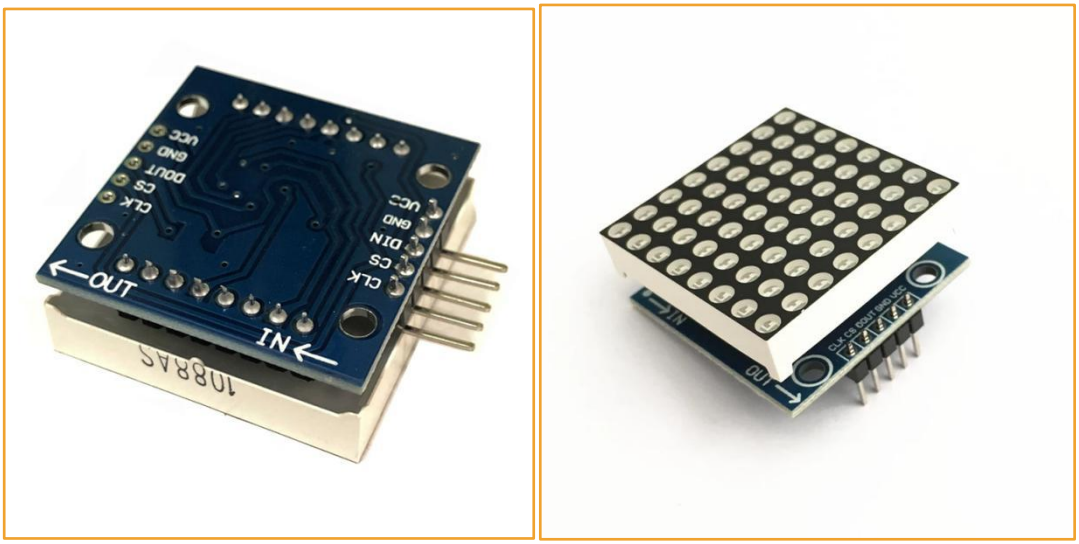
MAX7219 drives a single 8x8 dot matrix module experiment

MAX7219 driver module introduction

The MAX7219 is an integrated serial input/output display driver that connects the microprocessor to an 8-digit, 7-segment digital LED display, as well as a bar diagram display or 64 separate leds. It includes an on-chip b-type BCD encoder, a multiplex scan loop, a segment driver, and an 8-by-8 static RAM for each piece of data. Only one external register is used to set the segment current of each LED.

A convenient four-wire serial interface can be connected to a common microprocessor. Each data can be addressed without overwriting all displays at update time. The MAX7219 also allows the user to choose whether to encode or not encode each piece of data. The entire device includes A 150-a low-power off mode, analog and digital brightness controls, A scan limit register that allows users to display 1-8 bits of data, and A detection mode that makes all leds glow.

In short, in this lattice module, the MAX7219 integrated circuit is to help the MCU output display. If you use the ordinary method to drive an 8*8 lattice, you need to use 8 microcontroller IO,2 is 16 IO, if you drive a few lattice, the microcontroller IO is not enough, if you use MAX7219 to help, with the microcontroller 3 IO port can drive 1 /10 /20 lattice. Dot matrix display when no flicker! Support cascading!



