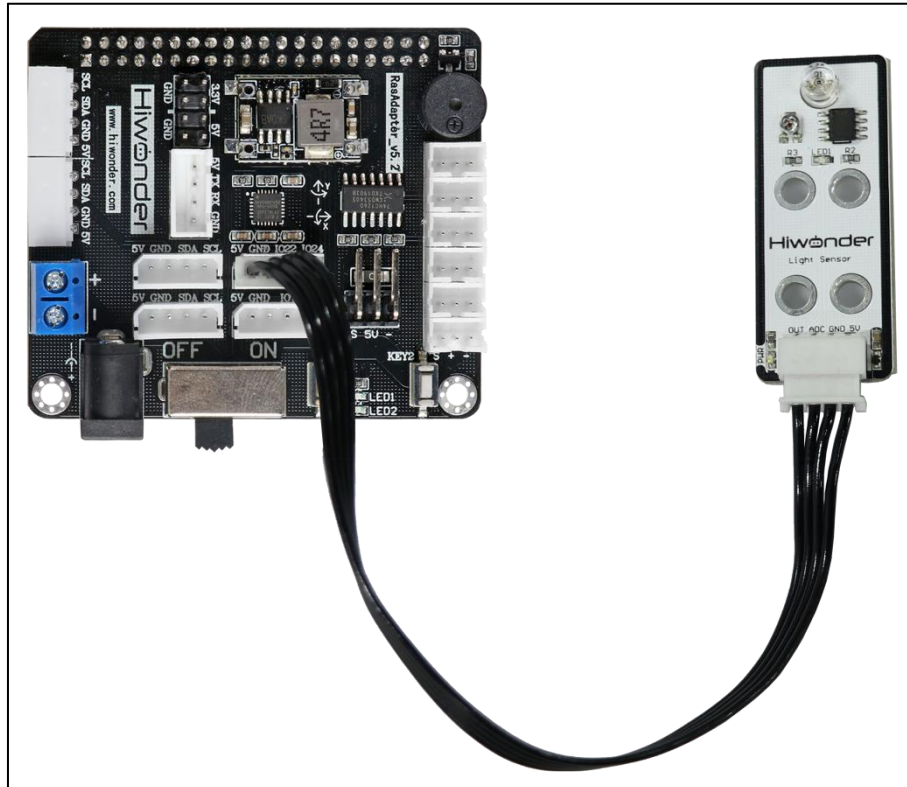


## Lesson 6 Light Sensor

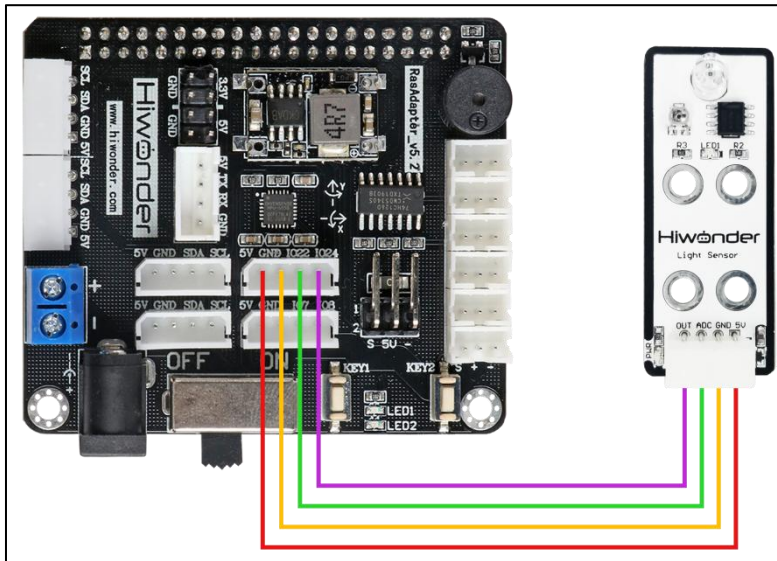
### 1. Getting Ready

Prepare a light sensor and connect it to any one of GPIO ports on Raspberry Pi expansion board through 4PIN cable. The wiring effect is as follow:



**Note: Please do not insert forcefully because 4PIN cable uses anti-reverse plugging design.**

In addition, 4 female to female Dupont lines can also be used to connect light sensor to Raspberry Pi expansion board, as the figure shown below:



## 2. Module Usage

The light sensor mainly includes a QTH23C (photodiode) and LM358chi (voltage comparator).

We can set a threshold by adjusting the potentiometer on sensor. When the external brightness is greater than the threshold, LED1 on module will light up and the signal terminal OUT will output a low level.

When the external brightness is less than the threshold, LED1 on module will light off and the signal terminal OUT will output a high level.

## 3. Working Principle

When the external brightness is higher than the threshold set by the module, the signal terminal OUT outputs a low level, otherwise it output a high level. We can judge the current status of the sensor according to the level change of the signal terminal OUT.

The source code of the program is located in:


/home/pi/TonyPi/Extend/Sensor/PhotoSensitiveControl.py

```

32 if __name__ == '__main__':
33     while True:
34         GPIO.setup(22, GPIO.IN) # Set pin as input mode
35         state = GPIO.input(22) # read the number value of pin
36         if not state:
37             if st :           # Make a judgement to prevent repeated sound
38                 st = 0
39                 setBuzzer(0.1) # Set the buzzer sound to sound for 0.1 second
40         else:
41             st = 1
42             GPIO.setup(6, GPIO.OUT)
43             GPIO.output(6, 0)
44
45             GPIO.setup(6, GPIO.OUT)
46             GPIO.output(6, 0)

```

## 4. Operation Steps

- 1) Click  in the upper left corner to open the terminal. Enter command "cd TonyPi/Extend/Sensor/" and press "Enter" to come to the directory of the game programmings.

```

*****
pi@raspberrypi:~ $ cd TonyPi/Extend/Sensor/

```

- 2) Enter "sudo python3 PhotoSensitiveControl.py" command, and then press "Enter" to start the game.

```

pi@raspberrypi:~ $ cd TonyPi/Extend/Sensor/
pi@raspberrypi:~/TonyPi/Extend/Sensor $ sudo python3 PhotoSensitiveControl.py

```

- 3) If want to close this program, press "Ctrl+C". You can try multiple time if fail to close.

## 5. Project Outcome

After the program is started, the buzzer will sound once when the external brightness is higher than the threshold set by the light sensor.