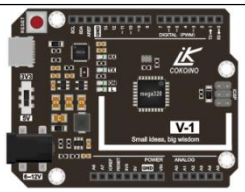
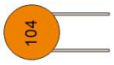
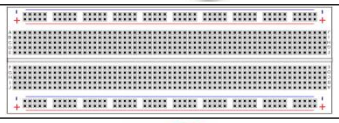
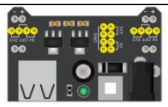
9.Voice switch

ABOUT THIS PROJECT：

You will learn：

How to Make Voice Switch

1、Things used in this project：

Hardware components	Picture	Quantity
V-1 board		1 PCS
F3 Red LED Light		1 PCS
104 Ceramic Capacitor		1 PCS
SS8050 Transistor		1 PCS
Microphone		1 PCS
Breadboard		1 PCS
Battery button (you need to buy 9V battery yourself)		1 PCS
Breadboard power module		1 PCS
Male to Male DuPont Cable		16 PCS
Type C USB Cable		1 PCS
220R Resistance		2 PCS
10K Resistance		2 PCS
10K Adjustable potentiometer		1 PCS
Relay		1 PCS

2. 5V Relay Module Introduction

The relay is an automatic switching element with isolation and low voltage control high voltage function. It is widely used in automatic control, mechatronics and power electronic equipment. It is one of the most important control components. Electromagnetic relay: An electrical relay that works by the suction force generated between the electromagnet core and the armature, as shown in Figure 1:

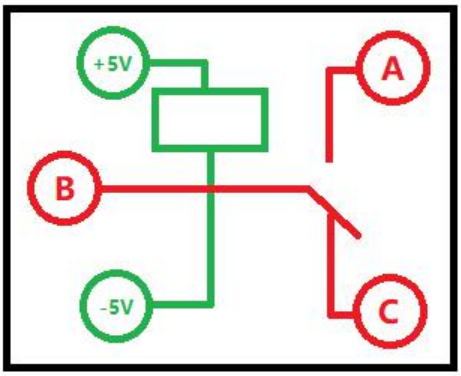


Figure 1

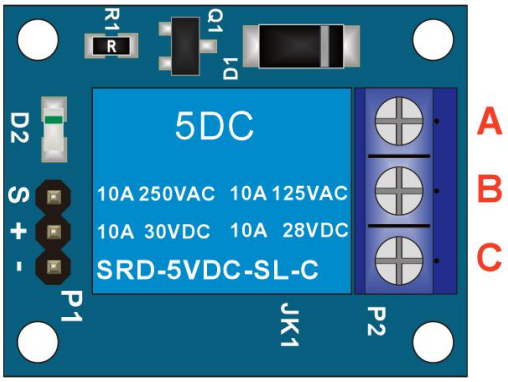
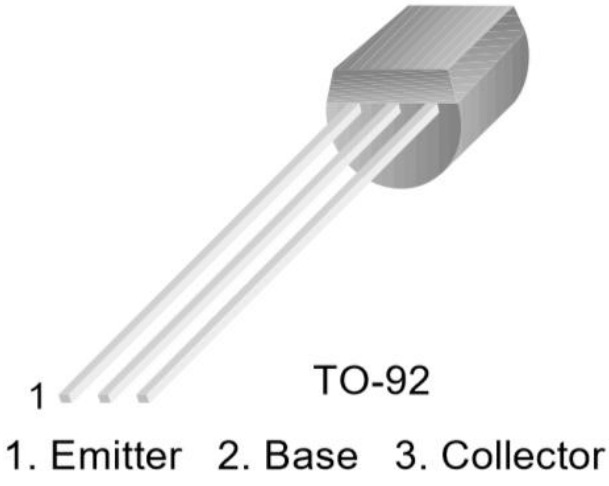


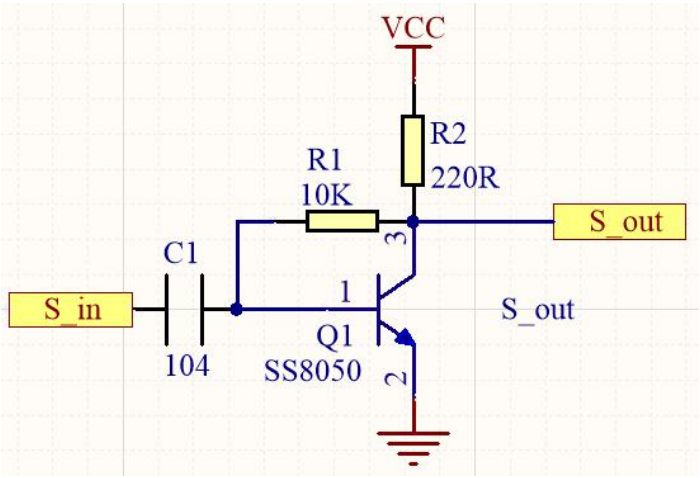
figure 2

Figure 2 above shows the relay module integrated with the triode drive circuit. P1 is the low voltage control terminal, and P2 is the switch terminal that can be connected to the high voltage. This is a DC5V relay, so the + and - interfaces of the P1 control terminal can only be connected to the DC5V power supply. The switch has three output terminals, AB is the normally open end, and BC is the normally closed end. When the relay is connected to the DC5V power supply, if the S pin of the P1 terminal is low level, the relay does not pull-in, AB conducts, BC does not conduct, D2 does not light; when the S pin is high, the relay pulls, AB is not conductive, BC is conductive, and D2 is on.

2.1 SS8050 triode

SS8050 belongs to PNP polarity, silicon material triode. In this experiment, we used it and resistor to design a simple amplifying circuit to amplify the signal of the microphone, making the UNO R3 easier to detect the sound signal and processing the sound.





