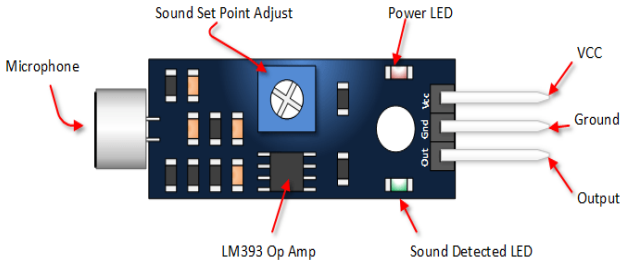
Lesson 10 Sound Sensor

Introduction

In this project you will learn how to use the sound sensor with Raspberry pi.

Principle

The microphone on the sensor module can convert audio signals into electrical signals (analog quantity), then convert analog quantity into digital quantity by PCF8591 and transfer them to MCU.



LM358 is a dual-channel operational amplifier. It contains two independent, high gain, and internally compensated amplifiers, but we will only use one of them in this experiment. The microphone transforms sound signals into electrical signals and then sends out the signals to pin 2 of LM358 and outputs them to pin 1 (that's, pin SIG of the module) via the external circuit. Then use PCF8591 to read analog values

Hardware Required

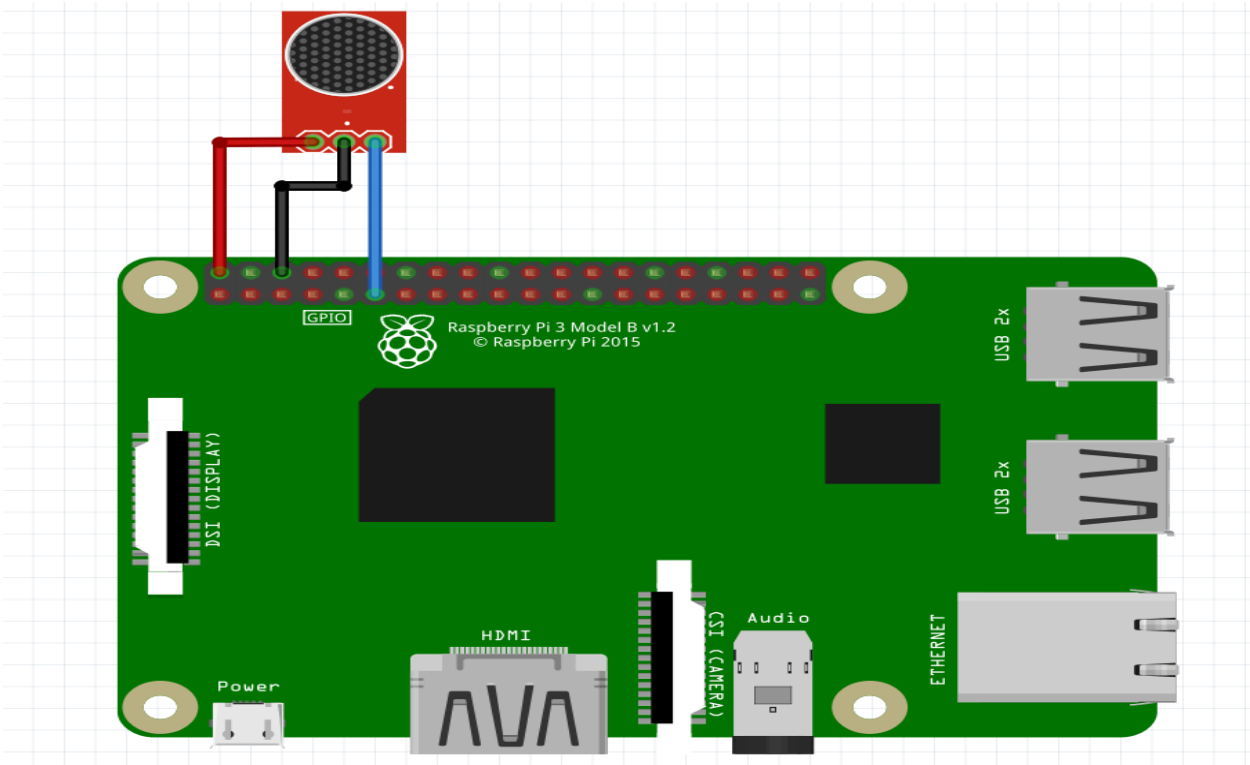
- Raspberry Pi 3 Model B
- Sound Sensor Module
- Connecting Jumpers
- Power Supply

Python Code

```
#!/usr/bin/python

import RPi.GPIO as GPIO

import time

#GPIO SETUP

channel = 17

GPIO.setmode(GPIO.BCM)

GPIO.setup(channel, GPIO.IN)
```

```
def callback(channel):
        if GPIO.input(channel):
                print "Sound Detected!"
        else:
                print "Sound Not Detected!"
GPIO.add_event_detect(channel, GPIO.BOTH, bouncetime=300)  # let us know when the pin goes HIGH or LOW
GPIO.add_event_callback(channel, callback)  # assign function to GPIO PIN, Run function on change
# infinite loop
while True:
        time.sleep(1)
```

Hardware Setup



Output

After connecting and coding as per the given diagram and python code, you will see Sound Detected and Sound Not Detected in the output terminal.

Applications

- Sound Sensor can be used in various applications like:
- Security Systems
- Burglar Alarms
- Device Control
- Door Alarms