Configure and Test Audio on Raspberry Pi

Hardware Requirements

1. Raspberry Pi Model A/B/B+
2. SD Card
3. Ethernet Cable / Wi-Fi
4. Power Supply
5. USB Microphone
6. Speakers

Software Requirements

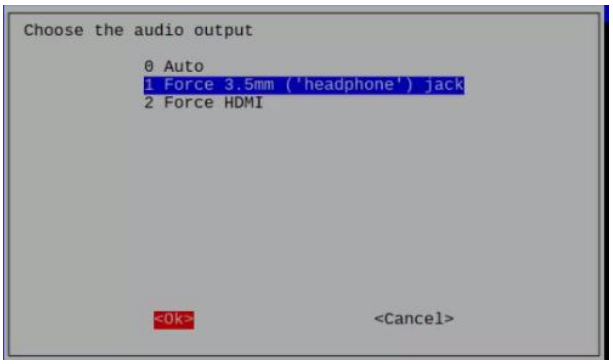
1. Raspbian Stretch OS

Attach USB Microphone and Speakers to Raspberry Pi.

I am using speakers with audio jack.

1. **Select Output device**

Advanced Options → Audio → Force 3.5 mm('headphone') jack



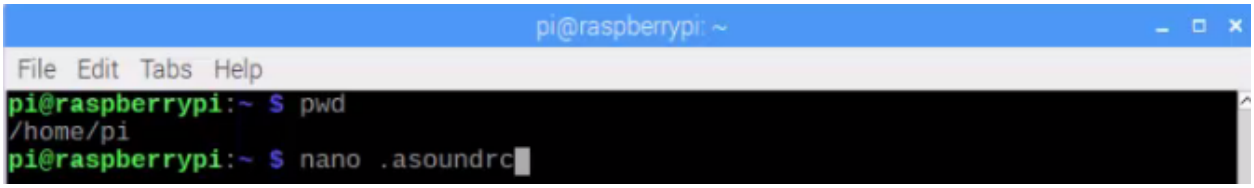
2. **Locate your USB microphone in the list of capture hardware devices.**
   (Write down the **card number and device number.)** (in my case its **1,0** respectively)

   $ arecord -l

3. **Locate your speaker in the list of playback hardware devices.**
   (Write down the **card number and device number.)**
   Note that the **3.5mm-jack** is typically labeled **Analog or bcm2835 ALSA** (not bcm2835 IEC958/HDMI). (in my case its **0,0** respectively)

   $ aplay -l

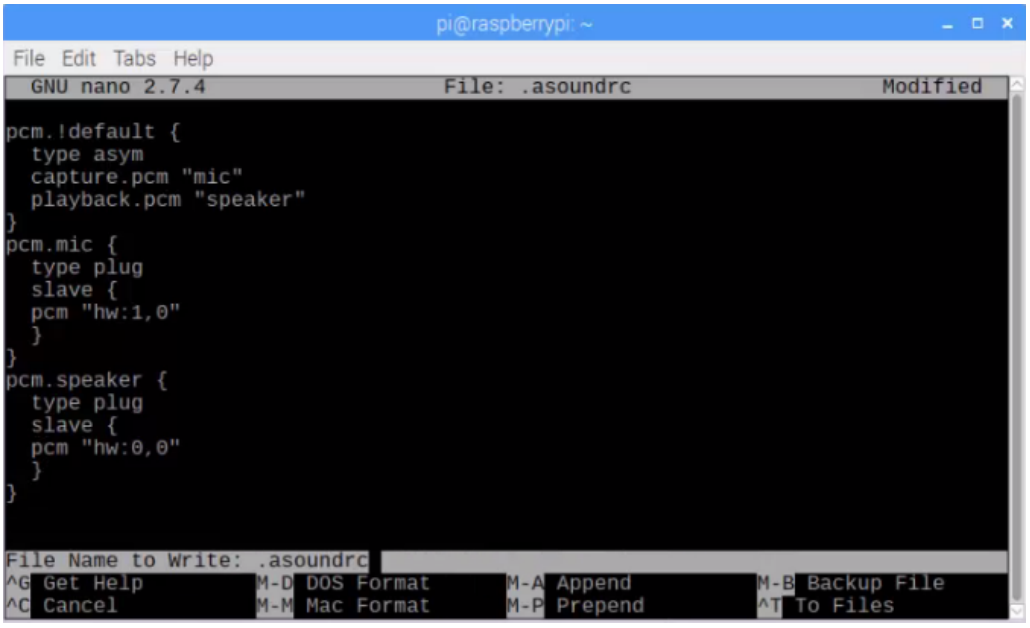
4. **Create a new file named .asoundrc in the home directory (/home/pi)**



Add following lines in it

```
pcm.!default {
  type asym
  capture.pcm "mic"
  playback.pcm "speaker"
}
pcm.mic {
  type plug
  slave {
    pcm "hw:<card number>,<device number>"
  }
}
pcm.speaker {
  type plug
  slave {
    pcm "hw:<card number>,<device number>"
  }
}
```

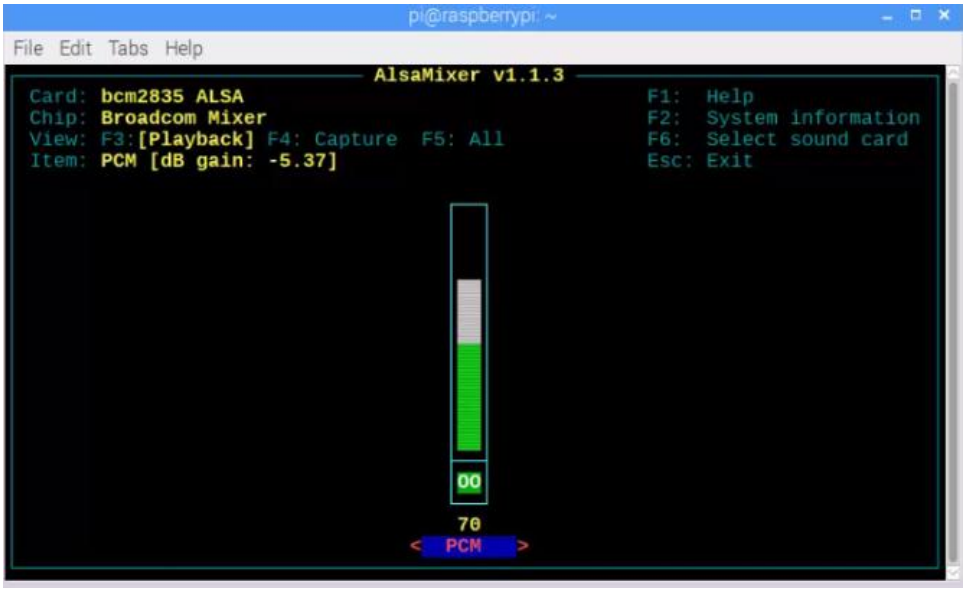
Replace <card number> and <device number> with the numbers you wrote down in the previous step. Do this for both pcm.mic and pcm.speaker.



Save file with Ctrl+O and Enter

5. **Adjust the playback volume.**
   Press the up arrow key to set the playback volume level to around 70.

   $ alsamixer



   Press Esc to exit .

6. **Play a test sound (this will be a person speaking). Press Ctrl+C when done.**
   If you don't hear anything when you run this, check your speaker connection.

   $ speaker-test –t wav

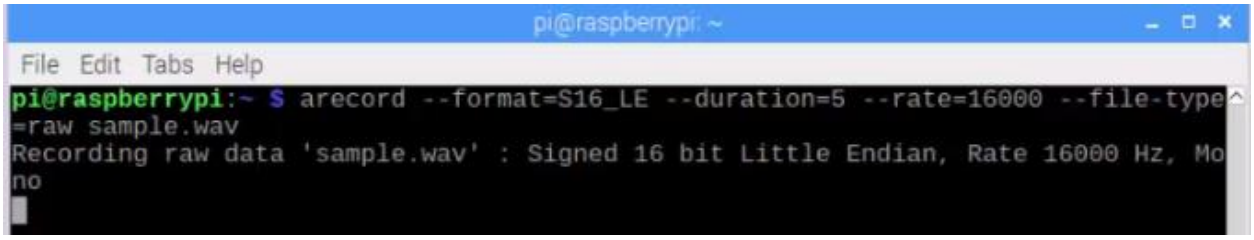
```
pi@raspberrypi:~ $ speaker-test -t wav

speaker-test 1.1.3

Playback device is default
Stream parameters are 48000Hz, S16_LE, 1 channels
WAV file(s)
Rate set to 48000Hz (requested 48000Hz)
Buffer size range from 512 to 65536
Period size range from 512 to 65536
Using max buffer size 65536
Periods = 4
was set period_size = 16384
was set buffer_size = 65536
 0 - Front Left
Time per period = 0.369303
 0 - Front Left
Time per period = 1.372140
 0 - Front Left
```

7. **Record a short audio clip.**

$ arecord --format=S16_LE --duration=5 --rate=16000 --file-type=raw sample.wav



8. **Check the recording by replaying it**

aplay --format=S16_LE --rate=16000 sample.wav

Note that…

- If recording and playback are working, then you are done configuring audio.
- If not, check that the microphone and speaker are properly connected.
- If this is not the issue, then try a different microphone or speaker.

That's all!!!

Thank you….