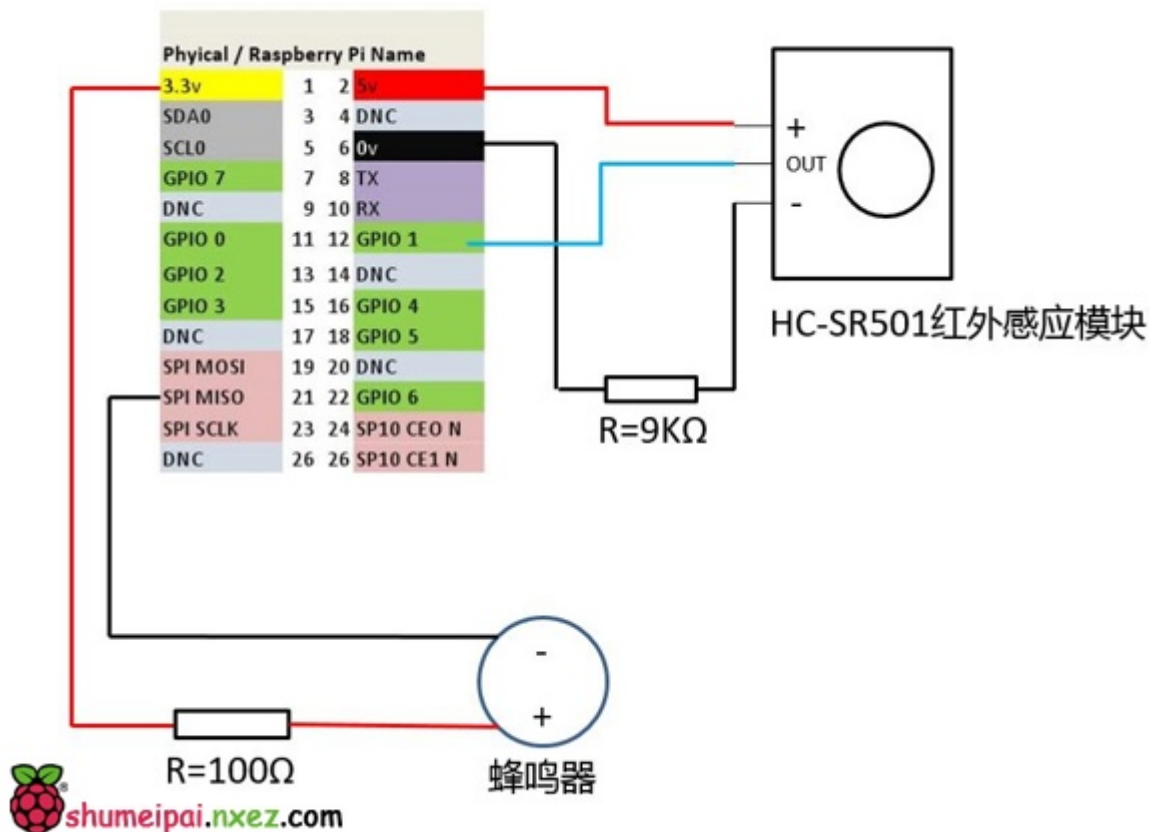


树莓派链接人体红外感应模块+蜂鸣器实现简易报警 方法一

拿到了一个红外感应模块HC-SR501，于是就用它和蜂鸣器简单试验了下。主要是试验一下这个红外感应模块的功能，所以代码也写的很随便啦，逻辑上也欠考虑。

实现基本功能：运行脚本后，感应模块每隔一定时间检测，如有人靠近，则发出哔哔报警声，并在屏幕打印提示信息，人若离开，则停止鸣叫。

简易的电路图如下：





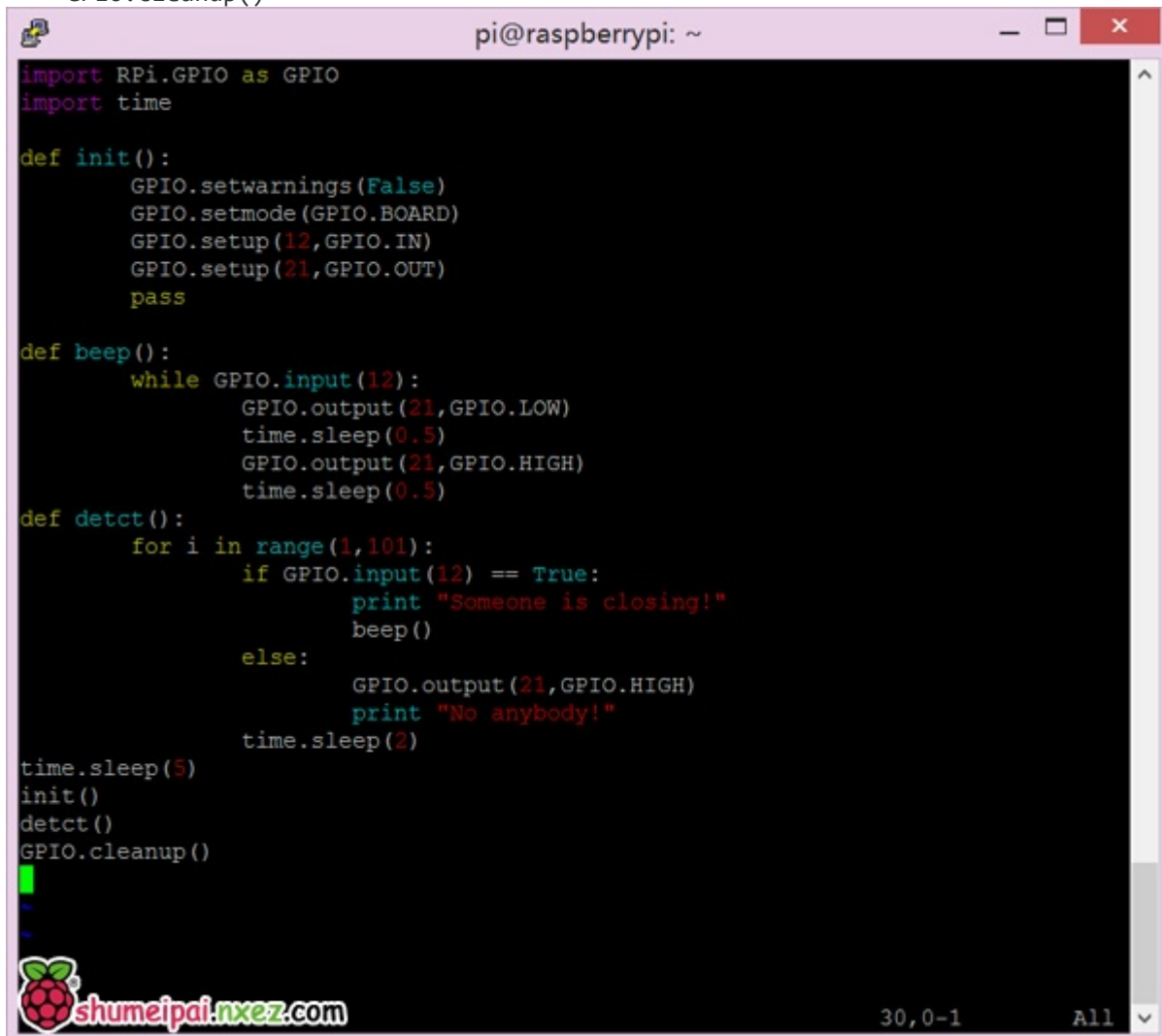
Python脚本：

```
1  import RPi.GPIO as GPIO
2  import time
3
4  #初始化
5  def init():
6      GPIO.setwarnings(False)
7      GPIO.setmode(GPIO.BOARD)
8      GPIO.setup(12,GPIO.IN)
9      GPIO.setup(21,GPIO.OUT)
10     pass
11
12 #蜂鸣器鸣叫函数
13 def beep():
14     while GPIO.input(12):
15         GPIO.output(21,GPIO.LOW)
16         time.sleep(0.5)
17         GPIO.output(21,GPIO.HIGH)
```

```

18         time.sleep(0.5)
19 #感应器侦测函数
20 def detct():
21     #因为是仅仅试验，所以只让它循环运行100次
22     for i in range(1,101):
23         #如果感应器针脚输出为True，则打印信息并执行蜂鸣器函数
24         if GPIO.input(12) == True:
25             print "Someone is closing!"
26             beep()
27         #否则将蜂鸣器的针脚电平设置为HIGH
28         else:
29             GPIO.output(21,GPIO.HIGH)
30             print "Noanybody!"
31         time.sleep(2)
32
33     time.sleep(5)
34     init()
35     detct()
36 #脚本运行完毕执行清理工作
37 GPIO.cleanup()

