Microbit controls dot matrix display

1、Achieve the goal

2、Preparation before class class

3、Wiring

4、Block programming

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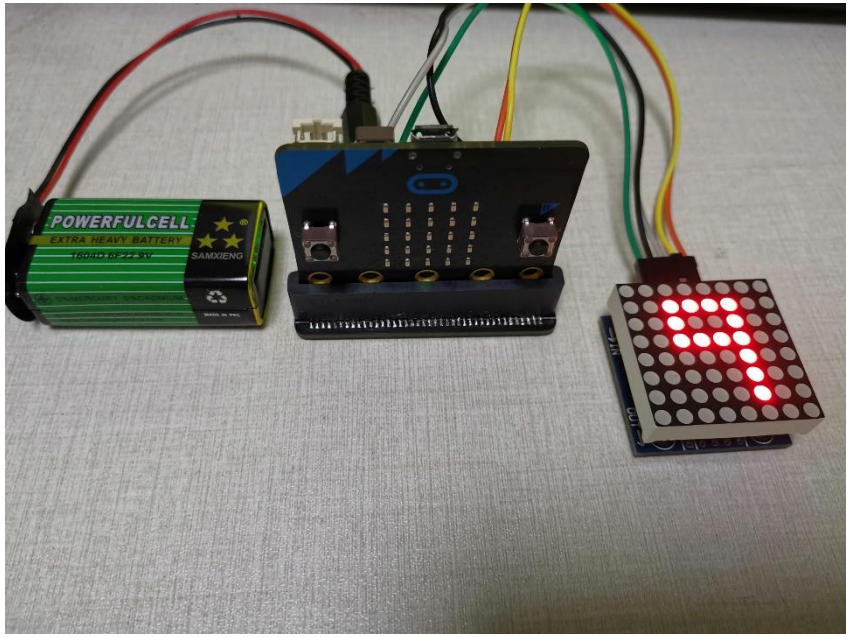

1、Achieve the goal

When the 8x8 dot matrix module is connected to the IO extension board, the 8x8 dot matrix module screen displays a number

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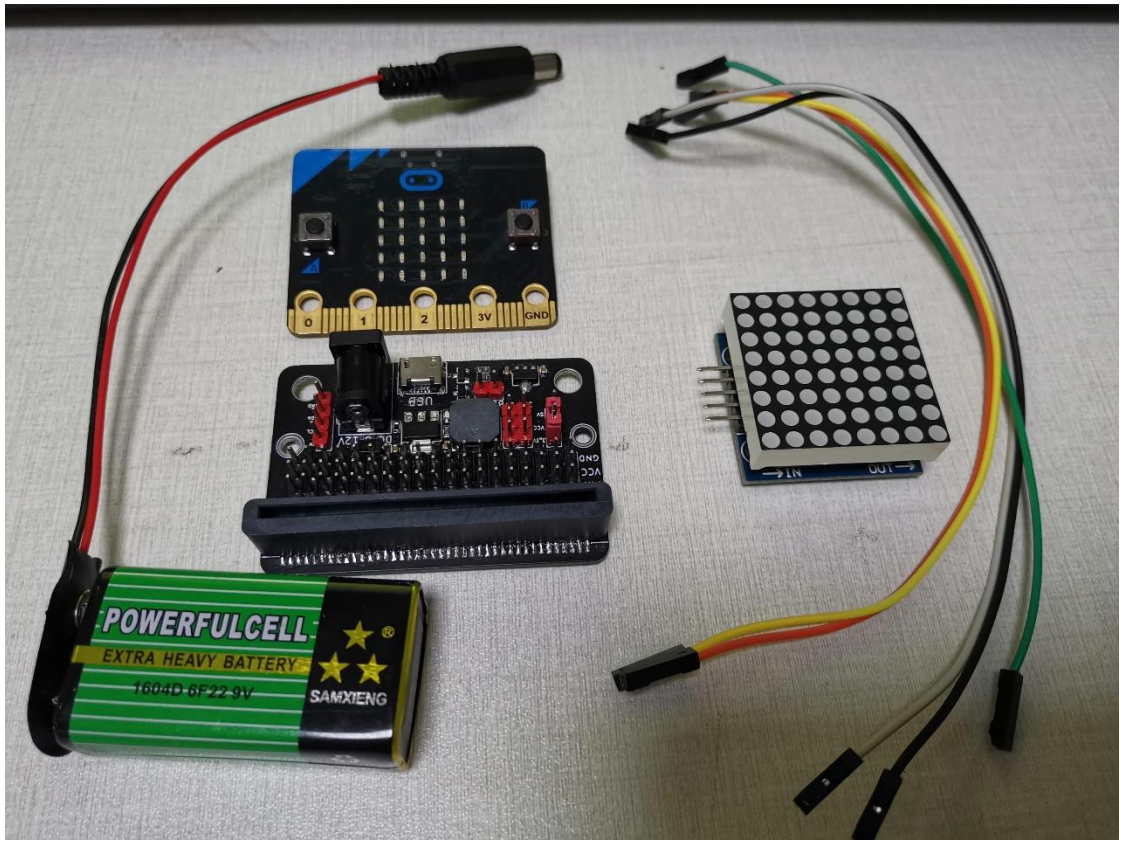

