Ex - 15
Detecting Movement

Problem

You want to trigger some action in Python when movement is detected.

Solution

Use a passive infrared (PIR) motion detector module.

To make this recipe, you will need:

- Female-to-female jumper wires
- PIR motion detector module

Figure shows how the sensor module is wired. This module expects a power supply of 5V and has an output of 3.3V, making it ideal for use with a Raspberry Pi.

WARNING

Make sure that the PIR module you use has a 3.3V output. If it has 5V output, you will need to use a pair of resistors to reduce this to 3.3V

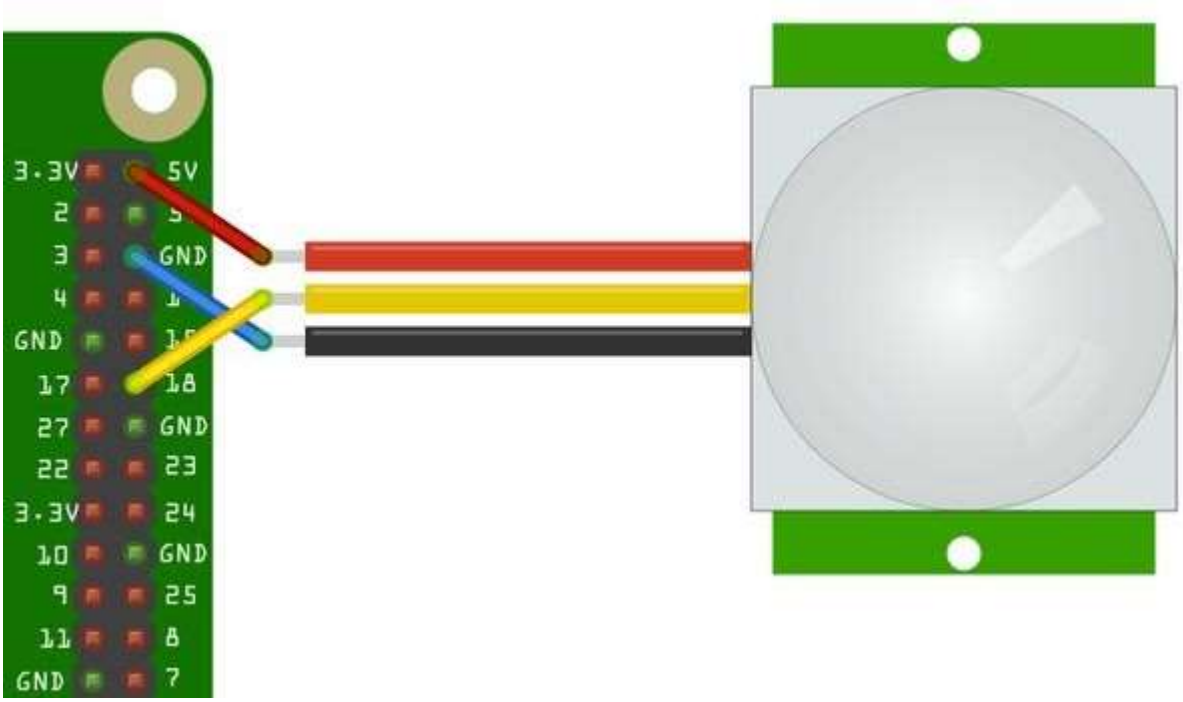

Figure. Wiring a PIR motion detector

Open an editor (nano or IDLE) and type in the following code *pir.py*.

```
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BCM)

GPIO.setup(18, GPIO.IN)

while True:
    input_state = GPIO.input(18)
    if input_state == True:
        print('Motion Detected')
        time.sleep(1)
```

The program simply prints out the state of the GPIO input 18.

```
$ sudo python pir.py
Motion Detected
Motion Detected
```

Discussion

Once triggered, the output of the PIR sensor will stay high for a little while. You can adjust this using one of the trimpots on its circuit board. The second trimpot (if present) will set the threshold of light level that will disable the sensor. This is useful when the se nsor is being used to control a light, turning it on when detecting movement, but only when its dark.