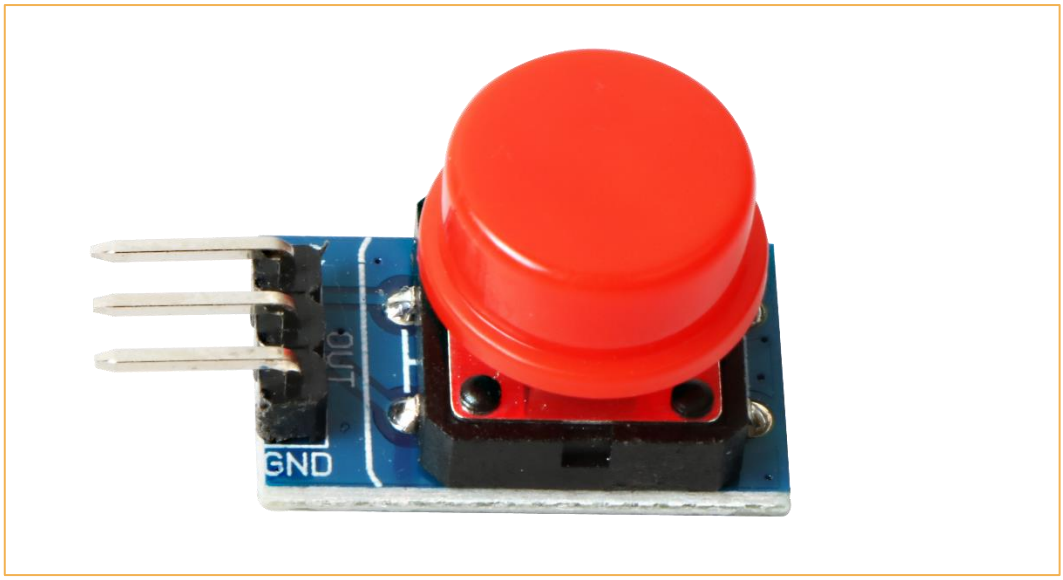
Button module experiment

Introduction to button module

The meaning of the digital I/O port is the INPUT and OUTPUT interface. In the previous LED lamp experiment, we only used the OUTPUT function of GPIO. Now let's try to use the I/O INPUT function in Arduino, which reads the output from an external device in this experiment. We used buttons and LED lights to complete the experiment using INPUT and OUTPUT as combinations.



The experiment purpose

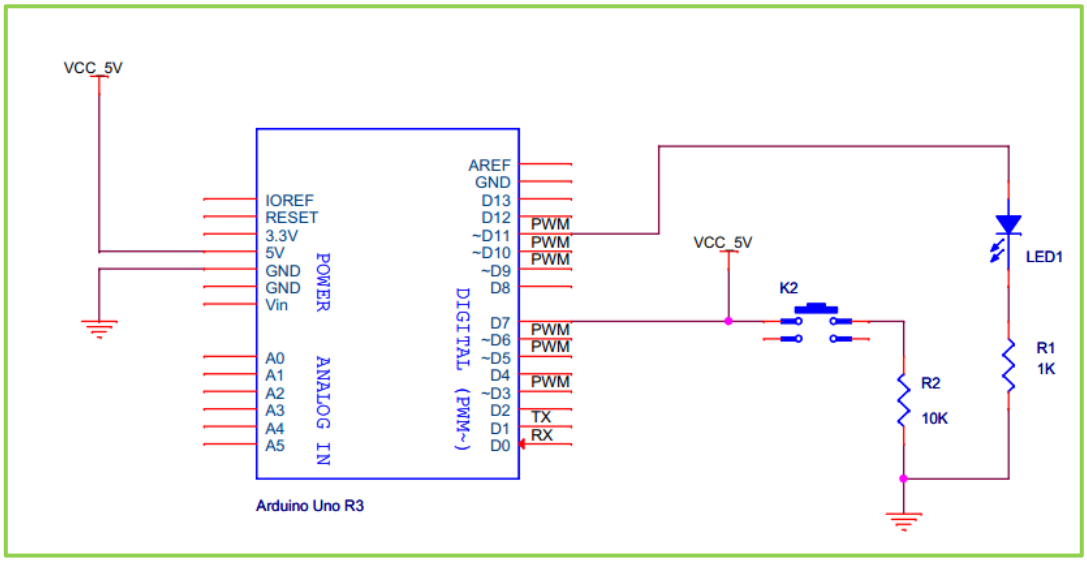
We connect the button to interface D7 and the red light to interface D11. (all d0-d13 digital I/O interfaces in Arduino controller can be used to connect the keys and indicator lights, but try not to choose digital D0 and D1 interfaces, because D0 and D1 functions are reused. In addition to I/O port functions, they are also used as serial communication interfaces.The device was communicating with the PC when the program was downloaded.So we should keep the D0 and D1 interfaces to avoid the trouble of inserting lines, we do not choose the D0 and D1 interfaces.

Component list

- Keywish Arduino Uno mainboard
- Breadboard
- USB cable
- Button * 1

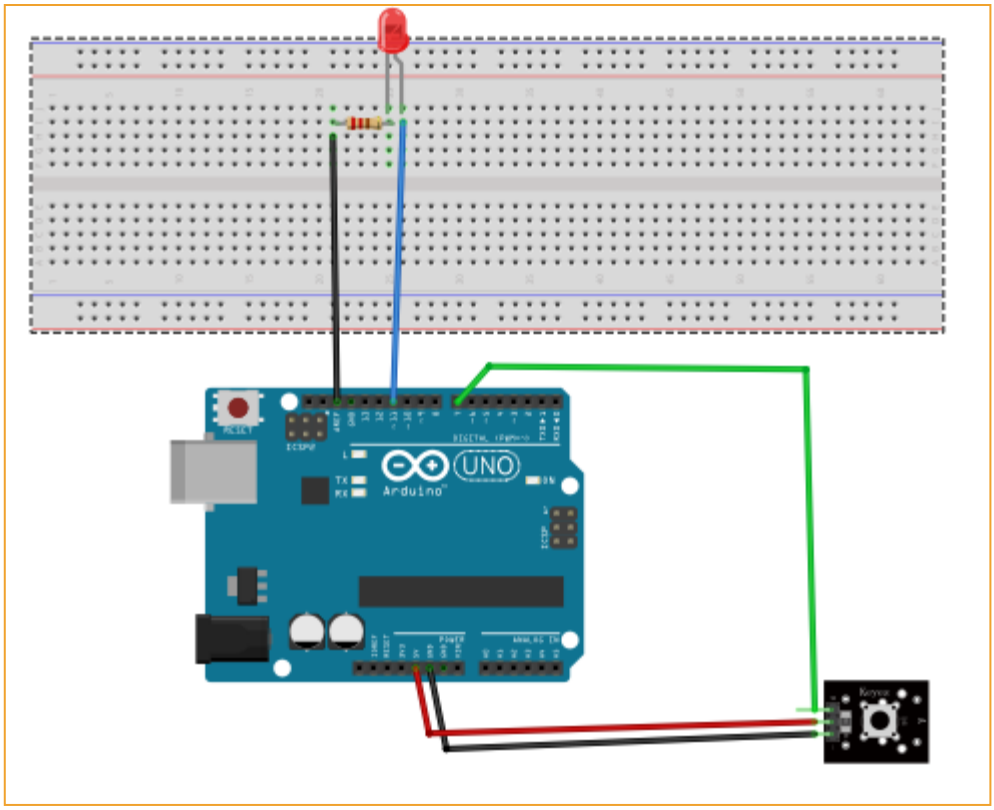
- LED light module * 1
- Jumper wires

Schematic diagram



Wiring Circuit

Arduino Uno	Key switch module
3	S
GND	-
+5V	Pin2
Arduino Uno	LED
11	+
GND	-



The experimental principle

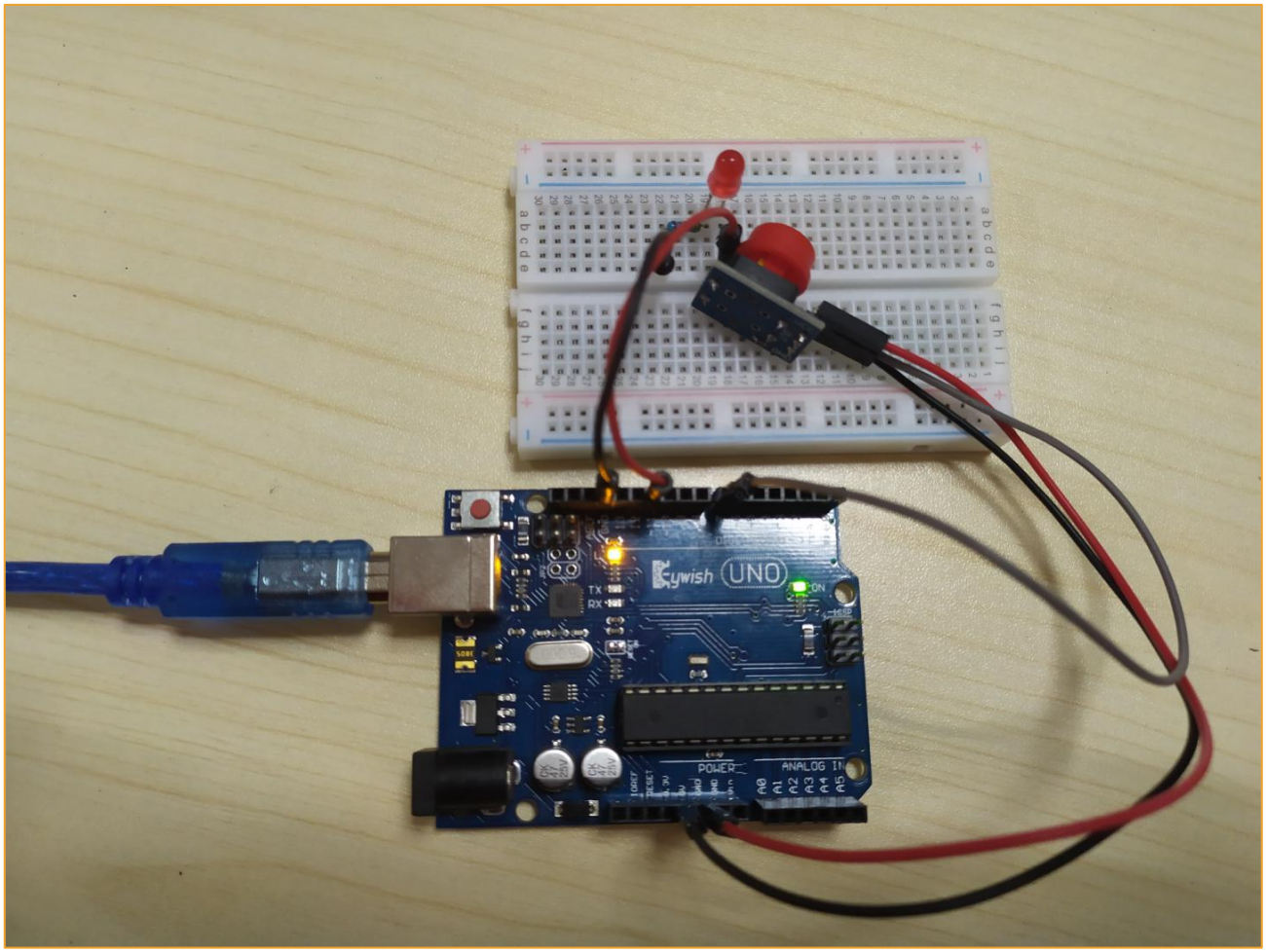
By analyzing the circuit, we can know that when the button is pressed, the D7 interface is in high level. It sets the D11 output pin into high level, which can make the light on. When the D7 interface is read low, the D11 output remains low and the indicator goes off. The principle is the same as above.

Code

```
int led out = 11 ;          //GPIO 11  LED pin
int keypad pin = 7 ;        // GPIO 7 key pin
int value;
void setup()
{
    pinMode(led out,OUTPUT);          // init led pin output
