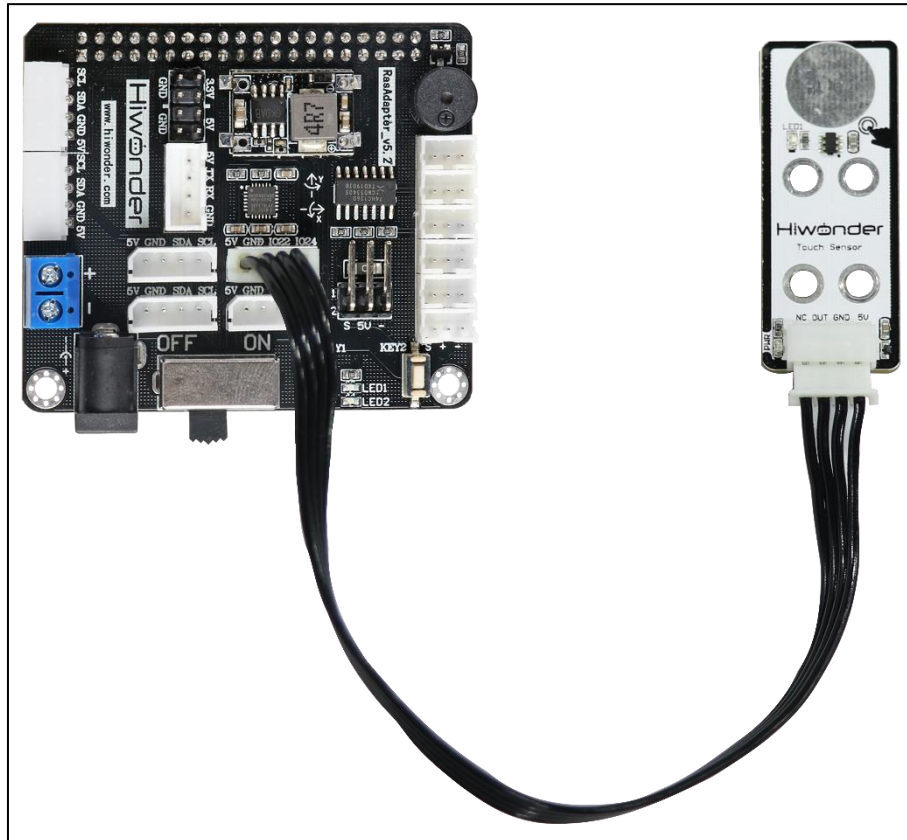# Lesson 2 Touch Sensor

## 1. Getting Ready

Prepare a touch sensor and connect it to any one of GPIO ports on Raspberry Pi expansion board through a 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 touch module to Raspberry Pi expansion board, as the figure shown below:
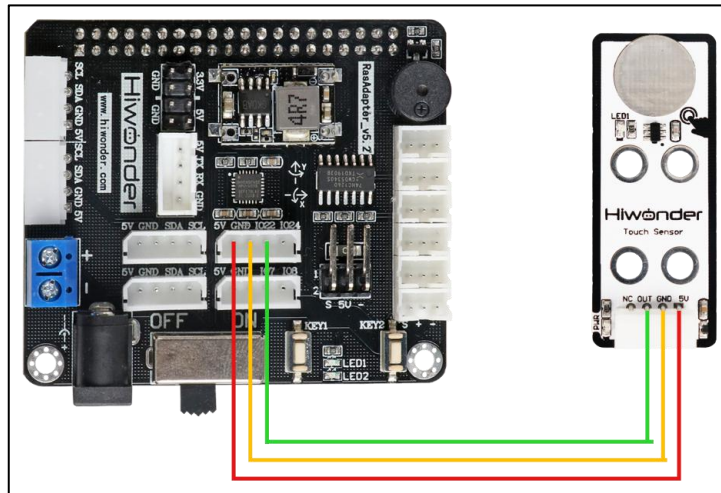
2. Module Usage

Touch sensor is based on the principle of capacitance induction. The human body or metal touch the gold-plated contact surface of the sensor, the sensor will sense the contact. In addition, the contact can also be sensed by the sensor across a certain thickness of plastic, paper and other materials, and the sensitivity of induction is associated with the size of the contact surface and the thickness of the material covered.

This sensor can be applied to the switch control for device, such as light control, and doorbell button. Beyond that, this sensor is compatible with Lego series for more creative DIY design.

3. Working Principle

When a touch is sensed, the sensor will output a high level. Otherwise, it will output a low level. You can judge the current status of the sensor through the level change of I/O port.

The source code of the program is located in:

/home/pi/TonyPi/Extend/Sensor/touch_buzzer.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 [terminal icon] in the upper left corner to open the terminal. Enter command "cd TonyPi/Extend/Sensor/" and press "Enter" to come to the directory of game programmings.

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

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

```
pi@raspberrypi:~ $ cd TonyPi/Extend/Sensor/
pi@raspberrypi:~/TonyPi/Extend/Sensor $ sudo python3 touch_buzzer.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, touch the metal plate of the sensor, and the. The buzzer will sound once when sense the touch.