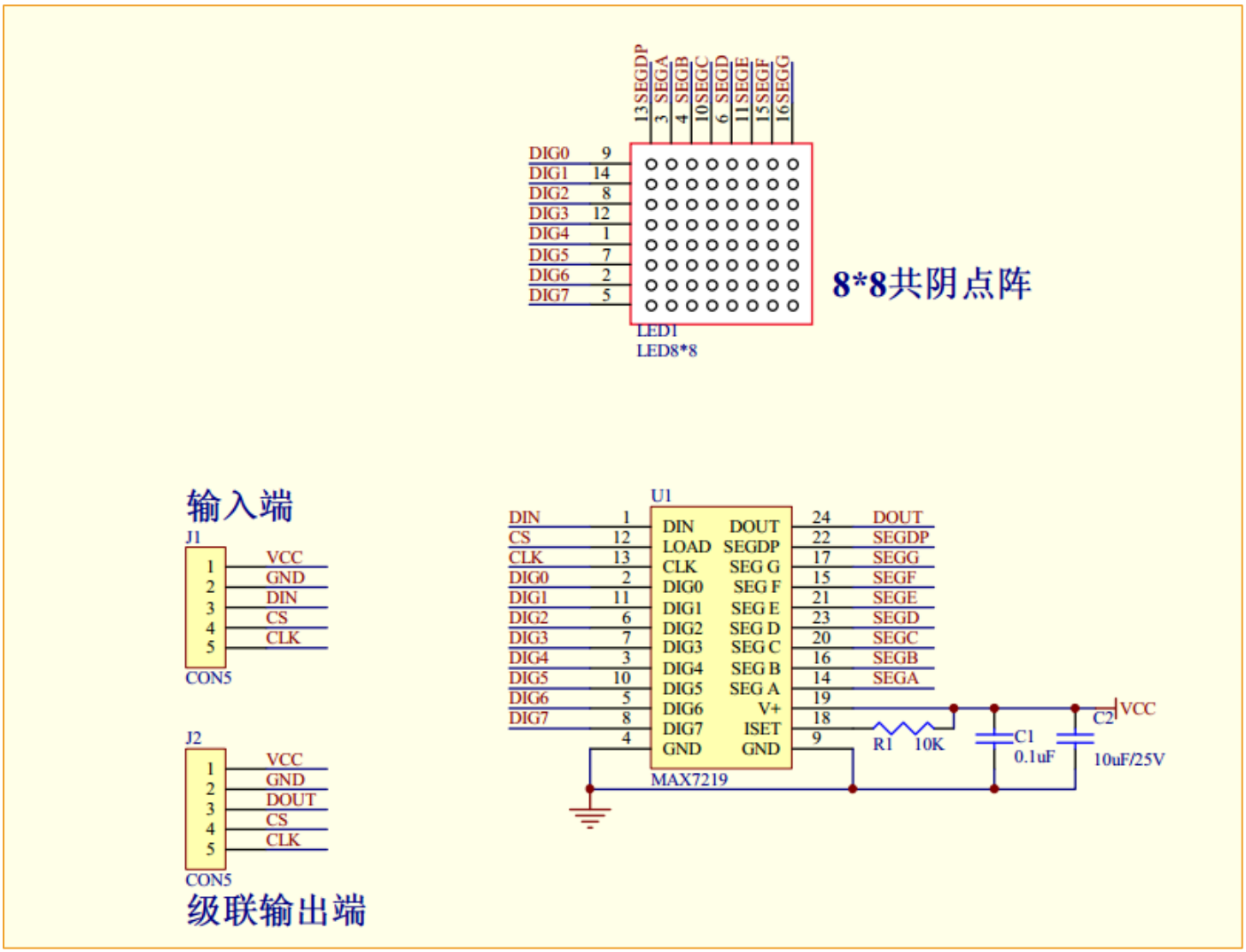
Module parameters:

- A single module can drive an 8 by 8 common negative lattice
- Module working voltage: 5V
- Module size: 3.2cm long X 3.2cm wide X 1.3cm high
- With 4 fixing screw holes, aperture 3mm
- Module with input and output interface, support multiple modules cascade

Wiring instructions:

- The left side of the module is the input port, and the right side is the output port.
- When you control a single module, you just need to connect the input port to Arduino
- When multiple modules are cascaded, the input end of the first module is connected to arduino, the output end is connected to the input end of the second module, and the output end of the second module is connected to the input end of the third module, and so on...