    pinMode(keypad pin,INPUT);       // init key pin input
}
void loop()
{
    val = digitalRead(keypad pin); // read key pad pin vaule
    if( value == LOW )
    {
        digitalWrite(led_out,HIGH);  // if key value is down  turn on LED
    }
    else
    {
        digitalWrite(led_out,LOW); // if key value is down  turn off LED
    }
}
```

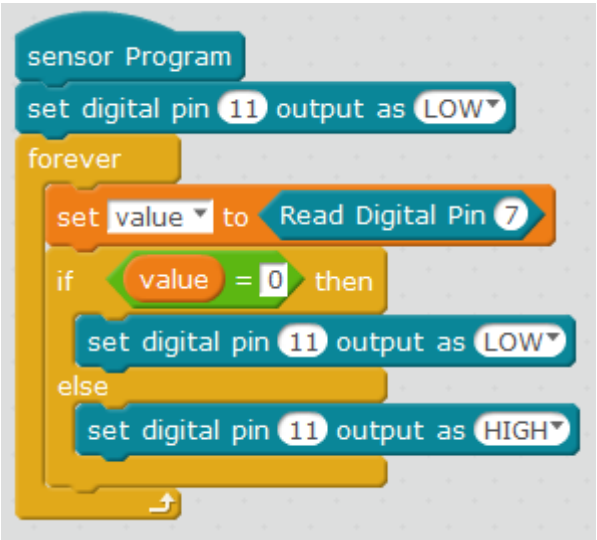
Download the program and complete the button experiment. Since the LED lamp module we use is a tricolor lamp, we only need to connect the pin of one of the lamps. The experimental principle is very simple, widely used in a variety of circuits and electrical appliances. In our real life, it is not difficult to find it in various devices, such as everyone's mobile phone, press the random button, the backlight will turn on, click the elevator button, the indicator light on the elevator will light up and so on.

