Course 14 ---Flame alarm

The purpose of the experiment:

In this lesson, we need to complete the experiment of fire alarm. The experimental effect is: when there is no fire source approaching, the circuit is normal. When there is a fire source approaching, the buzzer will make a sound.

Introduction of flame sensor:

The actual object is shown below. Flame sensor (Infrared receiving triode), Because infrared is very sensitive to flame, we use a special infrared receiver tube to detect the flame, and then convert the brightness of the flame into a level signal of high and low change, and we need to input these signals into the MCU. Finally the MCU makes corresponding program processing according to the change of the signals.

List of components required for the experiment:

Arduino UNO board *1
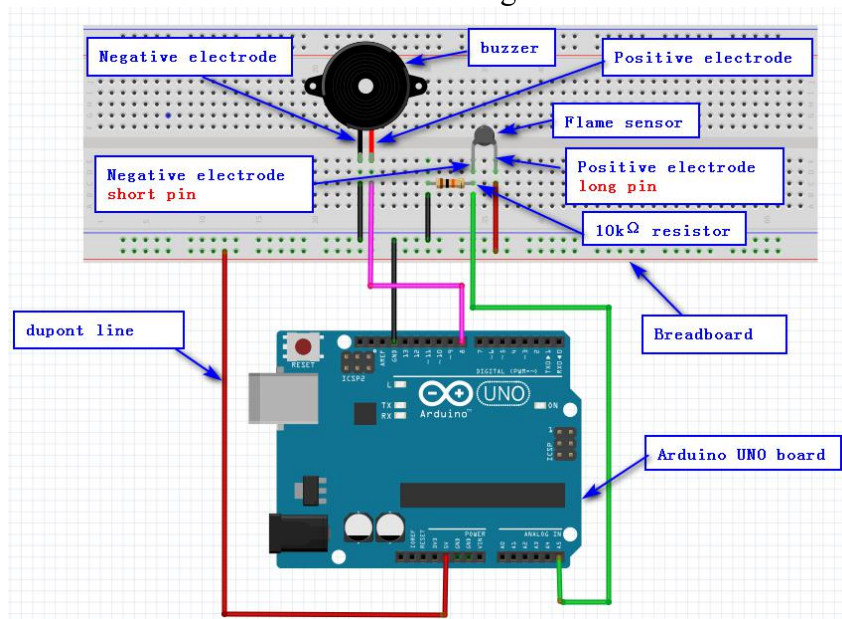USB cable *1
220 Ω resistor *1
10k Ω resistor *1
Tilt switch *1
Breadboard *1
Dupont line *1 bunch

Actual object connection diagram:

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

**Experimental code analysis:**

```
int flame=A5;    //Defining the analog port A5
 int Beep=8;    //Defining the digital port 8
 int val=0;      //Declarations of variables
void setup()
{
    pinMode(Beep,OUTPUT);    //Defining the digital port for the output port
    pinMode(flame,INPUT);    //Defining the analog port for the input port
    Serial.begin(9600);//The baud rate is 9600
    val=analogRead(flame);    //Read analog port voltage
}

void loop()
{
    Serial.println(analogRead(flame));    //The serial port sends the simulated voltage
value
    if((analogRead(flame)-val)>=600)     //Determine whether the simulated voltage
value is greater than 600
        digitalWrite(Beep,HIGH);
        else
            digitalWrite(Beep,LOW);
 }
```

Experimental steps:

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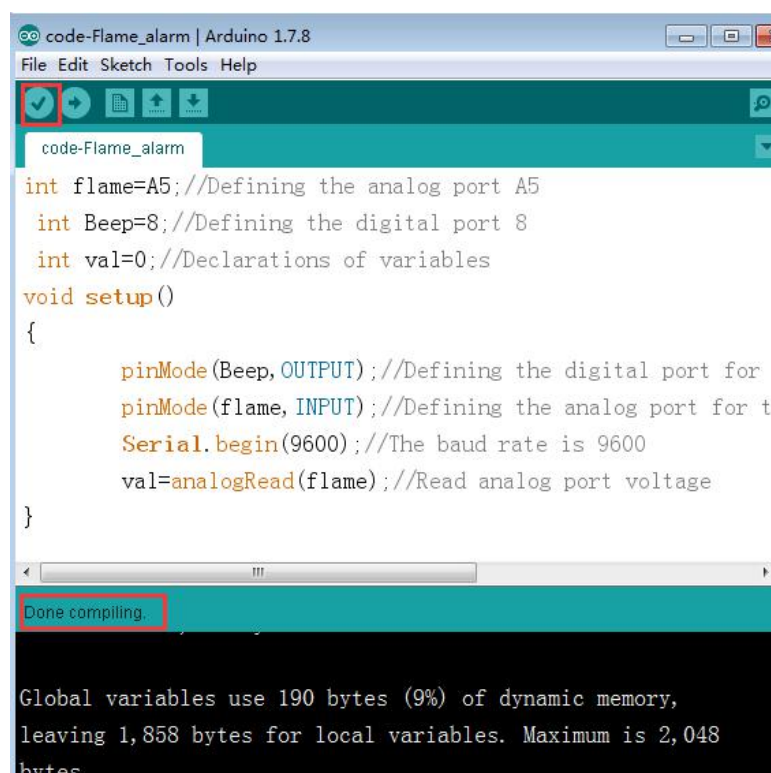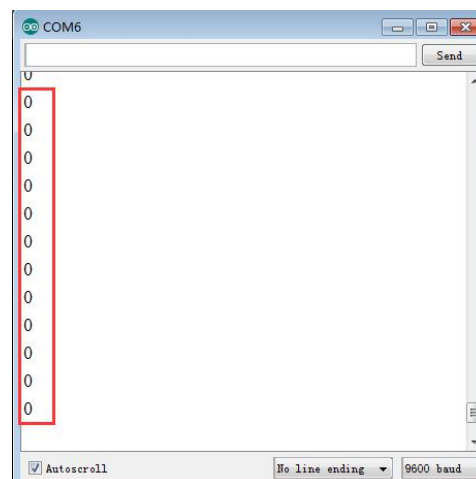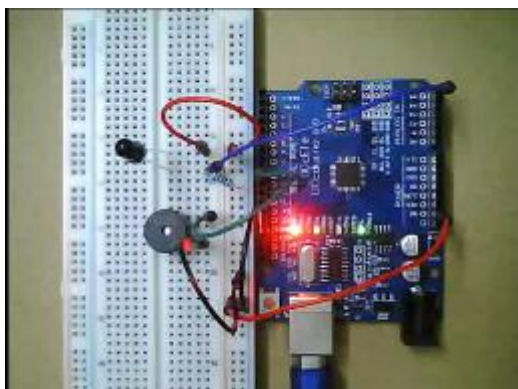
2. In the menu bar of Arduino IDE, we need to select 【Tools】---【Port】--- selecting the port that the serial number displayed by the device manager just now, as shown in the figure below. For example:COM6,as shown in the following figure.
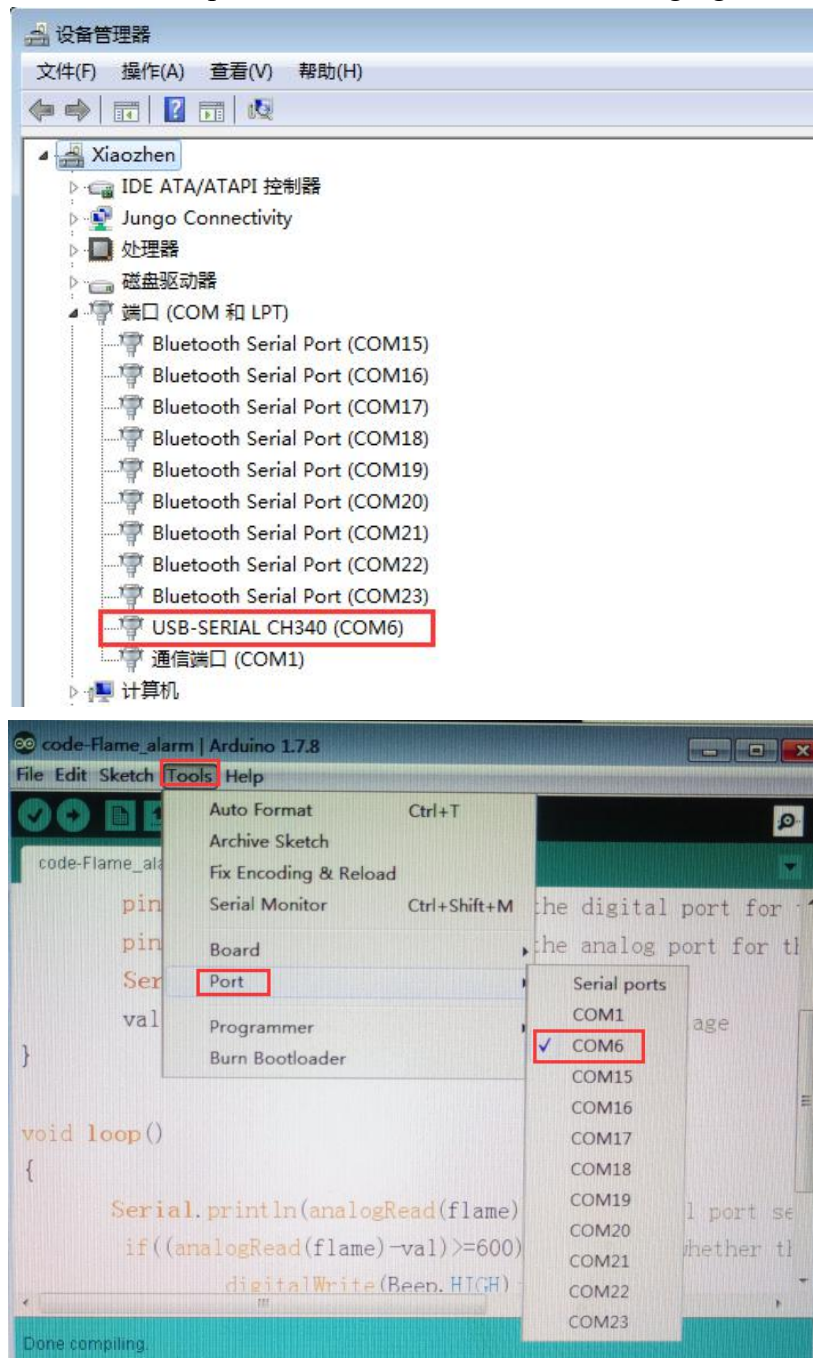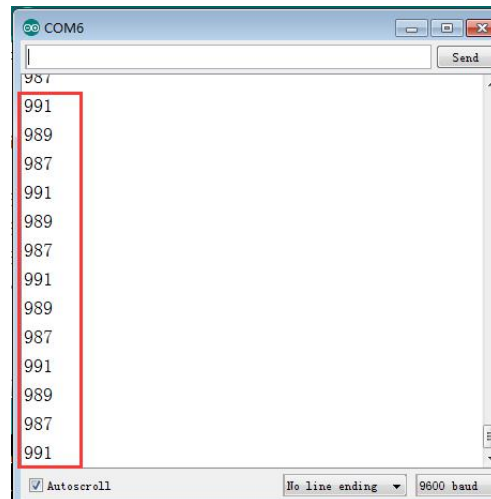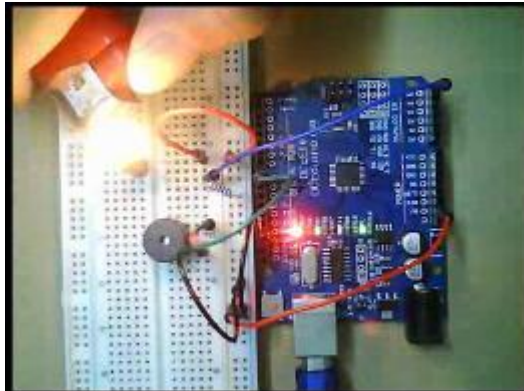

3.After the selection is completed, you need to click "→"under the menu bar to upload the code to the Arduino UNO board. When the word "**Done uploading**" appears in the lower left corner, the code has been successfully uploaded to the Arduino UNO board, as shown in the figure below.
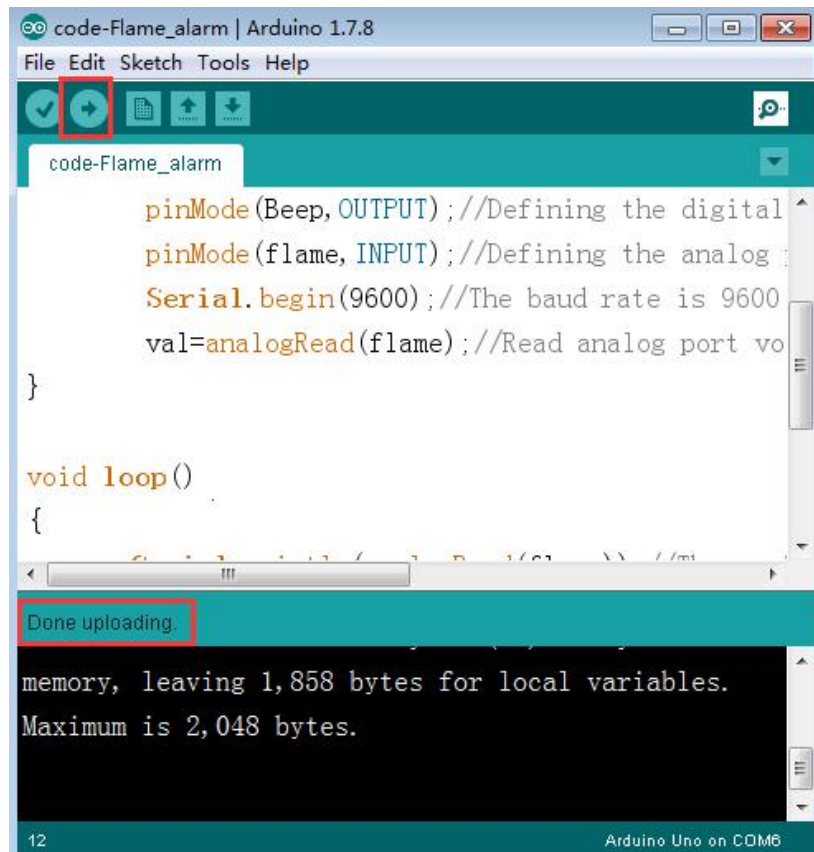
4.After the code is uploaded. When there is no fire source approaching, the circuit is normal. When there is a fire source approaching, the buzzer will make a sound to indicate the alarm. We can also open the serial monitor to observe the change in the value of the flame sensor, as shown in the figure below.

The code of the experiment: