

Course 12 ---8x8 dot matrix

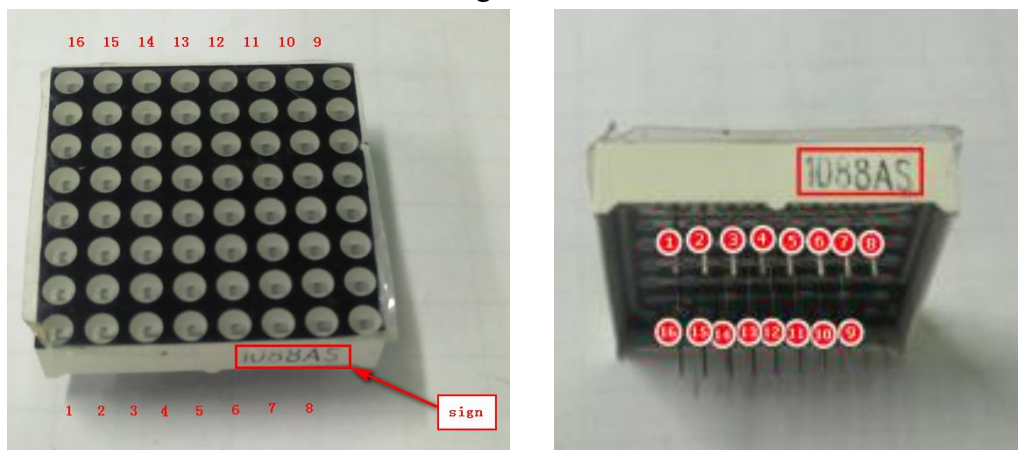
The purpose of the experiment:

In this course, we will learn how to use 8x8 dot matrix. The experimental effect is to light the LED on the 8x8 dot matrix.

Introduction of 8x8 dot matrix:

The 8x8 lattice is composed of 64 LED, and each LED is placed at the intersection of line and line. When one line is high level(1) and a column is low level(0), the corresponding diode will be bright. If you want to light up the first line, the ninth pin need to high level, and (13, 3, 4, 10, 6, 11, 15, 16) these pins are low level. If you want to light up the first column, the thirteenth pin need low level, and (9, 14, 8, 12, 1, 7, 2, 5) these pins are low level.

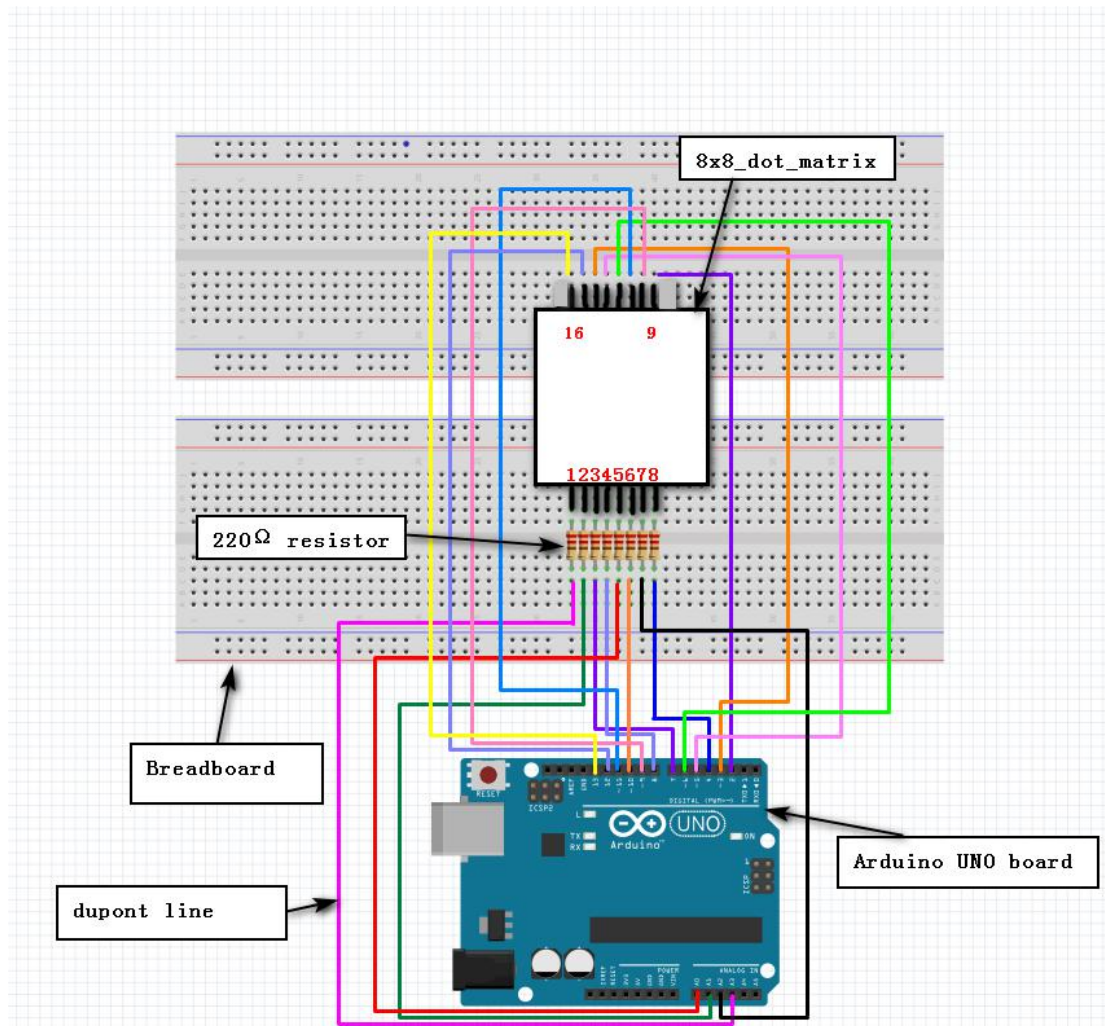
Pin identification as shown in the two figures below