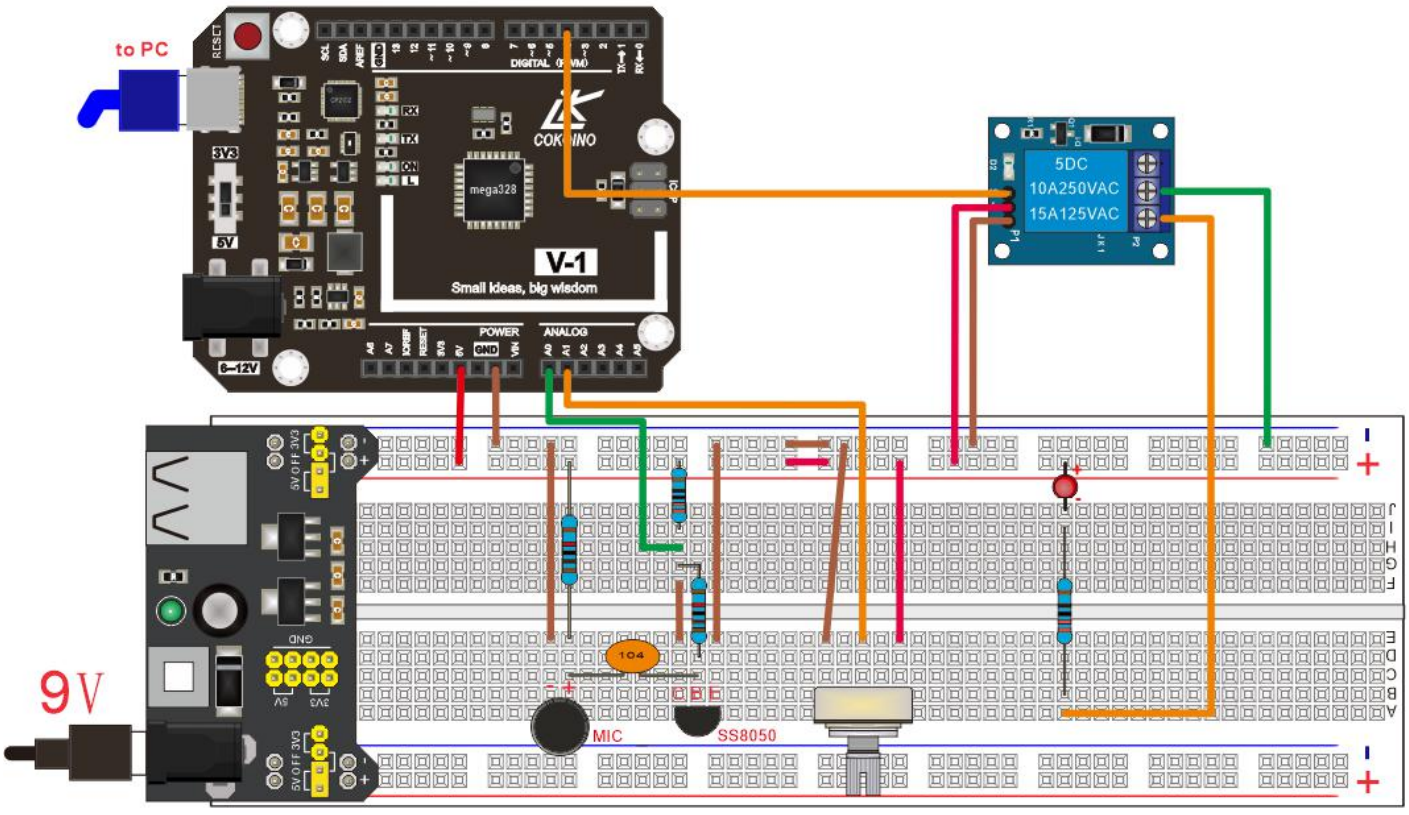
2. Voice switch

In this experiment, we can learn to read the analog signal output from the microphone through the analog port of UNO R3. To control the relay to pull in and off, thus controlling the light to turn on or off, the main statement of this program is: PWM_data = analogRead (A0); digitalWrite (pin, level);

