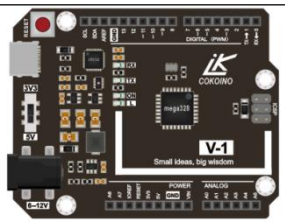
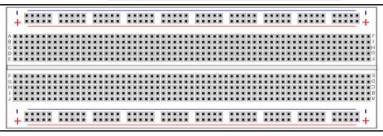
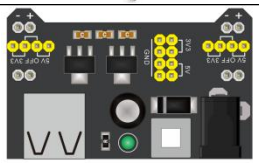
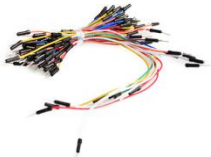
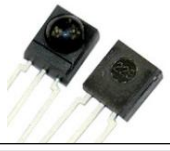
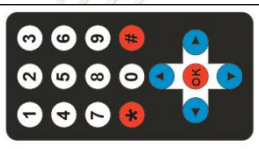
21.Wireless remote control display

ABOUT THIS PROJECT：

You will learn：

- Use use an IR remote control to a display

1. Things used in this project:

Hardware components	Picture	Quantity
V-1 board		1 PCS
Breadboard		1 PCS
9V Battery Snap Connector		1 PCS
Breadboard power module		1 PCS
Male to Male DuPont line		16 PCS
30CM USB Cable		1 PCS
8*8 LED matrix		1 PCS
Infrared (IR) Receiver		1 PCS
Infrared remote control		1 PCS

2. experimental explanation

This experiment is based on lesson lesson19-20. By combining the relevant materials of the two lessons, we will develop our ability to make more interesting experiments with the knowledge we have learned.

In this experiment, the infrared transmitter transmits the key values of 1-3, and the V1 board receives the key values through the infrared receiver, and then displays three different facial expressions on the 8*8 lattice.When you press the OK key of the infrared transmitter remote control, the facial expression on the 8*8 dot matrix will be cleared.