```



```

pi@raspberrypi: ~
import RPi.GPIO as GPIO
import time

def init():
    GPIO.setwarnings(False)
    GPIO.setmode(GPIO.BOARD)
    GPIO.setup(12,GPIO.IN)
    GPIO.setup(21,GPIO.OUT)
    pass

def beep():
    while GPIO.input(12):
        GPIO.output(21,GPIO.LOW)
        time.sleep(0.5)
        GPIO.output(21,GPIO.HIGH)
        time.sleep(0.5)

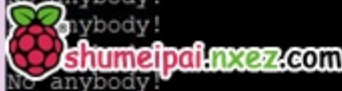
def detct():
    for i in range(1,101):
        if GPIO.input(12) == True:
            print "Someone is closing!"
            beep()
        else:
            GPIO.output(21,GPIO.HIGH)
            print "No anybody!"
            time.sleep(2)

time.sleep(5)
init()
detct()
GPIO.cleanup()

```

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```
pi@raspberrypi: ~  
pi@raspberrypi ~$ vi sensor.py  
pi@raspberrypi ~$ sudo python sensor.py  
No anybody!  
No anybody!  
No anybody!  
No anybody!  
No anybody!  
No anybody!  
No anybody!  
Someone is closing!  
Someone is closing!  
No anybody!  
No anybody!  
Someone is closing!  
No anybody!  
No anybody!  
Someone is closing!  
No anybody!  
No anybody!  
No anybody!  
No anybody!
```



方法二



树莓派 GPIO 引脚对照表

wiringPi 编码	BCM 编码	功能名	物理引脚 BOARD 编码	功能名	BCM 编码	wiringPi 编码
		3.3V	1	2	5V	
8	2	SDA.1	3	4	5V	
9	3	SCL.1	5	6	GND	
7	4	GPIO.7	7	8	TXD	14
		GND	9	10	RXD	15
0	17	GPIO.0	11	12	GPIO.1	18
2	27	GPIO.2	13	14	GND	
3	22	GPIO.3	15	16	GPIO.4	23
		3.3V	17	18	GPIO.5	24
12	10	MOSI	19	20	GND	
13	9	MISO	21	22	GPIO.6	25
14	11	SCLK	23	24	CE0	8
		GND	25	26	CE1	7
30	0	SDA.0	27	28	SCL.0	1
21	5	GPIO.21	29	30	GND	
22	6	GPIO.22	31	32	GPIO.26	12
23	13	GPIO.23	33	34	GND	
24	19	GPIO.24	35	36	GPIO.27	16
25	26	GPIO.25	37	38	GPIO.28	20
		GND	39	40	GPIO.29	21

先附上一张树莓派的GPIO图

稍微看一下图之后给模块接线，用的是母对母的杜邦线

先接红外人体感应模块，模块上写的vcc和gnd，查资料知道vcc是正极，gnd是负极，

模块的工作电压是5v，所以vcc接了pin02，gnd接了pin06，中间的那个是判断有没有人的需要用gpio接收感应，就用了一个gpio针，接到了pin12上

再接蜂鸣器，网上很多示例是无源蜂鸣器，我买的这个是有源的蜂鸣器模块，接法跟红外人体感应模块很相似，模块也有vcc、gnd、in三个针脚，工作电压为3.3v，理所当然的vcc接了pin01，gnd接了pin09，中间的那个in接了pin11

线接好后剩下的代码就好说了，如果你已经看了我前几篇，那么搞好代码这一块应该说是轻车熟路了
先安装python环境

1.安装python

```
$ sudo apt-get install python-dev
```

2.执行更新

```
$ sudo easy_install -U distribute
```

3.安装python-pip

```
$ sudo apt-get install python-pip
```

4.安装python的GPIO库

```
$ sudo pip install rpi.gpio
```

下面是python控制的代码，我也是从网上参考别人的代码和接法搞定的，新建一个文本，我命名为22.py，把代码写进去，注意代码的缩进。下面贴出我的代码：

```
import RPi.GPIO as GPIO
import time
def init():
    GPIO.setwarnings(False)
    GPIO.setmode(GPIO.BOARD)
    GPIO.setup(12,GPIO.IN)
    GPIO.setup(11,GPIO.OUT)
    pass
def beep():
    while GPIO.input(12):
        GPIO.output(11,True)
        time.sleep(0.5)
        GPIO.output(11,False)
        time.sleep(0.5)
def detct():
    #for i in range(1,101):
    while True:
        if GPIO.input(12) == True:
            print time.strftime('%Y-%m-%d %H:%M:%S',time.localtime(time.time()))+" Waring:Someone is Closing!"
            beep()
        else:
```

GPIO.output(11,False)

print time.strftime('%Y-%m-%d %H:%M:%S',time.localtime(time.time()))+" Not anybody!"

time.sleep(2)

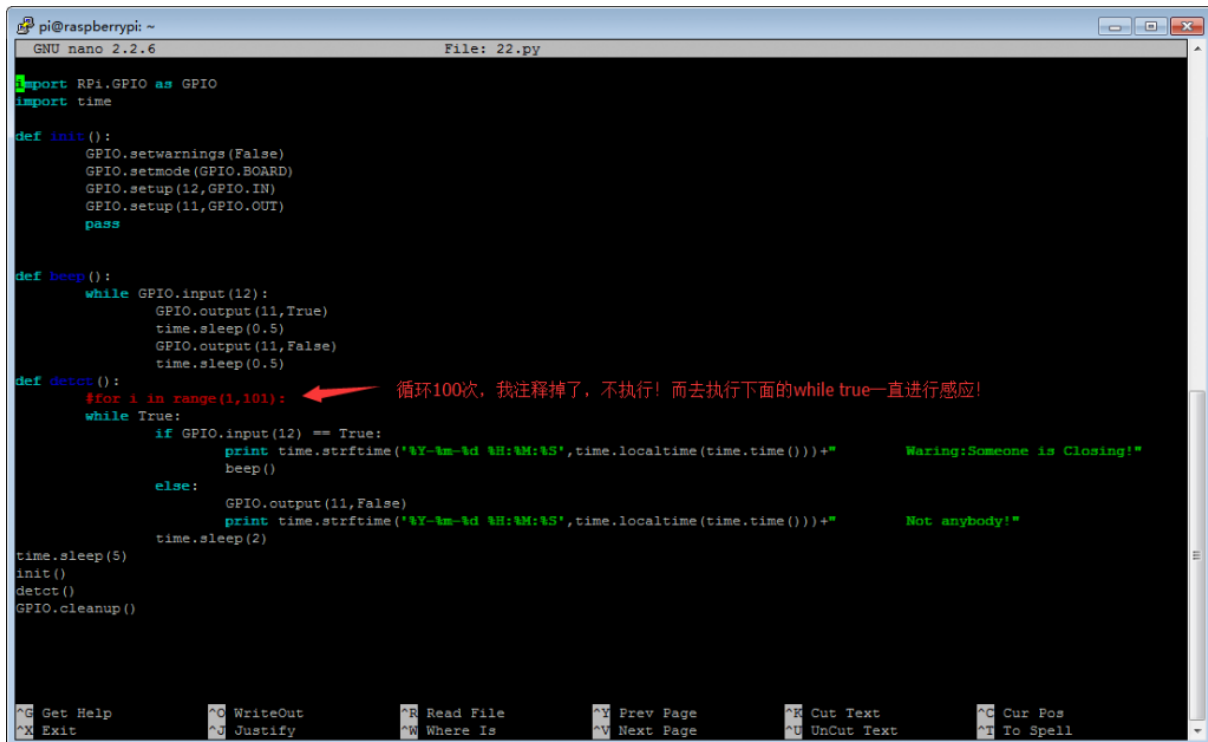
time.sleep(5)

init()

detct()

GPIO.cleanup()

代码图片（按着图片上的缩进来）：



```
pi@raspberrypi: ~
GNU nano 2.2.6      File: 22.py

import RPi.GPIO as GPIO
import time

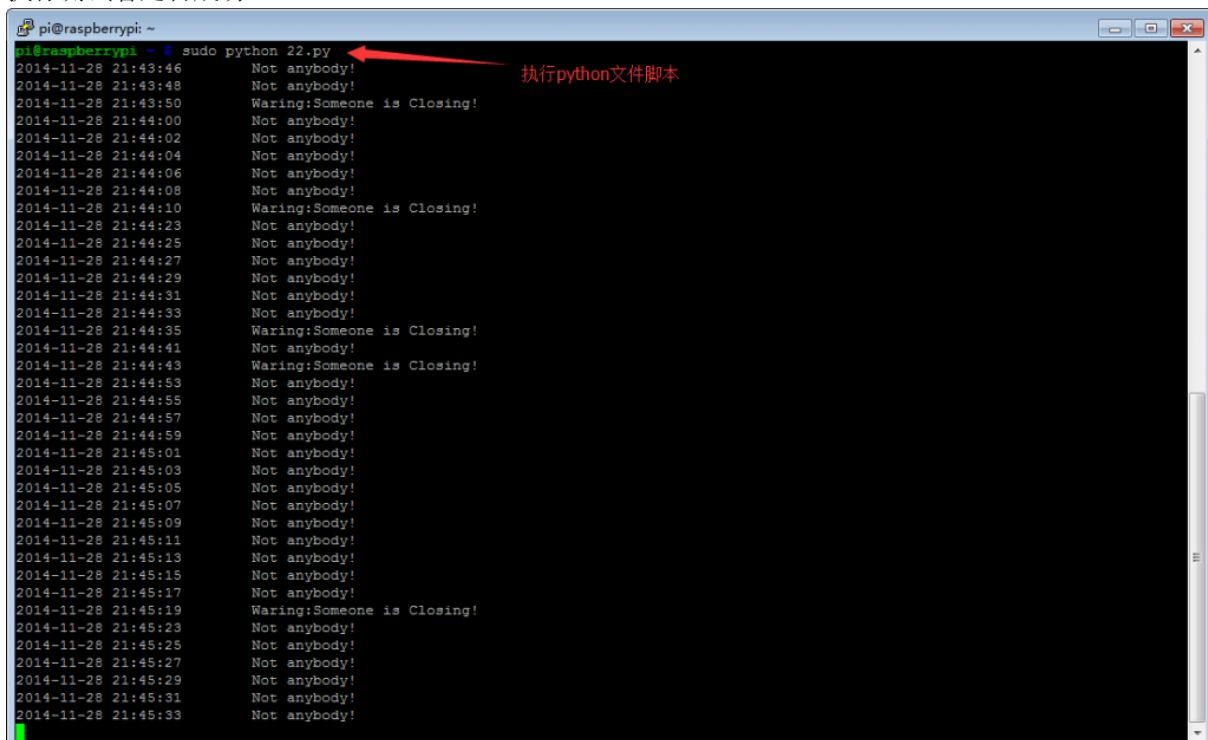
def init():
    GPIO.setwarnings(False)
    GPIO.setmode(GPIO.BOARD)
    GPIO.setup(12,GPIO.IN)
    GPIO.setup(11,GPIO.OUT)
    pass

def beep():
    while GPIO.input(12):
        GPIO.output(11,True)
        time.sleep(0.5)
        GPIO.output(11,False)
        time.sleep(0.5)

def detct():
    #for i in range(1,101):
    while True:
        if GPIO.input(12) == True:
            print time.strftime('%Y-%m-%d %H:%M:%S',time.localtime(time.time()))+"      Waring:Someone is Closing!"
            beep()
        else:
            GPIO.output(11,False)
            print time.strftime('%Y-%m-%d %H:%M:%S',time.localtime(time.time()))+"      Not anybody!"
            time.sleep(2)
    time.sleep(5)
init()
detct()
GPIO.cleanup()

^G Get Help      ^O WriteOut      ^R Read File      ^Y Prev Page      ^K Cut Text      ^C Cur Pos
^X Exit          ^J Justify      ^W Where Is      ^V Next Page      ^U UnCut Text    ^T To Spell
```

执行测试看是否成功：



```
pi@raspberrypi: ~
pi@raspberrypi ~$ sudo python 22.py
2014-11-28 21:43:46      Not anybody!
2014-11-28 21:43:48      Not anybody!
2014-11-28 21:43:50      Waring:Someone is Closing!
2014-11-28 21:44:00      Not anybody!
2014-11-28 21:44:02      Not anybody!
2014-11-28 21:44:04      Not anybody!
2014-11-28 21:44:06      Not anybody!
2014-11-28 21:44:08      Not anybody!
2014-11-28 21:44:10      Waring:Someone is Closing!
2014-11-28 21:44:23      Not anybody!
2014-11-28 21:44:25      Not anybody!
2014-11-28 21:44:27      Not anybody!
2014-11-28 21:44:29      Not anybody!
2014-11-28 21:44:31      Not anybody!
2014-11-28 21:44:33      Not anybody!
2014-11-28 21:44:35      Waring:Someone is Closing!
2014-11-28 21:44:41      Not anybody!
2014-11-28 21:44:43      Waring:Someone is Closing!
2014-11-28 21:44:53      Not anybody!
2014-11-28 21:44:55      Not anybody!
2014-11-28 21:44:57      Not anybody!
2014-11-28 21:44:59      Not anybody!
2014-11-28 21:45:01      Not anybody!
2014-11-28 21:45:03      Not anybody!
2014-11-28 21:45:05      Not anybody!
2014-11-28 21:45:07      Not anybody!
2014-11-28 21:45:09      Not anybody!
2014-11-28 21:45:11      Not anybody!
2014-11-28 21:45:13      Not anybody!
2014-11-28 21:45:15      Not anybody!
2014-11-28 21:45:17      Not anybody!
2014-11-28 21:45:19      Waring:Someone is Closing!
2014-11-28 21:45:23      Not anybody!
2014-11-28 21:45:25      Not anybody!
2014-11-28 21:45:27      Not anybody!
2014-11-28 21:45:29      Not anybody!
2014-11-28 21:45:31      Not anybody!
2014-11-28 21:45:33      Not anybody!
```