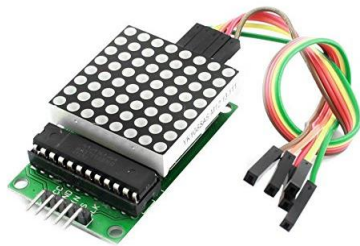


Heart-shaped display experiment

Overview



This lesson will teach you how to use MAX 7219 display module. Using array function to control LED dot matrix screen.

Specification






Please view MAX7219.pdf.

Path: \Public_materials\Datasheet\ MAX7219.pdf

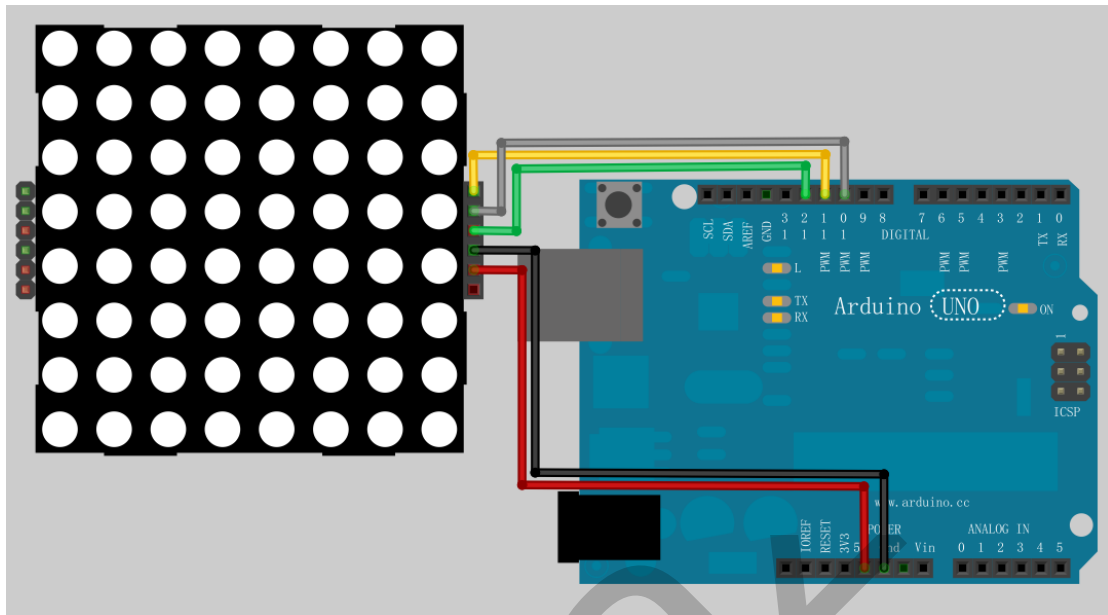
Pin definition

Max7219 module		UNO R3
CLK	->	D11
CS	->	D10
DIN	->	D12
GND	->	GND
VCC	->	+5V

Hardware required

Material diagram	Material name	Number
	Max 7219 module	1
	USB Cable	1
	UNO R3	1
	Breadboard	1
	Jumper wires	Several

Connection diagram



Connection:

Max7219 module		UNO R3
CLK	->	D11
CS	->	D10
DIN	->	D12
GND	->	GND
VCC	->	+5V

Sample code

Note: sample code under the **Sample code** folder.

You need to add the **LedControl** to the Arduino library file directory, otherwise the compiler does not pass. **Please refer to 'How to add library files.docx'.**

```
#include "LedControl.h"
LedControl lc=LedControl(12,11,10,1);
/* we always wait a bit between updates of the display */
unsigned long delaytime=100;
unsigned long delaytime1=2000;
```

```
void setup() {
  /*
   The MAX72XX is in power-saving mode on startup,
   we have to do a wakeup call
  */
  lc.shutdown(0,false);
  /* Set the brightness to a medium values */
```

V1.0

```
lc.setIntensity(0,8);
/* and clear the display */
lc.clearDisplay(0);
}
void heart_s()
{
    /* here is the data for the characters */
    byte hs[8]={
        B00000000,
        B00000000,
        B00100100,
        B01111110,
        B01111110,
        B00111100,
        B00011000,
        B00000000,
    };

    /* now display them one by one with a small delay */
    lc.setRow(0,0,hs[0]);
    lc.setRow(0,1,hs[1]);
    lc.setRow(0,2,hs[2]);
    lc.setRow(0,3,hs[3]);
    lc.setRow(0,4,hs[4]);
    lc.setRow(0,5,hs[5]);
    lc.setRow(0,6,hs[6]);
    lc.setRow(0,7,hs[7]);
    delay(delaytime);
}
void heart_b()
{
    /* here is the data for the characters */
    byte hb[8]={
        B00000000,
        B01100110,
        B11111111,
        B11111111,
        B11111111,
        B01111110,
        B00111100,
        B00011000,
    };

    /* now display them one by one with a small delay */
    lc.setRow(0,0,hb[0]);
```

V1.0

```

lc.setRow(0,1,hb[1]);
lc.setRow(0,2,hb[2]);
lc.setRow(0,3,hb[3]);
lc.setRow(0,4,hb[4]);
lc.setRow(0,5,hb[5]);
lc.setRow(0,6,hb[6]);
lc.setRow(0,7,hb[7]);
delay(delaytime);
}
void loop() {
  heart_s();
  delay(100);
  heart_b();
  lc.clearDisplay(0);
  delay(20);
}

```

//Here is the other animations

/*

This method will display the characters for the word "Arduino" one after the other on the matrix.
(you need at least 5x7 leds to see the whole chars)

*/

```

void writeArduinoOnMatrix() {
  /* here is the data for the characters */
  byte a[5]={B01111110,
              B10001000,
              B10001000,
              B10001000,
              B01111110};
  byte r[5]={B00111110,
              B00010000,
              B00100000,
              B00100000,
              B00010000};
  byte d[5]={B00011100,
              B00100010,
              B00100010,
              B00010010,
              B11111110};
  byte u[5]={B00111100,
              B00000010,

```

V1.0

```
B00000010,
B00000100,
B00111110};

byte i[5]={B00000000,
           B00100010,
           B10111110,
           B00000010,
           B00000000};

byte n[5]={B00111110,
           B00010000,
           B00100000,
           B00100000,
           B00011110};

byte o[5]={B00011100,B00100010,B00100010,B00100010,B00011100};

/* now display them one by one with a small delay */
lc.setRow(0,0,a[0]);
lc.setRow(0,1,a[1]);
lc.setRow(0,2,a[2]);
lc.setRow(0,3,a[3]);
lc.setRow(0,4,a[4]);
delay(delaytime1);
lc.setRow(0,0,r[0]);
lc.setRow(0,1,r[1]);
lc.setRow(0,2,r[2]);
lc.setRow(0,3,r[3]);
lc.setRow(0,4,r[4]);
delay(delaytime1);
lc.setRow(0,0,d[0]);
lc.setRow(0,1,d[1]);
lc.setRow(0,2,d[2]);
lc.setRow(0,3,d[3]);
lc.setRow(0,4,d[4]);
delay(delaytime1);
lc.setRow(0,0,u[0]);
lc.setRow(0,1,u[1]);
lc.setRow(0,2,u[2]);
lc.setRow(0,3,u[3]);
lc.setRow(0,4,u[4]);
delay(delaytime1);
lc.setRow(0,0,i[0]);
lc.setRow(0,1,i[1]);
lc.setRow(0,2,i[2]);
lc.setRow(0,3,i[3]);
```

V1.0

```

lc.setRow(0,4,i[4]);
delay(delaytime1);
lc.setRow(0,0,n[0]);
lc.setRow(0,1,n[1]);
lc.setRow(0,2,n[2]);
lc.setRow(0,3,n[3]);
lc.setRow(0,4,n[4]);
delay(delaytime1);
lc.setRow(0,0,o[0]);
lc.setRow(0,1,o[1]);
lc.setRow(0,2,o[2]);
lc.setRow(0,3,o[3]);
lc.setRow(0,4,o[4]);
delay(delaytime1);
lc.setRow(0,0,0);
lc.setRow(0,1,0);
lc.setRow(0,2,0);
lc.setRow(0,3,0);
lc.setRow(0,4,0);
delay(delaytime1);
}

```

```

/*

```

This function lights up a some Leds in a row.
 The pattern will be repeated on every row.
 The pattern will blink along with the row-number.
 row number 4 (index==3) will blink 4 times etc.

```

*/

```

```

void rows() {
    for(int row=0;row<8;row++)
    {
        delay(delaytime);
        lc.setRow(0,row,B10100000);
        delay(delaytime);
        lc.setRow(0,row,(byte)0);
        for(int i=0;i<row;i++) {
            delay(delaytime);
            lc.setRow(0,row,B10100000);
            delay(delaytime);
            lc.setRow(0,row,(byte)0);
        }
    }
}

```

```

}

```

```

/*

```

This function lights up a some Leds in a column.
 The pattern will be repeated on every column.
 The pattern will blink along with the column-number.
 column number 4 (index==3) will blink 4 times etc.

*/

```
void columns() {
    for(int col=0;col<8;col++) {
        delay(delaytime);
        lc.setColumn(0,col,B10100000);
        delay(delaytime);
        lc.setColumn(0,col,(byte)0);
        for(int i=0;i<col;i++) {
            delay(delaytime);
            lc.setColumn(0,col,B10100000);
            delay(delaytime);
            lc.setColumn(0,col,(byte)0);
        }
    }
}
```

/*

This function will light up every Led on the matrix.
 The led will blink along with the row-number.
 row number 4 (index==3) will blink 4 times etc.

*/

```
void single() {
    for(int row=0;row<8;row++)
    {
        for(int col=0;col<8;col++)
        {
            delay(delaytime);
            lc.setLed(0,row,col,true);
            delay(delaytime);
            for(int i=0;i<col;i++)
            {
                lc.setLed(0,row,col,false);
                delay(delaytime);
                lc.setLed(0,row,col,true);
                delay(delaytime);
            }
        }
    }
}
```

/* By modifying the "unsigned char table1[8][8] = {}" or "unsigned char table2[8][8] = {}"

function, you can display different animation.

*/

Language reference

Tips : click on the following name to jump to the web page.

If you fail to open, use the Adobe reader to open this document.

[Byte](#)

Application effect

Please ensure that the connection correct, then upload the code, you will see the heart beating animation.

smraza