3. Wireless remote control display

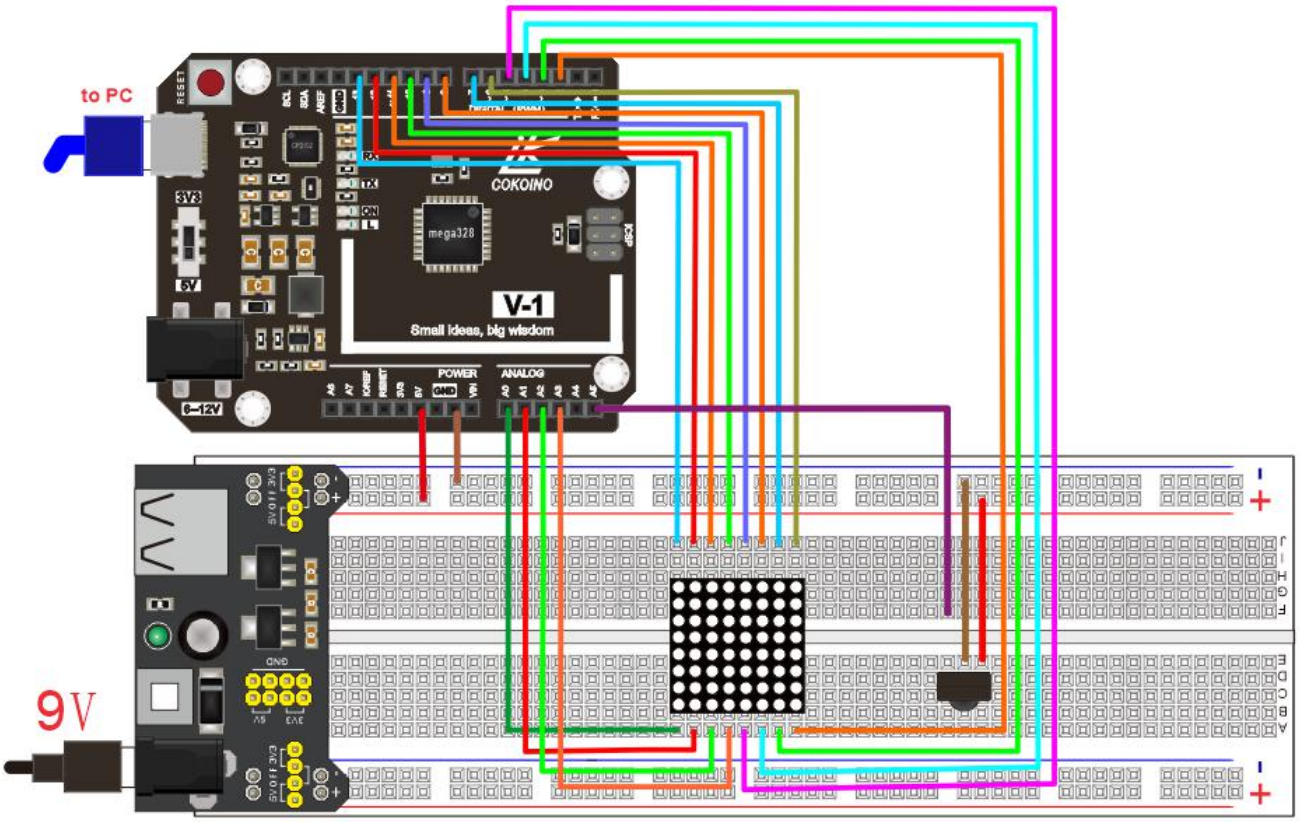
3.1、Code

```
#include <IRremote.h>
int RECV_PIN = A5;
IRrecv irrecv(RECV_PIN);
decode_results results;
int leds[8] = {6, 11, 2, 9, 14, 3, 15, 5};    //Lattice screen the anode pin
int gnds[8] = {10, 16, 17, 7, 4, 8, 12, 13}; //Lattice screen negative pins
int Display_data[8][8]={
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        { 0, 0, 0, 0, 0, 0, 0, 0 },
                        };
void Clean(void){
   for(int a=0;a<8;a++){
      for(int b=0;b<8;b++)
         Display_data[a][b]=0; }
}
void Display(void){
   for(int a=0;a<8;a++){

      for(int b=0;b<8;b++){
         if(Display_data[a][b]==1){
            digitalWrite(gnds[a],LOW);
            digitalWrite(leds[b],HIGH);
            delayMicroseconds(50);
            digitalWrite(gnds[a],HIGH);
            digitalWrite(leds[b],LOW);    }
      }
   }
}
void face1(void){
   Clean();
   Display_data[0][1]=1;Display_data[0][6]=1;
   Display_data[1][0]=1;Display_data[1][2]=1;
   Display_data[1][7]=1;Display_data[1][5]=1;
   Display_data[2][0]=1;Display_data[2][2]=1;
```

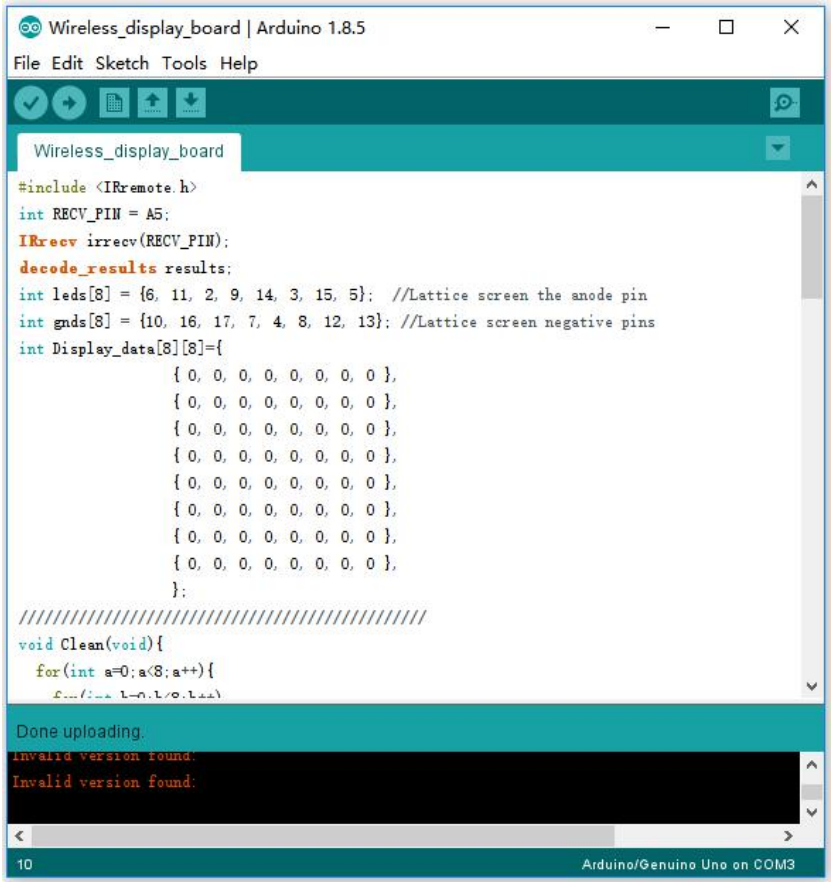
```
  Display_data[2][7]=1;Display_data[2][5]=1;
  Display_data[5][1]=1;Display_data[5][6]=1;
  Display_data[6][2]=1;Display_data[6][5]=1;
  Display_data[7][3]=1;Display_data[7][4]=1;
}
void face2(void){
  Clean();face1();
  Display_data[3][1]=1;
  Display_data[3][6]=1;
}
void face3(void){
  Clean();face1();face2();
  Display_data[0][1]=0;
  Display_data[0][6]=0;
}
void setup(){
  Serial.begin(9600);
  irrecv.enableIRIn(); // Start the receiver
  for (int i = 0; i < 8; i++){
    pinMode(leds[i], OUTPUT);
    pinMode(gnds[i], OUTPUT);
    digitalWrite(gnds[i], HIGH); //The cathode pin up, put out all the LED
  }
  Clean();   //All closed
}
void loop() {
  if (irrecv.decode(&results)) {
    switch(results.value){
      case 0xffa25d : face1();break;
      case 0xff629d : face2();break;
      case 0xffe21d : face3();break;
      case 0xff38c7 : Clean();break;
      default : break;
    }
    Serial.println(results.value,HEX);
    irrecv.resume(); // Receive the next value
  }
  Display();
}
```

3.2、Connections diagram

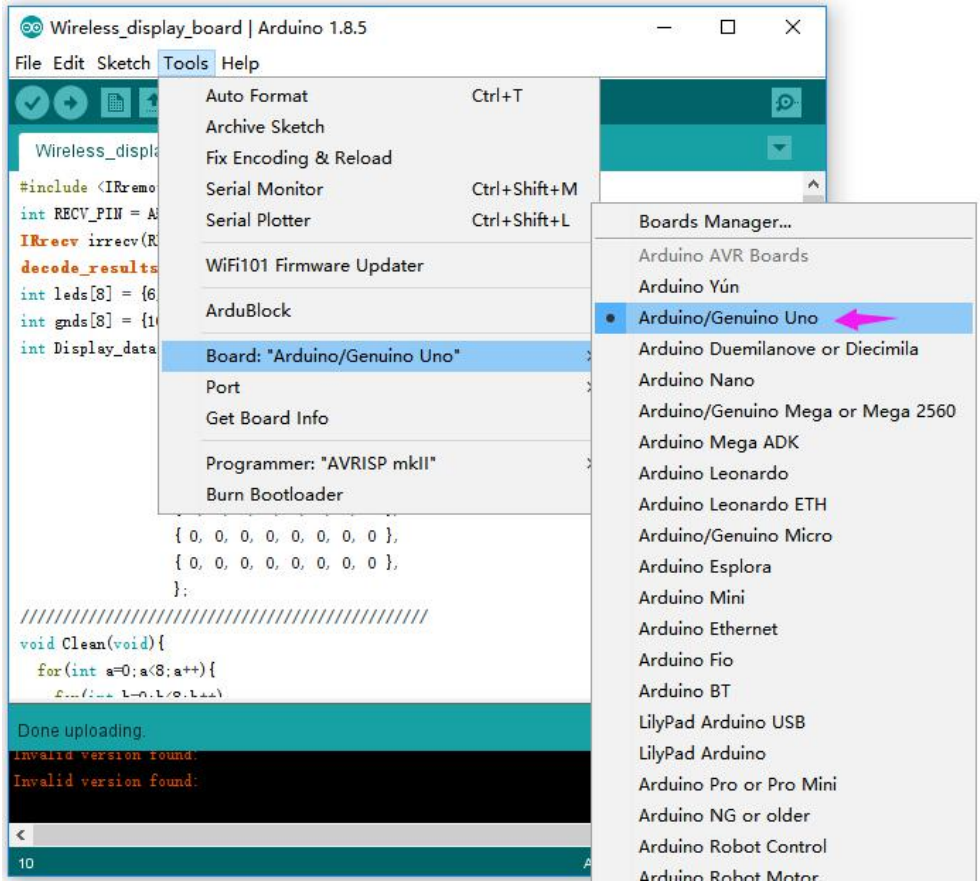


3.3、Compile and upload

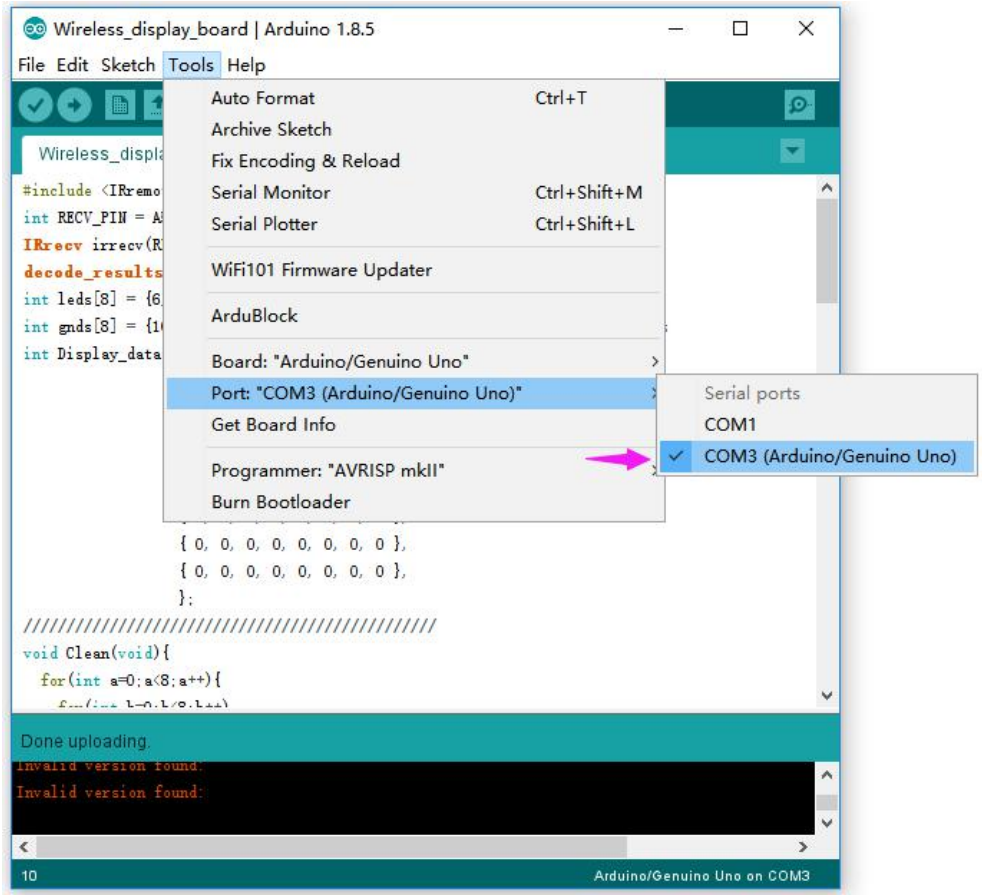
3.3.1、Using USB cable to connect computer to V-1 board，Open the Arduino IDE，copy the above code into the IDE：



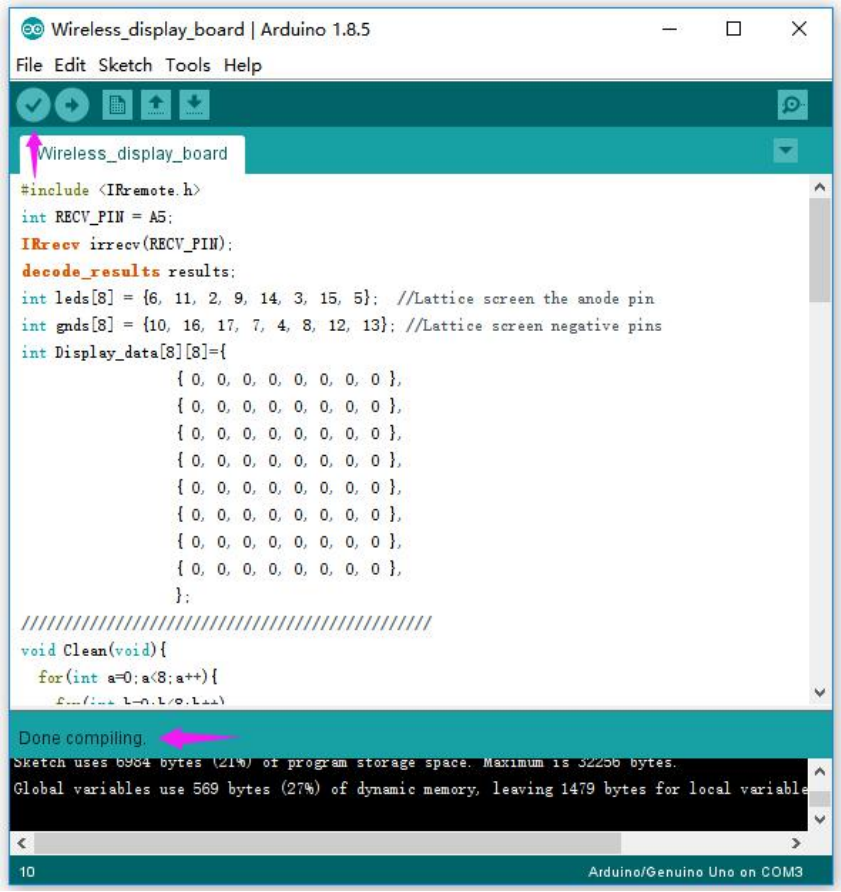
3.3.2、Select corresponding board type



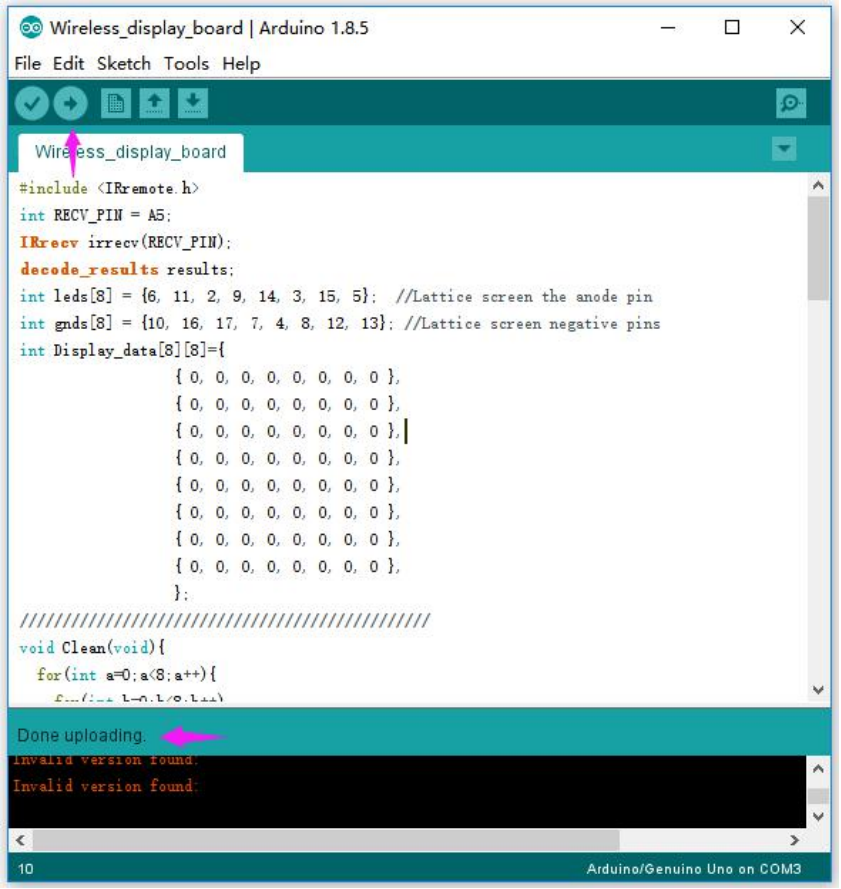
3.3.3、select corresponding port



3.3.4、compile this sketch



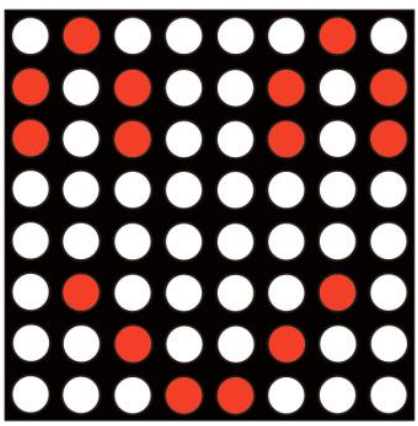
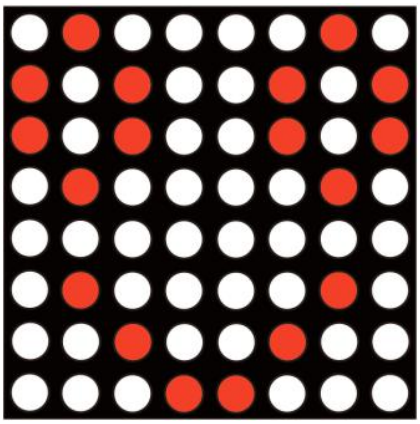
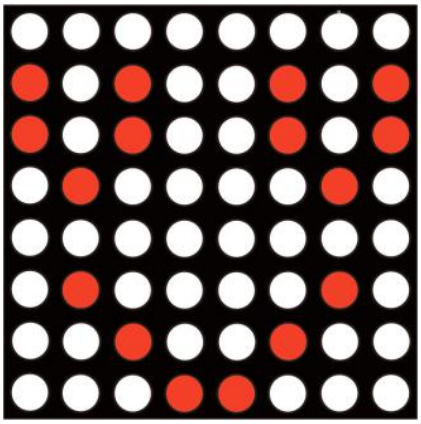
3.3.5、simply click the “Upload” button in the environment

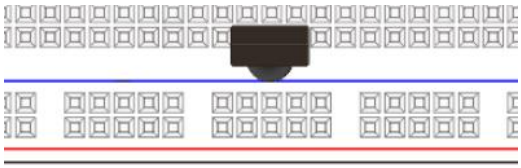


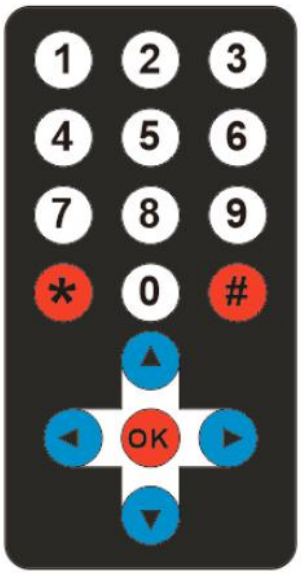
3.3.6、Running Result

A few seconds after the upload finishes, you can disconnect the V-1 board from the computer and use the external power supply to power the entire circuit.

Press the 1-3 keys respectively in the direction of the infrared receiver with the infrared transmitter remote control, the 8 * 8 dot matrix will display 3 expressions, as shown below:





Remarks: Please pull out the plastic piece at the bottom of the infrared emission remote control when using.