Schematic diagram



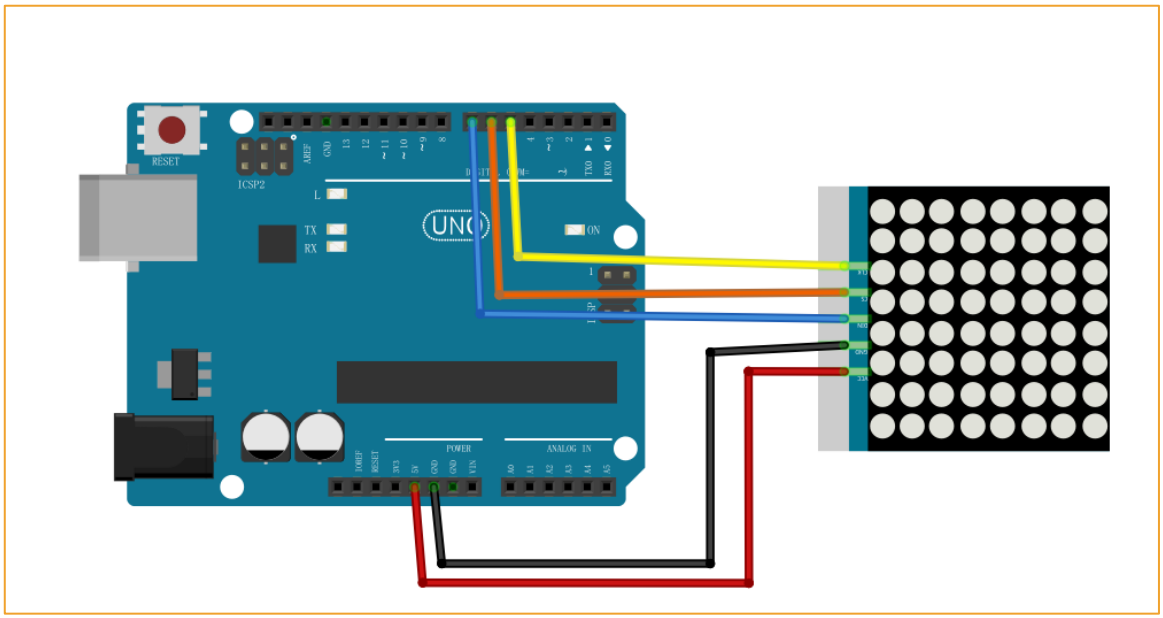
The component list

- Keywish Arduino Uno R3 motherboard *1
- USB cable *2
- MAX7219 displays drive *1
- 8-digit 7-segment digital LED display *1

- Jumper wires *4

Wiring the circuit

Arduino	MAX7219 MAX7219 displays drive
VCC	VCC
GND	GND
5	CLK
6	CS
7	DIN

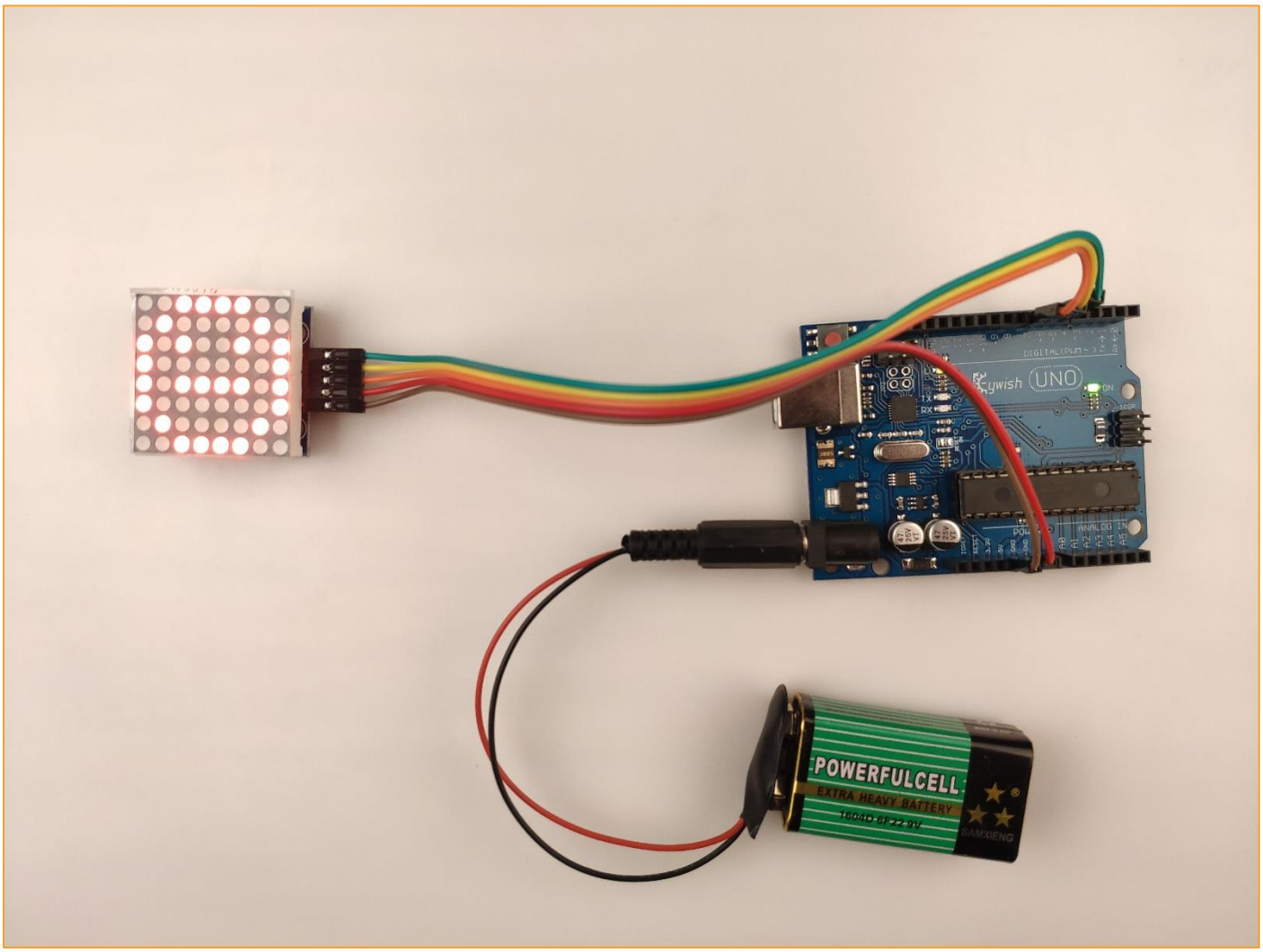


Code

```
#include "MAX7219_MaxMatrix.h"


//define Max7219 pins
#define PIN_DIN    7   //max 7219
#define PIN_CS     6
#define PIN_CLK    5


MaxMatrix ledmatrix(PIN_DIN,PIN_CS,PIN_CLK, 1);  // init Max7219 LED Matrix, 1 module


void setup(){
  Serial.begin(9600);
```

```
  ledmatrix.init();
  ledmatrix.setIntensity(1);
  ledmatrix.clearMatrix();

Serial.println("zero:0\none:1\ntwo:2\nthree:3\nfour:4\nfive:5\nsix:6\nseven:7\neight:8\
nnine:9\nsmile:10\nhappyOpen:11\nhappyClosed:12\nheart:13\nbigSurprise:14\nsmallSurpris
e:15\ntongueOut:16\nvamp1:17\nvamp2:18\nlineMouth:19\nconfused:20\ndiagonal:21\nsad:22\
nsadOpen:23\nsadClosed:24\nokMouth:25\nxMouth:26\ninterrogation:27\nthunder:28\nculito:
29\nangry:30");
}

void loop() {
  while(Serial.available()) {
    int val = Serial.parseInt();
    if (val >= 0 && val <= 30) {
      ledmatrix.writeFull(ledmatrix.getMouthShape(val));
    }
    delay(2000);
  }
}
```

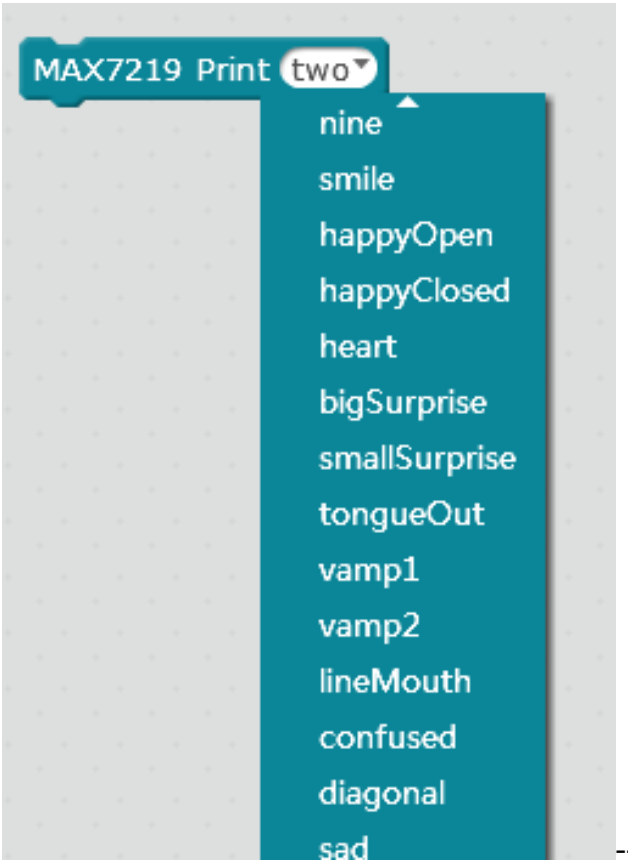
Experiment Result



MBlock graphical programming program

- 

- Initialize pins DIN, CS, CLK and set the number of 8x8 matrices in series



- -- Drop down 8x8 dot matrix screen corresponding to the number of letters, Numbers and expressions can be displayed, select the character you want to display, select it will be displayed in the dot matrix screen.

MagicBlock graphical programming program

MagicBlock programmed the lattice screen program as shown in the figure below: