Tilt Switch

Overview

This course will use the Raspberry Pi to capture the Tilt Switch signal, which to control the LED light on and off.

Experimental Materials

RaspberryPi \*1

Breadboard \*1

Tilt switch \*1

Led \*1

Resistor(330Ω) x1

Dupont Line

Ready to work

1. Install python interpreter in your Raspberry Pi system

2. Install the RPi.GPIO library in your Raspberry Pi system

3. Install the wiringPi library in your Raspberry Pi system

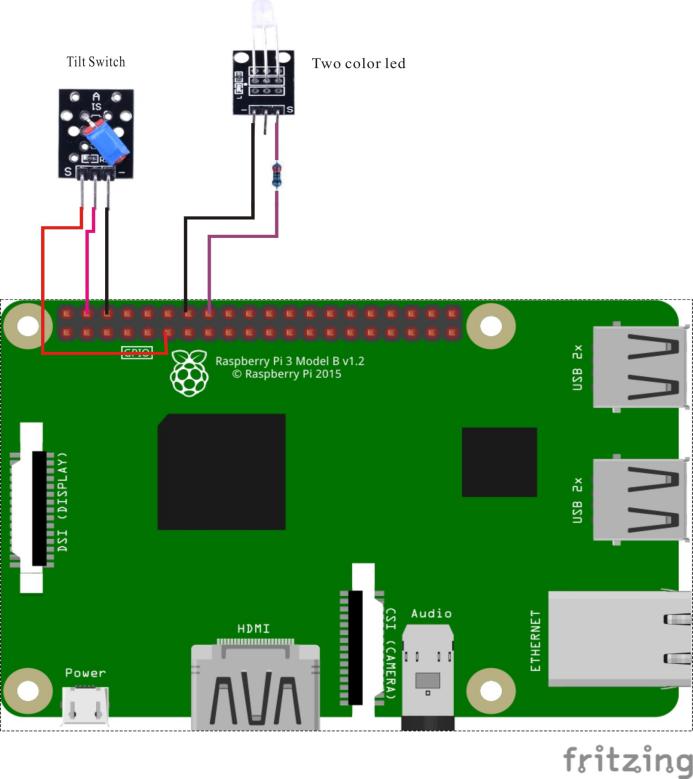
Refer to the attached "Installing a Python Interpreter and Corresponding Libraries in a Raspberry Pi System" for details.

product description

When the tilt switch is in the horizontal position, the S pin of the switch module is disconnected from the GND pin,and the S pin is connected to VCC through the pull-up resistor, the level on the S pin is at high level. When the tilt switch is tilted at a certain angle, the internal metal balls will roll, and then the S pin and the GND pin are connected through the metal ball. At this time, the level of the S pin becomes a low level. So we can do the corresponding actions according to the level change of the S pin of the Raspberry Pi.



Wiring diagram



Sample code

1. python code

#!/usr/bin/env python

import RPi.GPIO as GPIO

TiltPin = 11

LedPin = 16

Led\_status = 1

def setup():

GPIO.setmode(GPIO.BOARD) # Numbers GPIOs by physical location

GPIO.setup(LedPin, GPIO.OUT) # Set LedPin's mode is output

GPIO.setup(TiltPin, GPIO.IN, pull\_up\_down=GPIO.PUD\_UP)

GPIO.output(LedPin, GPIO.LOW) # Set LedPin low to off led

def swLed(ev=None):

global Led\_status

Led\_status = not Led\_status

GPIO.output(LedPin, Led\_status) # switch led status(on-->off; off-->on)

print "LED: off" if Led\_status else "LED: on"

def loop():

GPIO.add\_event\_detect(TiltPin, GPIO.FALLING, callback=swLed, bouncetime=100) # wait for falling

while True:

pass # Don't do anything

def destroy():

GPIO.output(LedPin, GPIO.LOW) # led off

GPIO.cleanup() # Release resource

if \_\_name\_\_ == '\_\_main\_\_': # Program start from here

setup()

try:

loop()

except KeyboardInterrupt:

destroy()

1. C code

#include <stdio.h>

#include <string.h>

#include <errno.h>

#include <stdlib.h>

#include <wiringPi.h>

#define TiltPin 0

#define LedPin 4

int main(void)

{

if(wiringPiSetup() < 0)

{

printf( " setup wiringPi failed!\n");

return -1;

}

pinMode(TiltPin, INPUT);

pinMode(LedPin, OUTPUT);

while(1)

{

if(0 == digitalRead(TiltPin))

{

digitalWrite(LedPin, LOW);

}

else

{

digitalWrite(LedPin, HIGH);

}

}

return 0;

}

Experimental phenomena

When the tilt switch is tilted at a certain angle, the LED lamp is lit, and when the tilt switch is in the horizontal position, the light will be not lit.