**List of components required for the experiment:**

Arduino UNO board *1
 USB cable *1
 220 Ω resistor *8
 8x8 dot matrixLED*1
 Breadboard *1
 dupont line *1bunch

Actual object connection diagram:

We need to connect the circuit as shown in the figure below.



Experimental code analysis:

```

const int row1 = 2; // Arduino Pin2 connect pin9 of the dot matrix
const int row2 = 3; // Arduino Pin3 connect pin14 of the dot matrix
const int row3 = 4; // Arduino Pin4 connect pin8 of the dot matrix
const int row4 = 5; // Arduino Pin5 connect pin12 of the dot matrix
const int row5 = 17; // Arduino Pin17 (A3)connect pin1 of the dot matrix
const int row6 = 16; // Arduino Pin16 (A2)connect pin7 of the dot matrix
const int row7 = 15; // Arduino Pin15 (A1)connect pin2 of the dot matrix
const int row8 = 14; // Arduino Pin14 (A0)connect pin5 of the dot matrix
//the pin to control COL
const int col1 = 6; //Arduino Pin6 connect pin13 of the dot matrix
const int col2 = 7; // Arduino Pin7 connect pin3 of the dot matrix
const int col3 = 8; //Arduino Pin8 connect pin4 of the dot matrix
const int col4 = 9; // Arduino Pin9 connect pin10 of the dot matrix
const int col5 = 10; //Arduino Pin10 connect pin6 of the dot matrix
const int col6 = 11; //Arduino Pin11 connect pin11 of the dot matrix
const int col7 = 12; // Arduino Pin12 connect pin12 of the dot matrix
const int col8 = 13; // Arduino Pin13 connect pin13 of the dot matrix

```

```
void setup()
{
    int i = 0 ;
    for(i=2;i<18;i++)
    {
        pinMode(i, OUTPUT);
    }

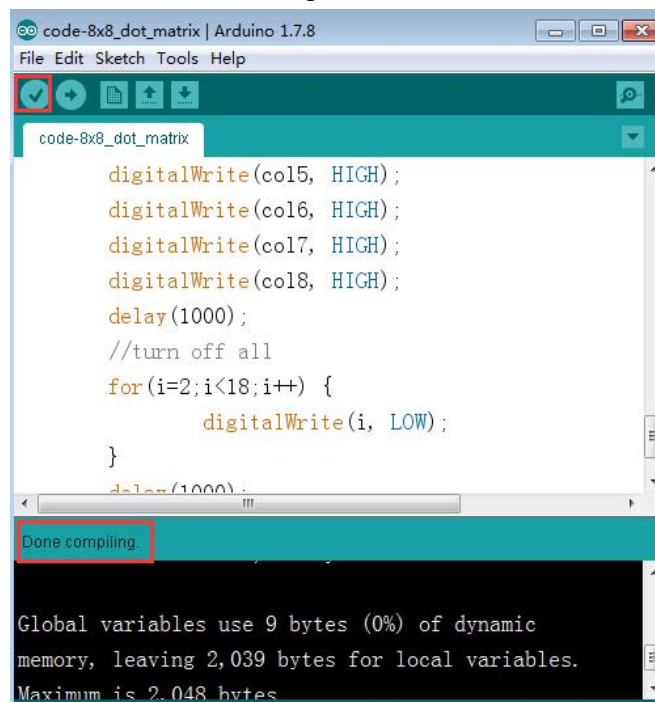
    for(i=2;i<18;i++) {
        digitalWrite(i, LOW);
    }
}

void loop()
{
    int i;
    //the row # 1 and col # 1 of the LEDs turn on
    digitalWrite(row1, HIGH);
    digitalWrite(row2, LOW);
    digitalWrite(row3, LOW);
    digitalWrite(row4, LOW);
    digitalWrite(row5, LOW);
    digitalWrite(row6, LOW);
    digitalWrite(row7, LOW);
    digitalWrite(row8, LOW);
    digitalWrite(col1, LOW);
    digitalWrite(col2, HIGH);
    digitalWrite(col3, HIGH);
    digitalWrite(col4, HIGH);
    digitalWrite(col5, HIGH);
    digitalWrite(col6, HIGH);
    digitalWrite(col7, HIGH);
    digitalWrite(col8, HIGH);
    delay(1000);
    //turn off all
    for(i=2;i<18;i++) {
        digitalWrite(i, LOW);
    }
    delay(1000);
}
```

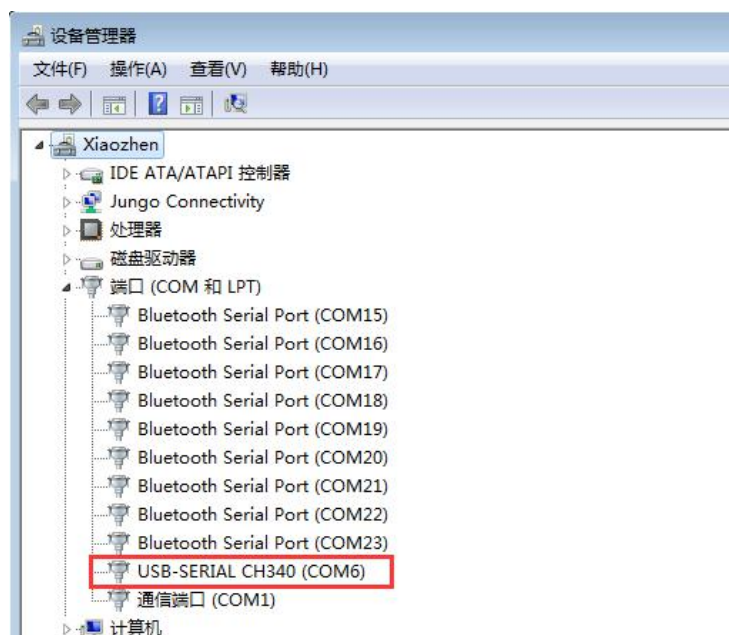
Experimental steps:

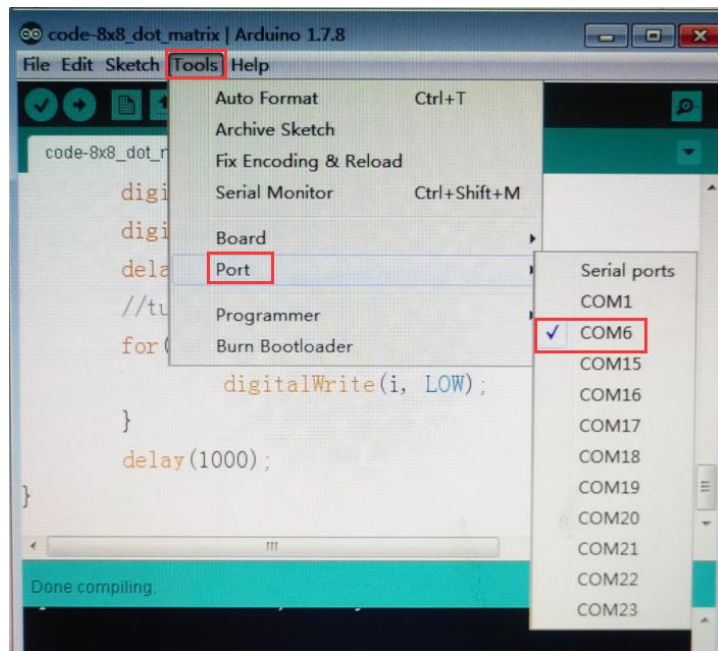
1. We need to open the code of this experiment: **code-8x8_dot_matrix.ino**, click “ ✓ ” under the menu bar to compile the code, and wait for the word "**Done compiling** " in

the lower right corner, as shown in the figure below.

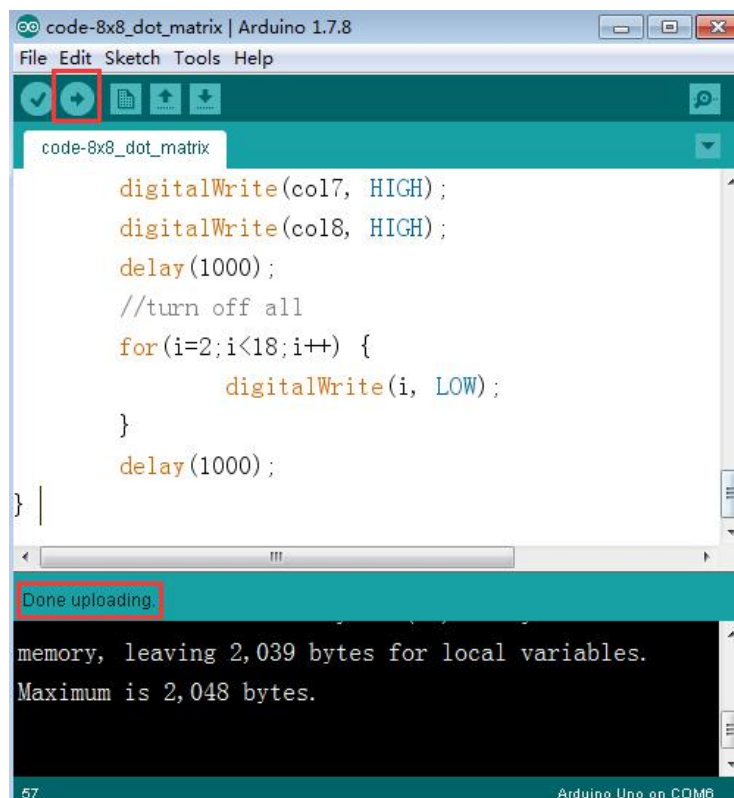


2. In the menu bar of Arduino IDE, we need to select **【Tools】**---**【Port】**--- selecting the port that the serial number displayed by the device manager just now, as shown in the figure below. For example:COM6,as shown in the following figure.

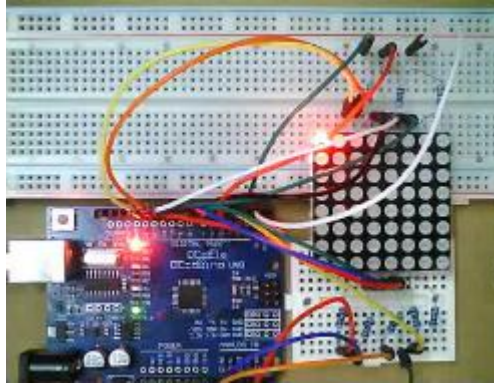




3. After the selection is completed, you need to click “→” under the menu bar to upload the code to the Arduino UNO board. When the word “**Done uploading**” appears in the lower left corner, the code has been successfully uploaded to the Arduino UNO board, as shown in the figure below.



4. After the code is uploaded. We can see that the lights in the first row and first column of the dot matrix are twinkling, as shown in the following figure.



The code of the experiment: