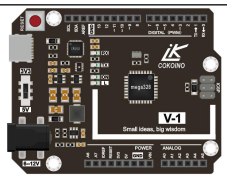
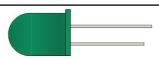
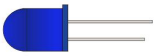
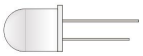
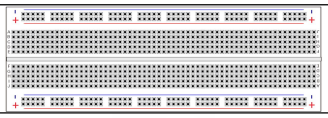
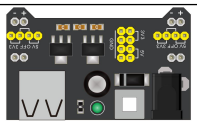
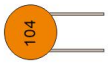
8.Voice Control Light

ABOUT THIS PROJECT：

You will learn：

- How to Make Voice Control Light

1、Things used in this project：

Hardware components	Picture	Quantity
V-1 board		1 PCS
F3 Red LED Light		1 PCS
F3 Green LED Light		1 PCS
F3 Blue LED Light		1 PCS
F3 White LED Light		1 PCS
Breadboard		1 PCS
9V Battery Snap Connector (you need to buy 9V battery yourself)		1 PCS
Breadboard power module		1 PCS
Male to Male DuPont Cable		12 PCS
30 CM USB Cable		1 PCS
220R Resistance		4 PCS
10K Resistance		2 PCS
104 Ceramic Capacitor		1 PCS
Microphone		1 PCS
10K Potentiometer		1 PCS

2.Microphone Introduction

A microphone is an energy conversion device that converts a sound signal into an electrical signal, and is a device (electricity → sound) that is exactly the opposite of the speaker. The microphone is the input and the speaker is the output.

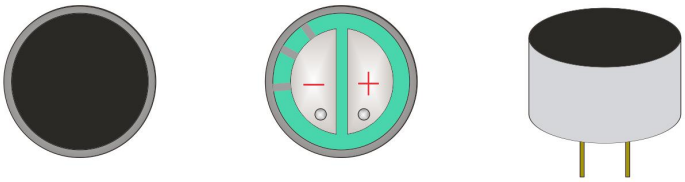


Figure 1

As shown in Figure 1, the microphone has two pins, one of which is connected to the case to shield the interference signal. This pin is usually the negative pole; the other end is usually the positive pole.

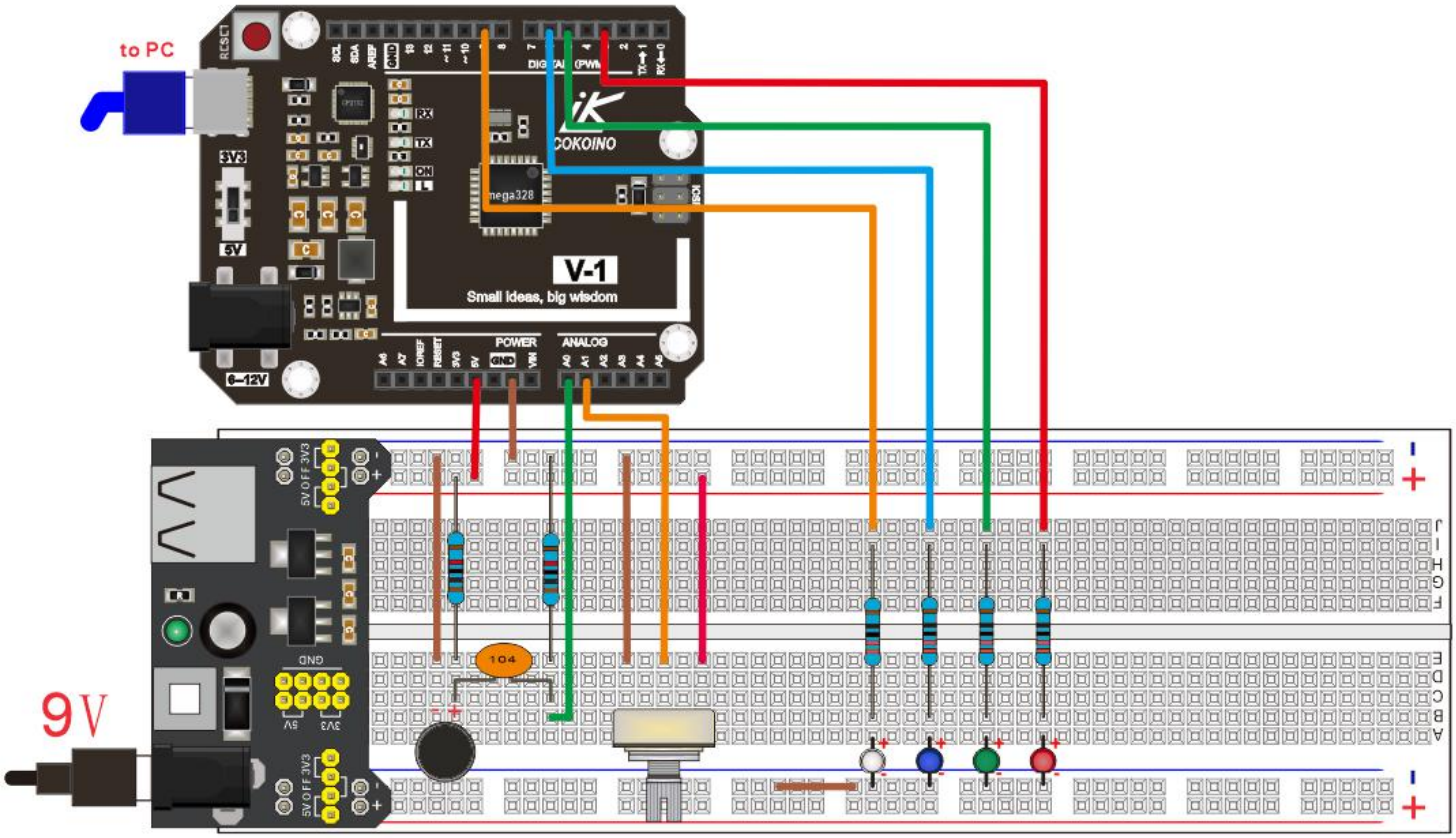
2. Sound control LED light

In this experiment, you can learn to read the analog signal output from the microphone through the analog port of V-1 board to control the LED light to be turned on or off. The main statement of this program is: PWM_data = analogRead(A0); analogWrite(pin, PWM_data);

2.1、Sketch

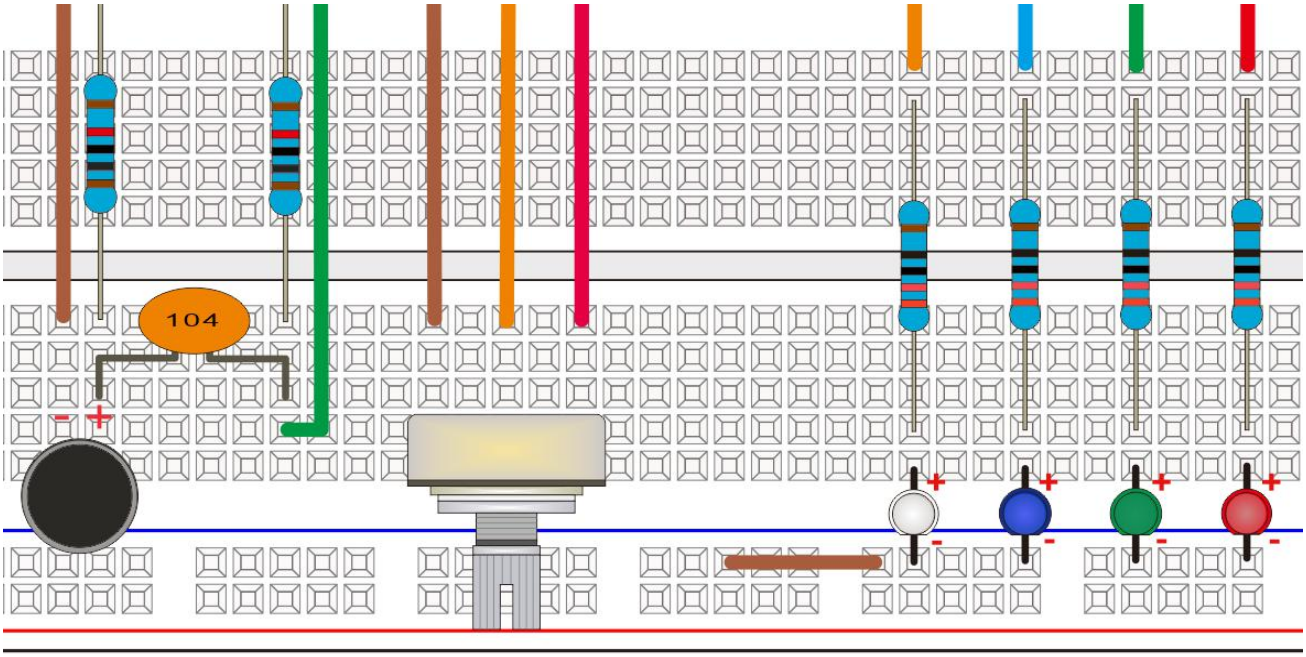
```
#define LED_R 3
#define LED_G 5
#define LED_B 6
#define LED_W 9
int PWM_data=0;
int ADJ_data=0;
void setup() {
  pinMode(LED_R,OUTPUT);
  pinMode(LED_G,OUTPUT);
  pinMode(LED_B,OUTPUT);
  pinMode(LED_W,OUTPUT);
  pinMode(A0,INPUT);
  pinMode(A1,INPUT);
}
void loop() {
  ADJ_data = analogRead(A1);
  PWM_data = analogRead(A0);
  if(PWM_data>ADJ_data ){
    digitalWrite(3,HIGH);
    delay(200);
    digitalWrite(5,HIGH);
    delay(200);
    digitalWrite(6,HIGH);
    delay(200);
    digitalWrite(9,HIGH);
    delay(200);
    }
  digitalWrite(3,LOW);
  digitalWrite(5,LOW);
  digitalWrite(6,LOW);
  digitalWrite(9,LOW);
}
```

2.2 Connection Diagram



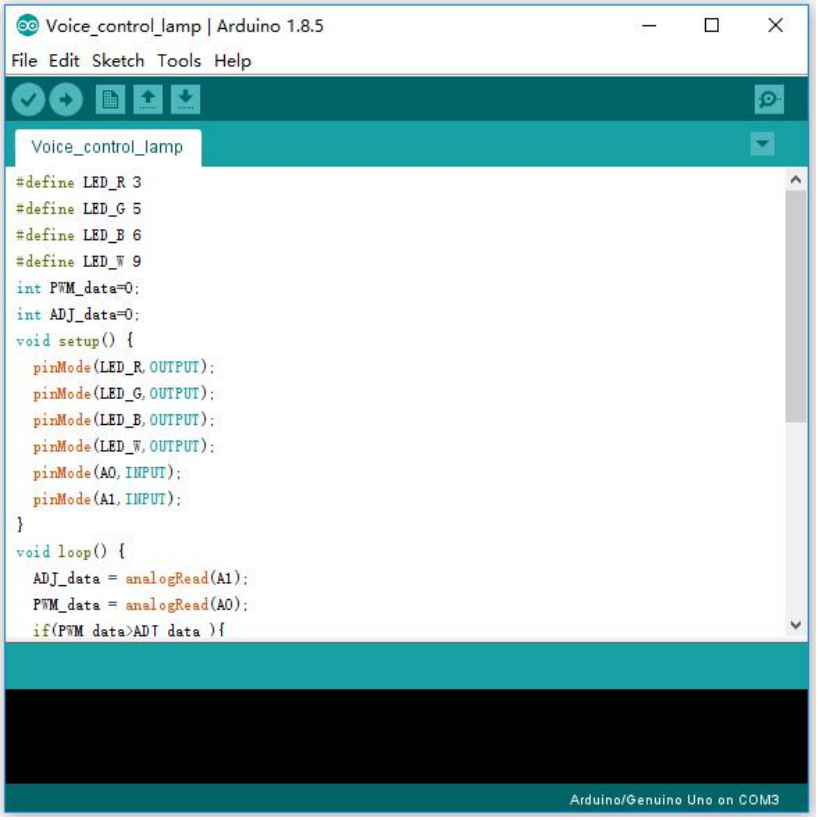
Note: 104 ceramic capacitors are used to isolate DC signals and turn on AC microphone signals.

Detail enlargement

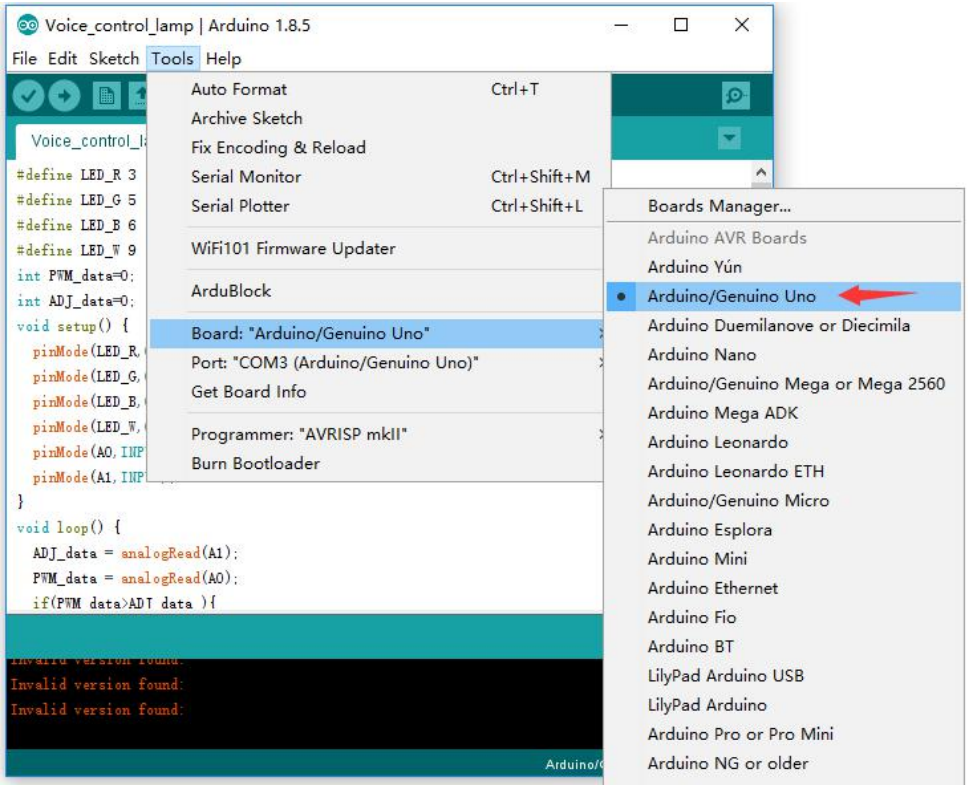


2.3 Step

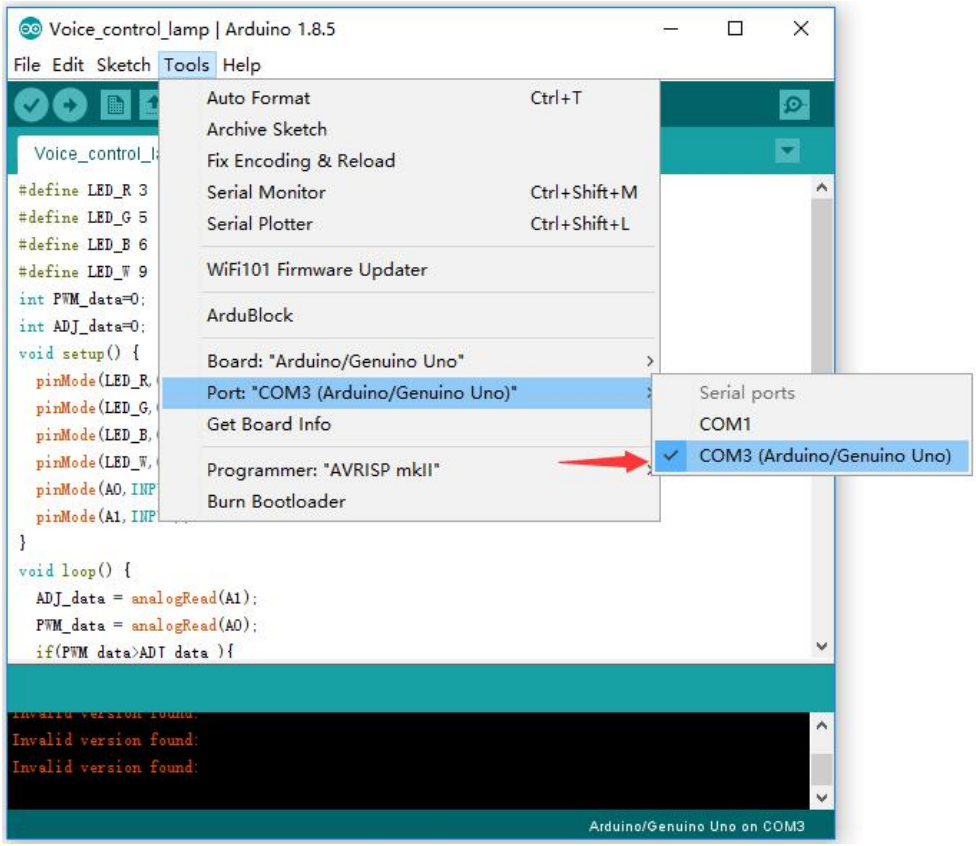
2.3.1、Connect the computer and V-1 board with a USB cable and copy the above sample code to the Arduino IDE as shown below：



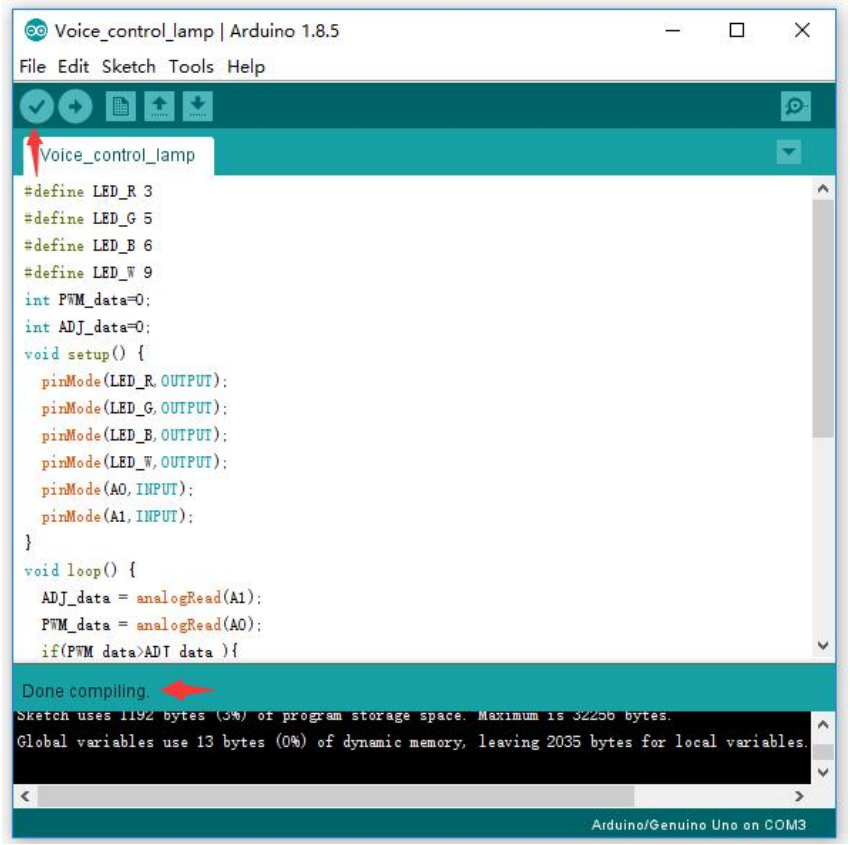
2.3.2、Select board type



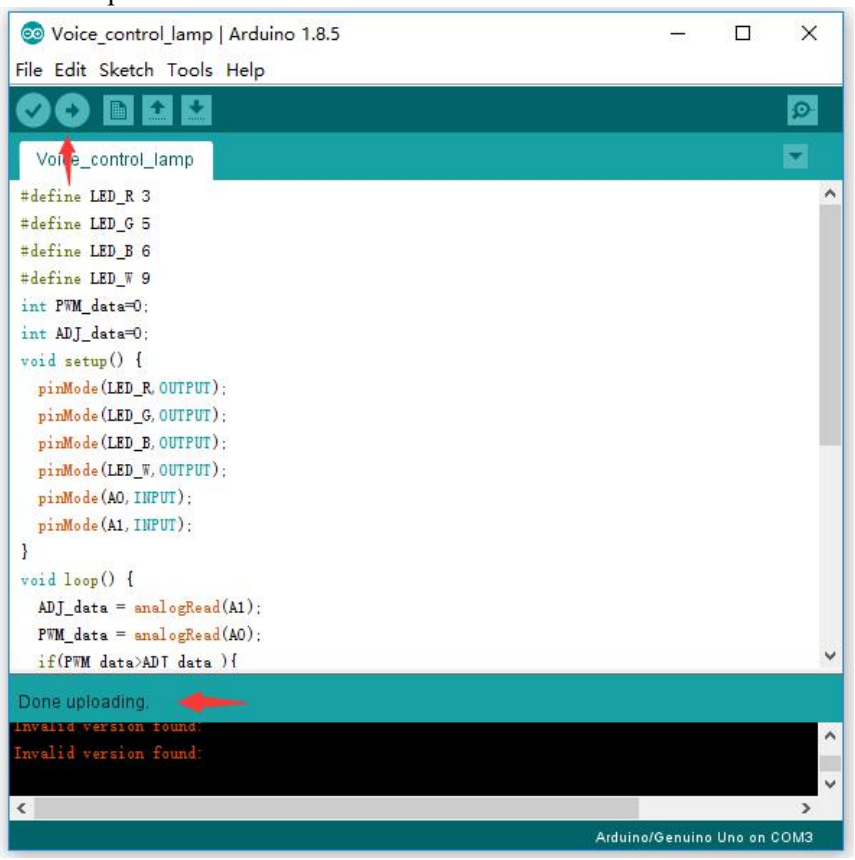
2.3.3、Select port

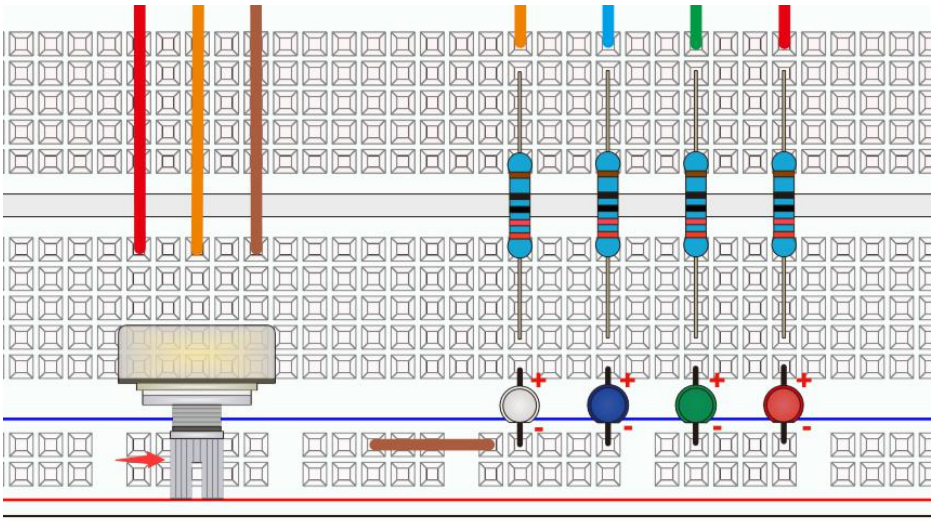


2.3.4、Compiling



2.3.5、Upload the sketch



2.3.6、Result

Unplug the USB cable from the V-1 board, connect the power module to the external power supply, and then turn on the switch of the power module on the breadboard. Adjust the potentiometer to make the 4 LED lights reach the critical point of turn and off. At this time, the microphone is the most sensitive to the sound. When you pat the palm and the microphone senses the sound, it will light up 4 LED lights, as shown below: