimental phenomena

After the program is downloaded successfully, configure the fingerprint recognition module pins when booting, dot matrix 1 will be displayed.

If it fails, check the connection or reset the micro:bit. Then start to register fingerprint ID1, press the finger to be recognized on the sensor, and display a smile after saving successfully, and display 2 to start registering fingerprint ID2, press the finger to be recognized on the sensor, and display a smile after saving successfully,



and display V on micro:bit matrix. Press the finger you just saved, and press different finger buzzers to sound different music. After each recognition, you need to release your finger. If the finger is not recognized, the buzzer does not sound.