2、Preparation before class

Prepare microbit motherboard, USB cable, battery, expansion board, 8x8 dot matrix module, dupont cable.

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3、Wiring

The VCC pins of the 8x8 lattice are connected to the extension board VCC, GND to the extension board GND, DIN pins to the extension board MOSI's P15 pin, CLK to the extension board SCK's P13 pin, and CS to the extension board's P0 pin

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4、Block programming

```
49          self._register(_DIGIT0 + y, self.buffer[y]
50  def number_0():   #A function that displays' 0 '
51      display.fill(False)  #All lights in the lattice ar
52      display.pixel(1, 2, True)  #Set the lights with cc
53      display.pixel(1, 3, True)
54      display.pixel(1, 4, True)
55      display.pixel(1, 5, True)
56      display.pixel(2, 2, True)
57      display.pixel(3, 2, True)
58      display.pixel(4, 2, True)
59      display.pixel(5, 2, True)
60      display.pixel(6, 2, True)
61      display.pixel(6, 3, True)
62      display.pixel(6, 4, True)
63      display.pixel(6, 5, True)
64      display.pixel(2, 5, True)
65      display.pixel(3, 5, True)
66      display.pixel(4, 5, True)
67      display.pixel(5, 5, True)
68  while True:  #Start the program, infinite loop
69      display = Matrix8x8(microbit.spi, microbit.pin0)
70      display.brightness(8)  #Set the brightness to 8
71      number_0()  #Call the appropriate function to disp
72      display.show()   #Refresh the state of the lattice
```

1, dot matrix display contains two python programming files, number_0-9 this file is a number library file, which contains the number of 0-9 program display source code; The microbit_max7219 file is the file that controls the dot matrix display

2. When controlling dot matrix display, according to the desired number, copy the corresponding function in number_0-9 file to the microbit_max7219 program, and then call the function in the infinite loop, it can be displayed.

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microbit_max7219.py | number_0-9.py

```
_DISPLAYTEST = 15
class Matrix8x8:
    def __init__(self, spi, cs):
        self.spi = spi
        self.cs = cs
        self.buffer = bytearray(8)
        spi.init()
        self.init()
    def _register(self, command, data):
        # write to display
        self.cs.write_digital(0)
        self.spi.write(bytearray([command, data]))
        self.cs.write_digital(1)
    def init(self):
        for command, data in ((_SHUTDOWN, 0),(_DISPLAYTEST, 0),(_SCANLIMIT, 7),(_DECODEMODE, 0),(_SHUTDOWN, 1),):
            self._register(command, data)
    def brightness(self, value):
        if not 0<= value <= 15:
            raise ValueError("Brightness out of range")
        self._register(_INTENSITY, value)
    def fill(self, color):
        data = 0xff if color else 0x00
        for y in range(8):
            self.buffer[y] = data
    def pixel(self, x, y, color=None):
        if color is None:
            return bool(self.buffer[y] & 1 << x)
```

Microbit

5、Download experience

1. Click "swipe in", download the program to the microbit, connect the circuit, and you can see the result of your programming