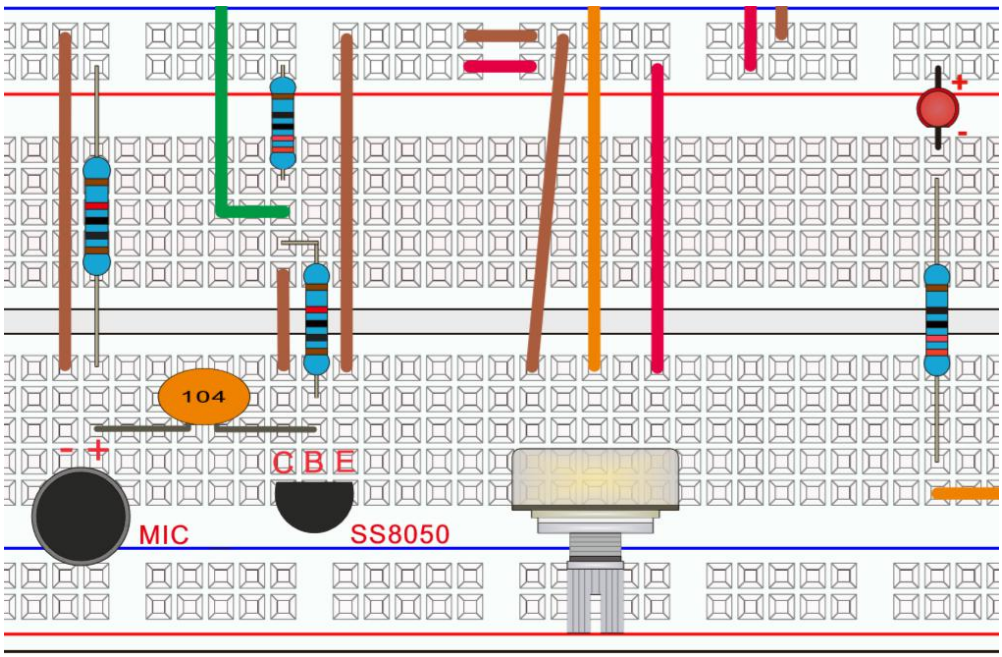
3.1、Code

```
#define LED_R 4
int PWM_data=0;
int ADJ_data=0;
void setup() {
   pinMode(LED_R,OUTPUT);
   pinMode(A0,INPUT);
   pinMode(A1,INPUT);
}
void loop() {
   ADJ_data = analogRead(A1);
   PWM_data = analogRead(A0);
   if(PWM_data>ADJ_data ){
      digitalWrite(4,HIGH);
      delay(1000);
      }
   digitalWrite(4,LOW);
}
```

3.2 Connection Diagram

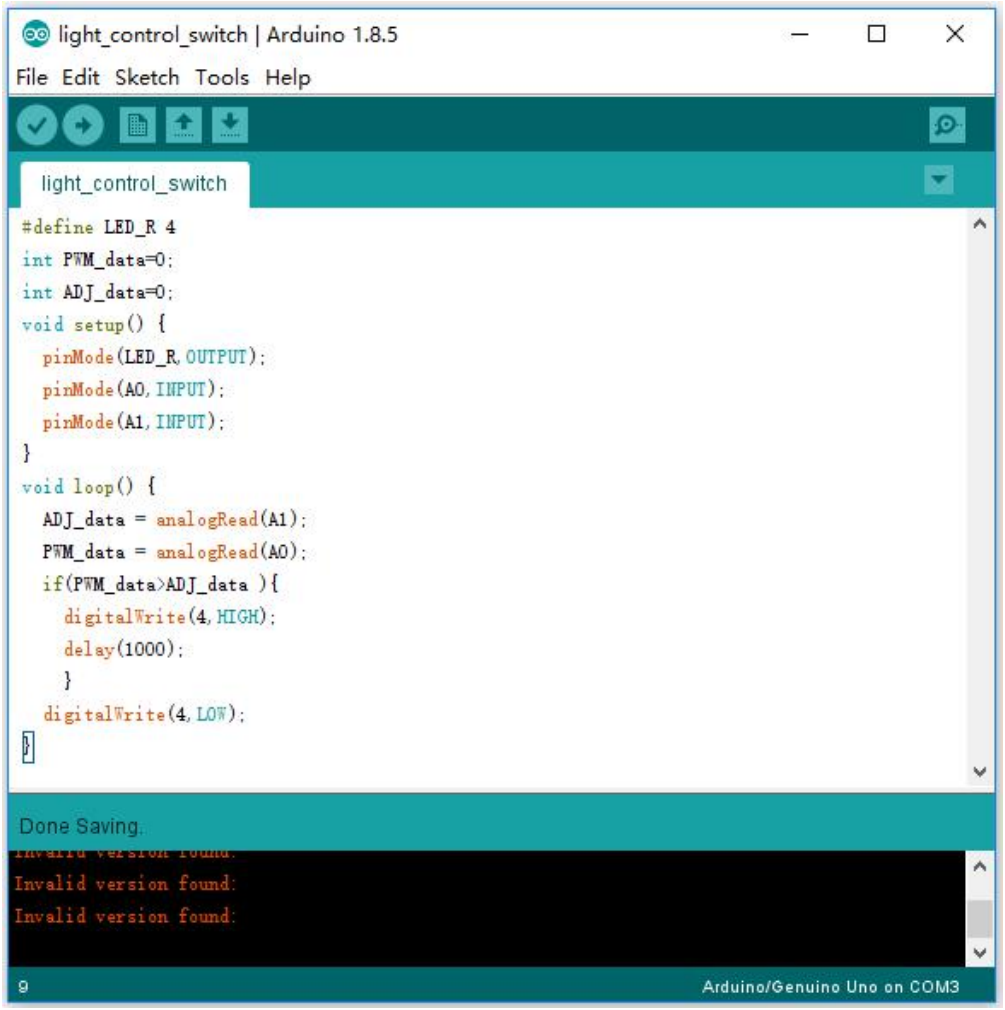


Detail enlargement

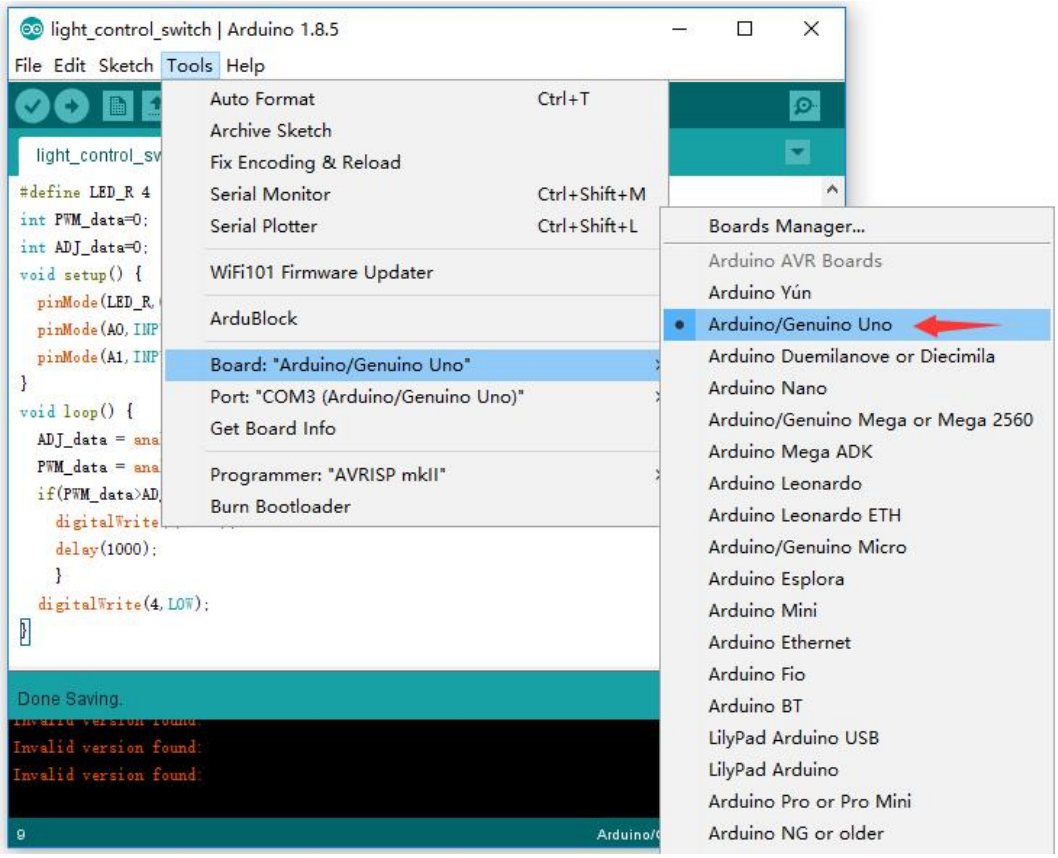


3.3、Project Step

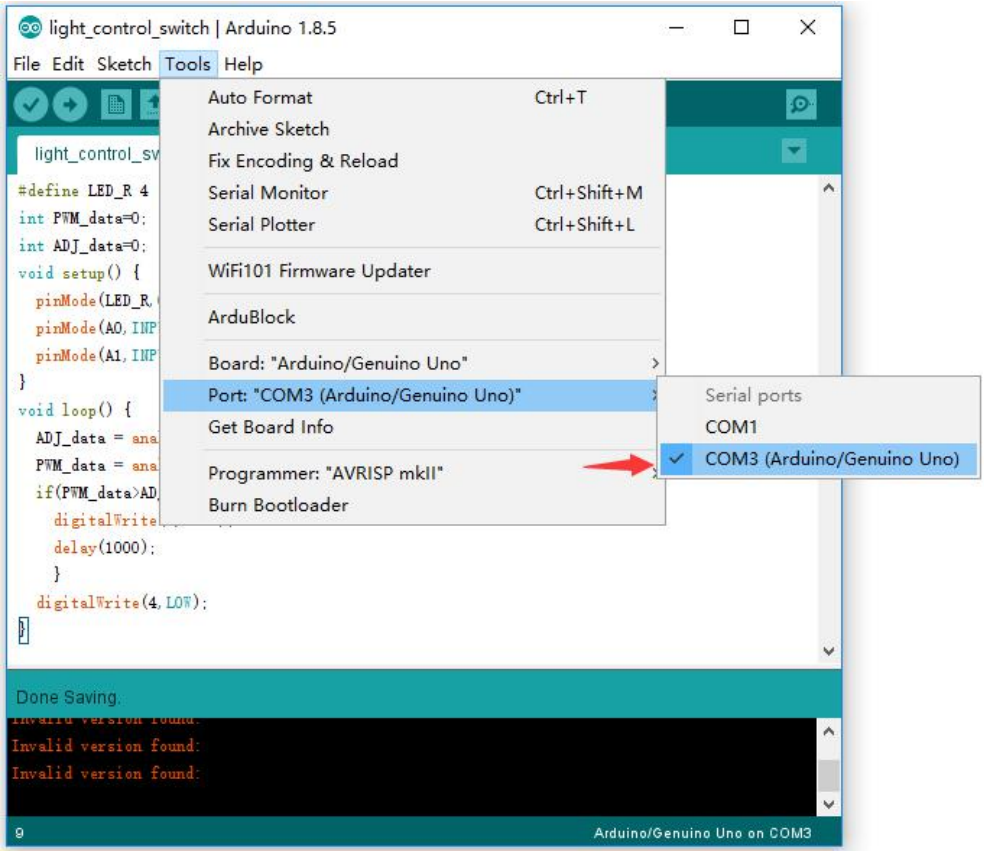
3.3.1、Connect the computer and V-1 board with a USB cable and copy the above sample code to the Arduino IDE as shown below：



