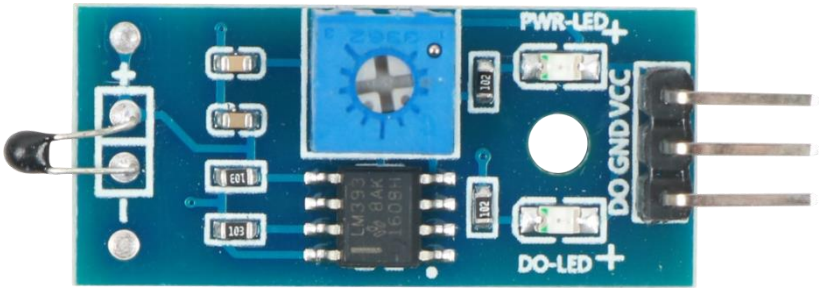
Thermistor module experiment

Introduction of thermistor module

Thermistors are a class of sensing elements, which can be divided into positive temperature coefficient thermistors (PTC) and negative temperature coefficient thermistors (NTC) according to different temperature coefficients. The typical characteristic of thermistors is that they are sensitive to temperature, showing different resistance values at different temperatures. The positive temperature coefficient thermistor (PTC) has higher resistance value when the temperature is higher, and the negative temperature coefficient thermistor (NTC) has lower resistance value when the temperature is higher, they both belong to semiconductor devices.



Experiment purpose

- Read the resistance values of thermistors at different temperatures
- Use thermistor module to control LED on and off.

Experiment princple

Arduino UNO R3 mainboard reads the digital output value of thermistor. When the read value reaches the threshold value of 0 (low level), the LED light will be controlled and the active buzzer will ring. Otherwise, the LED will be turned off and the active buzzer will not ring.

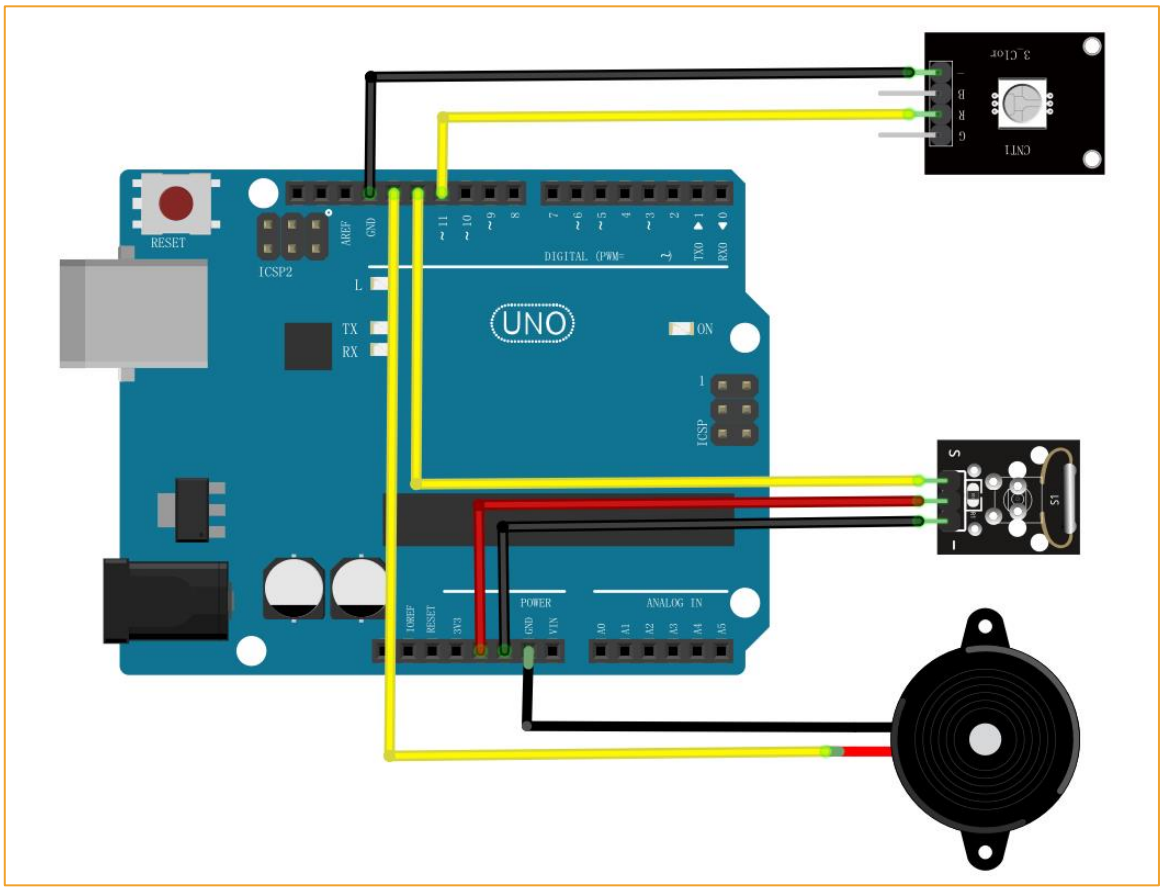
Component List

- Keywish Arduino Uno R3 mainboard
- Breadboard
- USB cable
- Thermistor module *1
- LED Module*1
- Active Buzzer *1
- Lighter

- Jumper wires

Wiring of Circuit

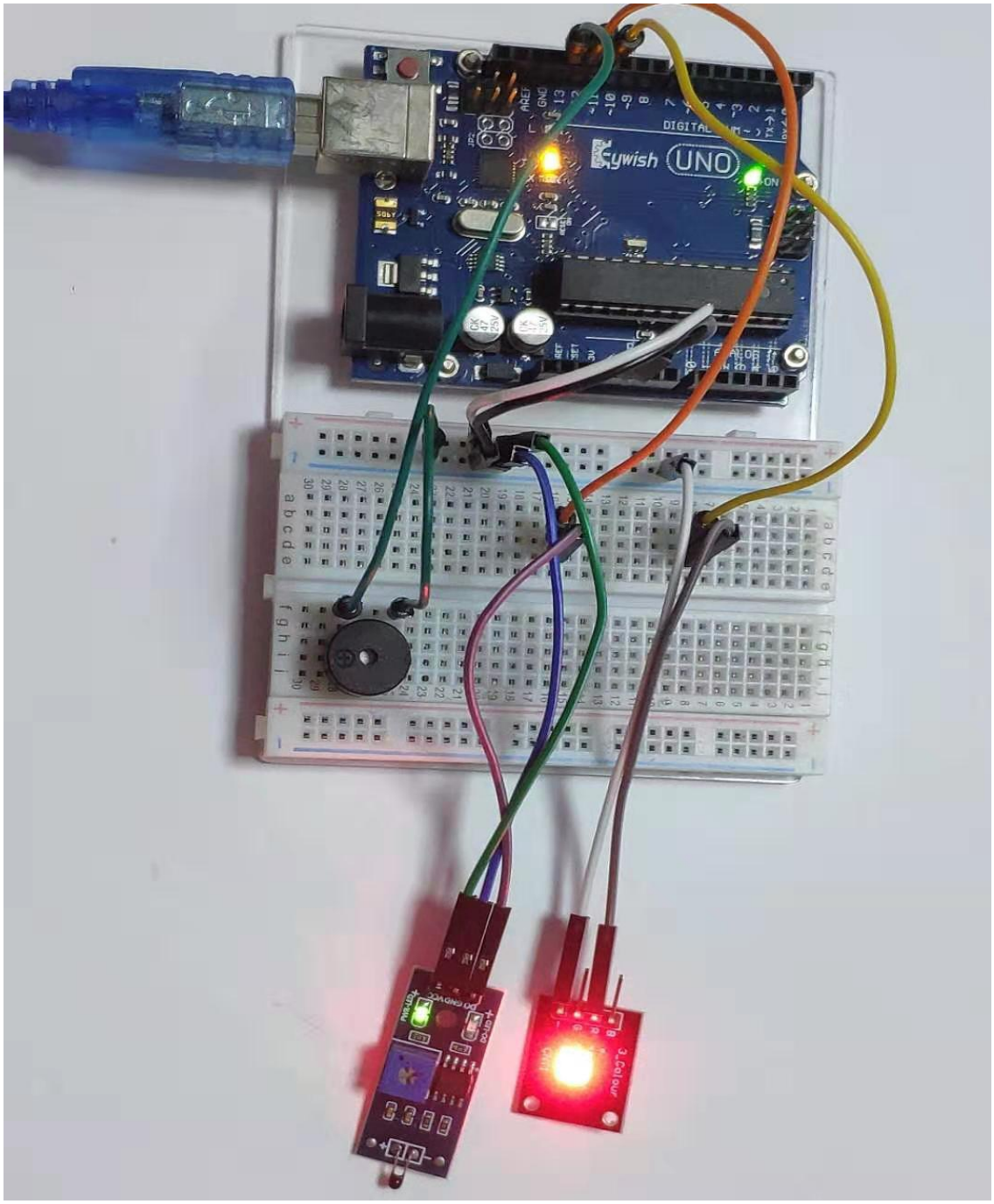
Arduino UNO	Knock sensor module
5V	VCC（R）
GND	GND(G)
12	OUT(Y)
Arduino UNO	LEDModule
11	+
GND	—
Arduino UNO	Active buzzer
13	+
GND	—



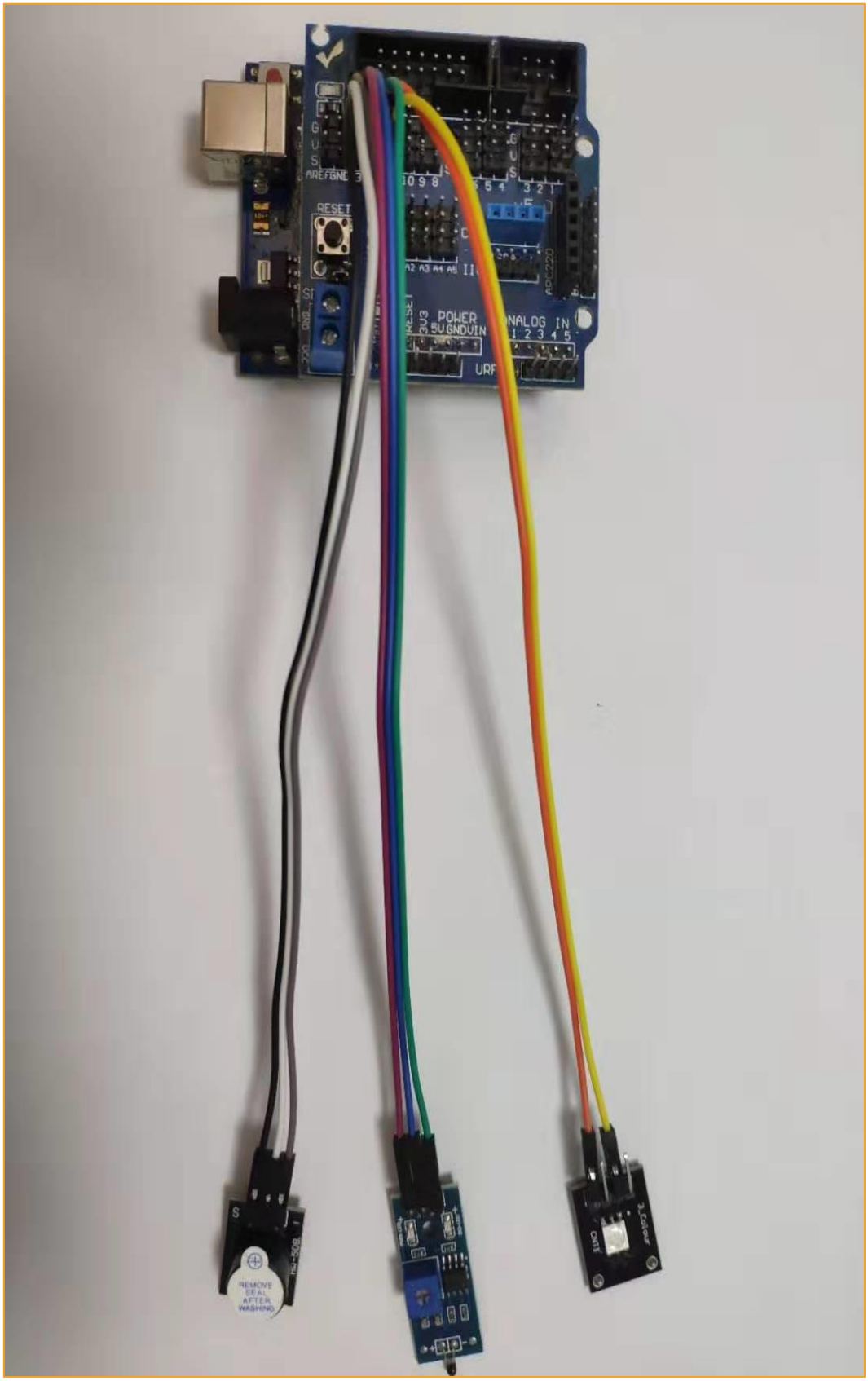
Arduino IDE Code

```
int Led=11;
int Buzzer_pin=13;
int Sensor_PIN=12;
int val=0;
void setup()
{
  pinMode(Led,OUTPUT);
  pinMode(Buzzer_pin,OUTPUT);
  pinMode(Sensor_PIN,INPUT);
  Serial.begin(9600);
}
void loop()
{
  val=digitalRead(Sensor_PIN);
  Serial.println(val);
  if(val==0)
     {
       digitalWrite(Led,HIGH);
      digitalWrite(Buzzer_pin,HIGH);
     }
  else
     {
       digitalWrite(Led,LOW);
       digitalWrite(Buzzer_pin,LOW);
     }
}
```

Experiment Result

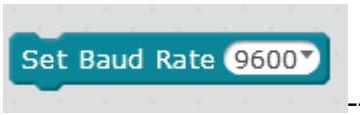


If there is a Sensor V5.0 expansion board in the kit, you can connect the Sensor according to the following wiring method, which is more convenient.



MBlock graphical programming program

The main blocks used in mBlock programming are:

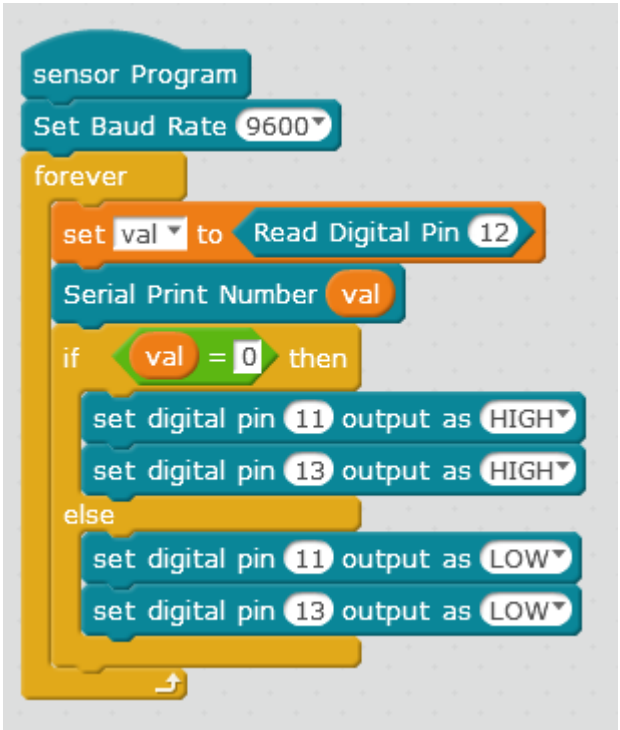


--Set baud rate

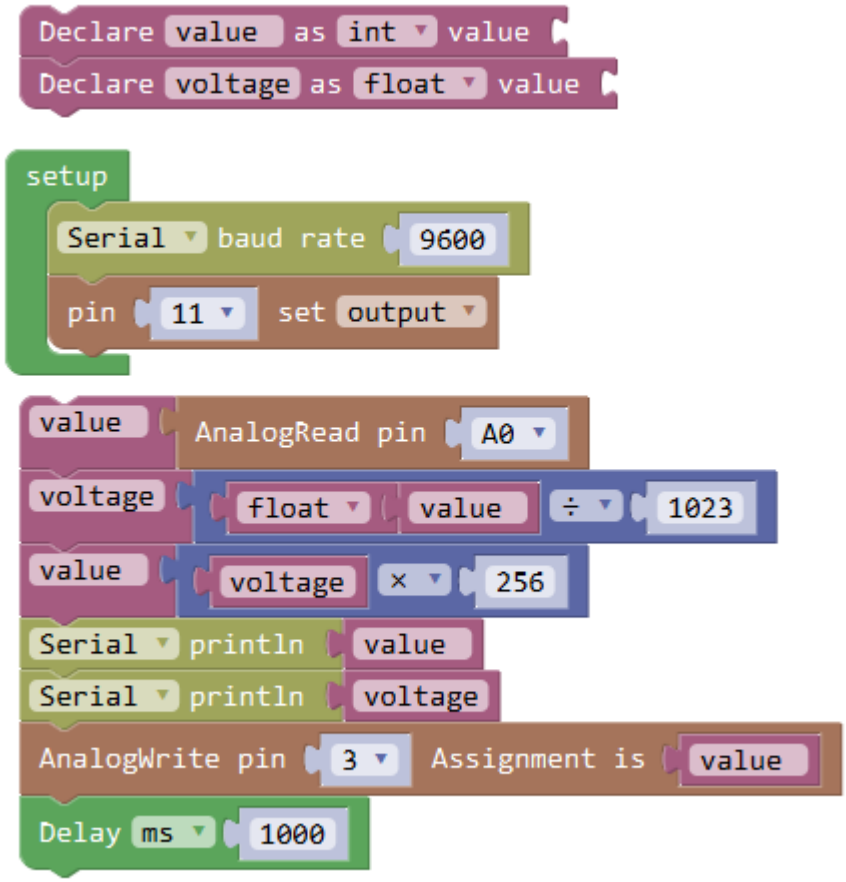
--Set a variable to be， Save the read thermistor module level signal

--A serial port to print

MBlock writes the thermistor program as shown in the figure below:



Mixly graphical programming program



MagicBlock graphical programming program