Experiment Result

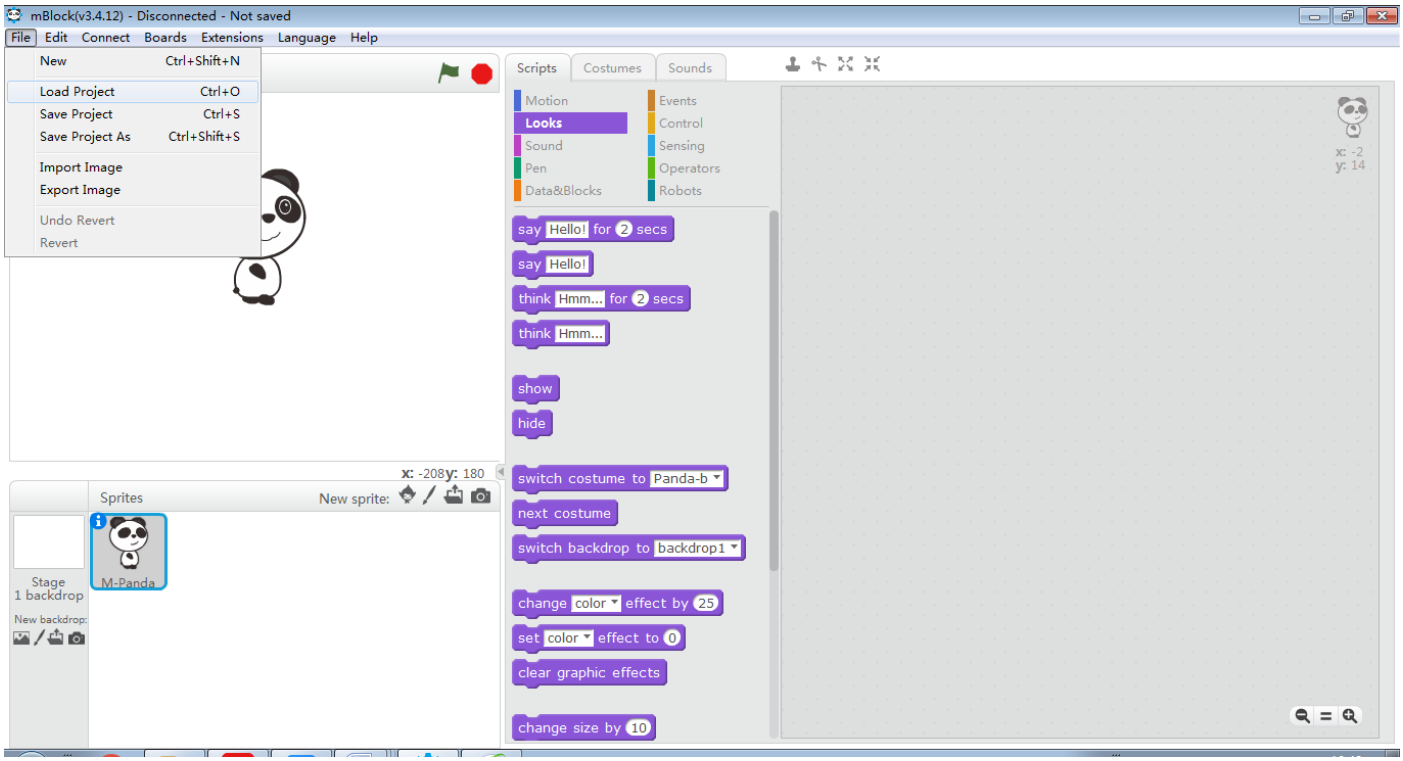


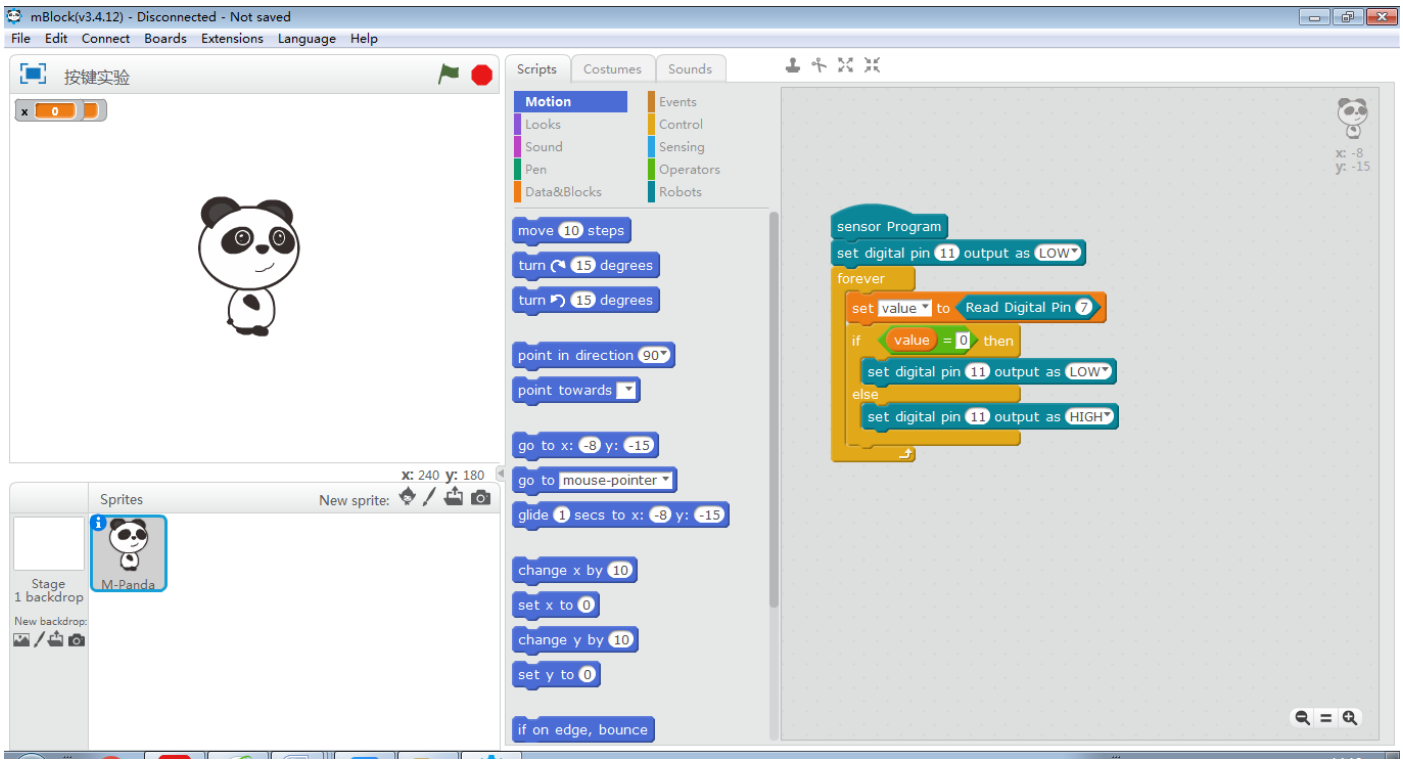
Mblock grapgical programming program

mBlock writes the button module experiment program is shown in the following figure:



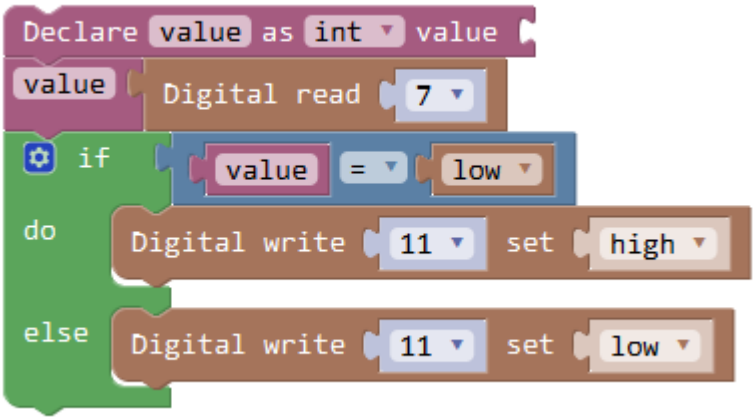
You can also open the program file directly with mblock, which is a. Sb2 file. Here are the steps to open it:





Mixly graphical programming program

Mixly writes the button module experiment program is shown in the figure below:


Declare value as int value
value
Digital read 7
if
value = low
do
Digital write 11 set high
else
Digital write 11 set low

Magicblock grapgical programming program