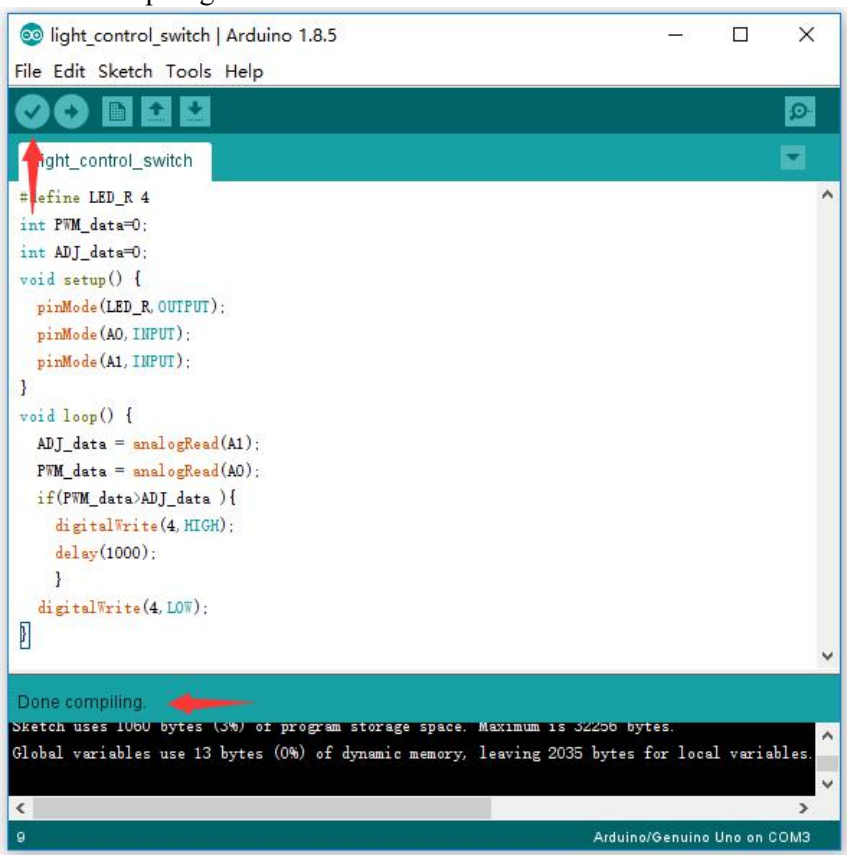
3.3.2、Select board type



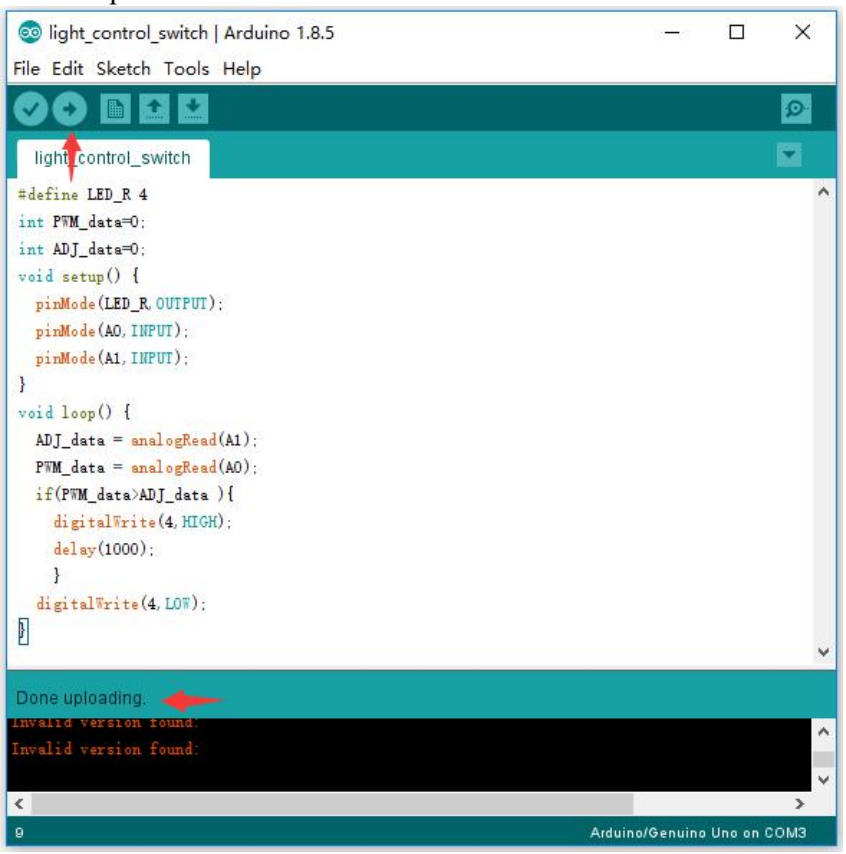
3.3.3、Select port



3.3.4、Compiling



3.3.5、Upload the sketch



3.3.6、Result

Unplug the USB cable from the uno board, connect the power module to the external power supply, and then turn on the switch of the power module on the breadboard. Adjusting the potentiometer makes the red LED light at the critical point of opening and closing. At this time, the microphone is the most sensitive to the sound. When the palm is tapped, the red LED will light up after the microphone senses the sound, as shown below: