Tizen.IoTivity.Sensoring

w/ Analog Sensor

소프트웨어센터 | 소프트웨어 플랫폼 팀 | 박정훈

2017. 10. 26
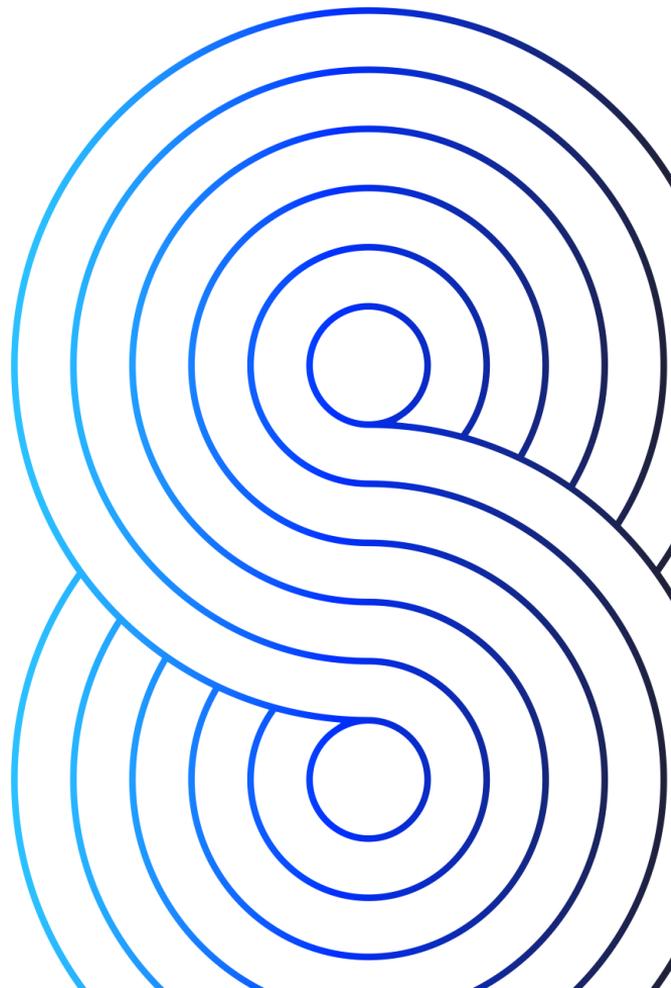
Analog Sound Sensor (DFR0034)

Specification

- Supply Voltage: 3.3V to 5V
- Detects the sound intensity
- Interface: Analog
- Size: 22x30mm
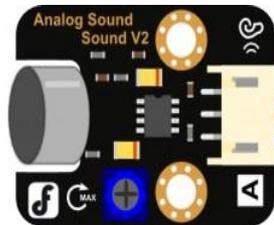
GND
VCC
Analog signal output

???
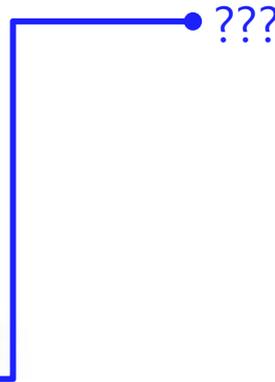
Raspberry Pi 3 GPIO Header

Pin#	NAME			NAME	Pin#
01	3.3v DC Power	🔴 🔴		DC Power 5v	02
03	GPIO02 (SDA1 , I²C)	🔵 🔴		DC Power 5v	04
05	GPIO03 (SCL1 , I²C)	🔵 ⚫		Ground	06
07	GPIO04 (GPIO_GCLK)	🟢 🟠		(TXD0) GPIO14	08
09	Ground	⚫ 🟠		(RXD0) GPIO15	10
11	GPIO17 (GPIO_GEN0)	🟢 🟢		(GPIO_GEN1) GPIO18	12
13	GPIO27 (GPIO_GEN2)	🟢 ⚫		Ground	14
15	GPIO22 (GPIO_GEN3)	🟢 🟢		(GPIO_GEN4) GPIO23	16
17	3.3v DC Power	🔴 🟢		(GPIO_GEN5) GPIO24	18
19	GPIO10 (SPI_MOSI)	🟣 ⚫		Ground	20
21	GPIO09 (SPI_MISO)	🟣 🟢		(GPIO_GEN6) GPIO25	22
23	GPIO11 (SPI_CLK)	🟣 🟣		(SPI_CE0_N) GPIO08	24
25	Ground	⚫ 🟣		(SPI_CE1_N) GPIO07	26
27	ID_SD (I²C ID EEPROM)	🟡 🟡		(I²C ID EEPROM) ID_SC	28
29	GPIO05	🟢 ⚫		Ground	30
31	GPIO06	🟢 🟢		GPIO12	32
33	GPIO13	🟢 ⚫		Ground	34
35	GPIO19	🟢 🟢		GPIO16	36
37	GPIO26	🟢 🟢		GPIO20	38
39	Ground	⚫ 🟢		GPIO21	40

Rev. 2
29/02/2016

www.element14.com/RaspberryPi

MCP3008 pinout:

| Pin	Name	Pin	Name
1	CH0	16	V_{DD}
2	CH1	15	V_{REF}
3	CH2	14	AGND
4	CH3	13	CLK
5	CH4	12	D_{OUT}
6	CH5	11	D_{IN}
7	CH6	10	$\overline{CS}$/SHDN
8	CH7	9	DGND
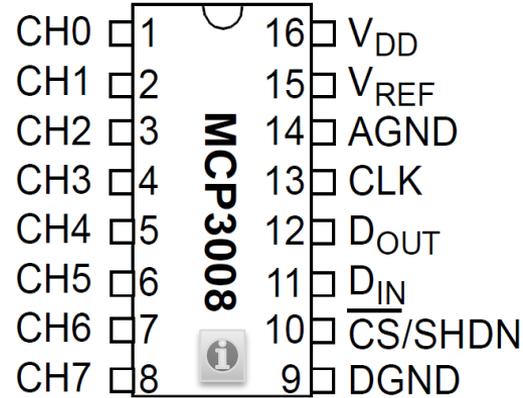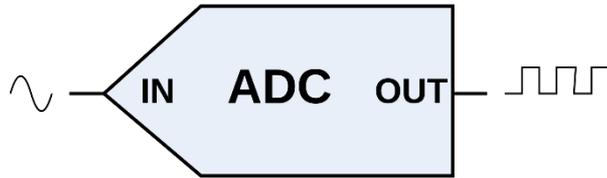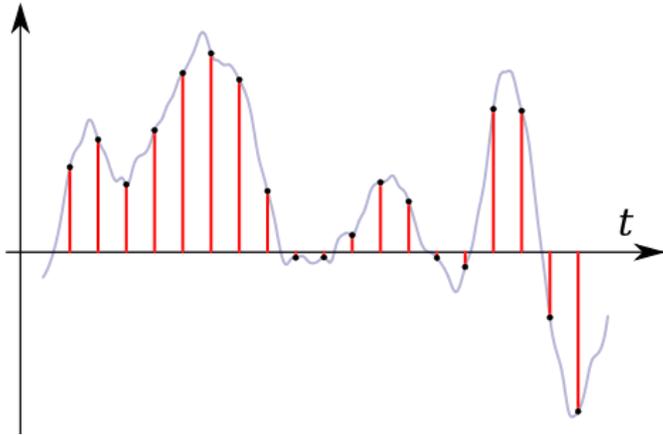
MCP3008 Features

- **10-bit resolution** (0 ~ 1023)
- **8 input channels**
- Analog inputs programmable as single-ended or pseudo-differential pairs
- On-chip sample and hold
- **SPI serial interface**
- Single supply operation: 2.7V - 5.5V
- Industrial temp range: -40°C to +85°C

준비물

RPi 3
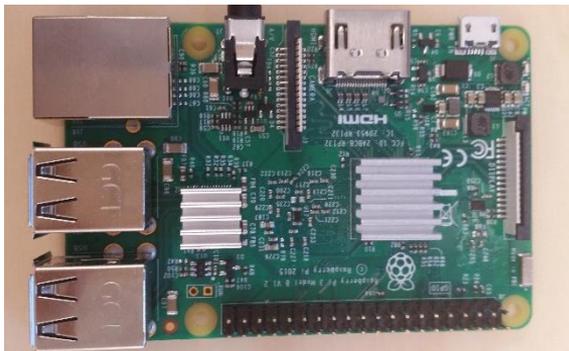
빵판 + MCP3008

SPI 연결 케이블
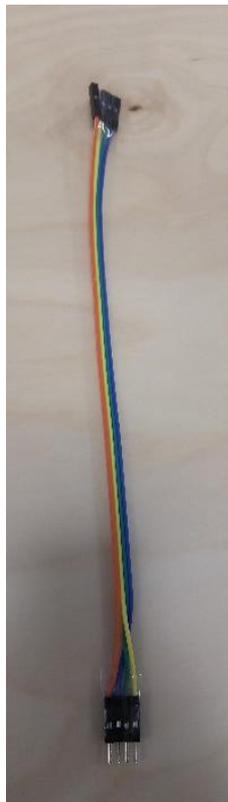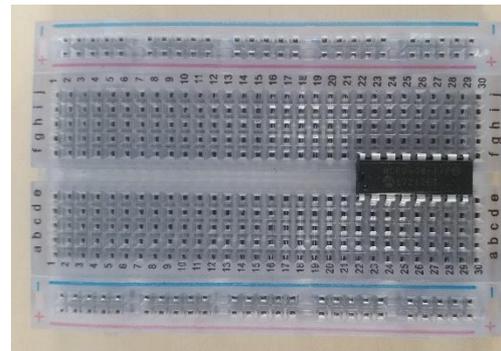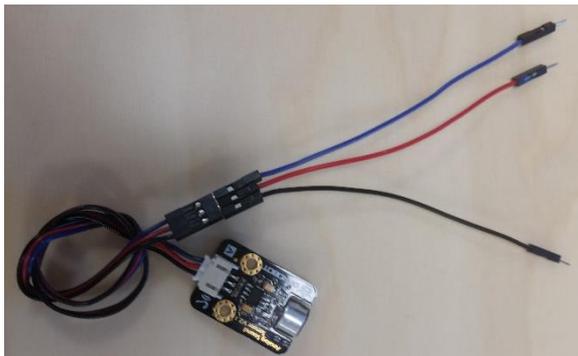
sound sensor

점프 케이블
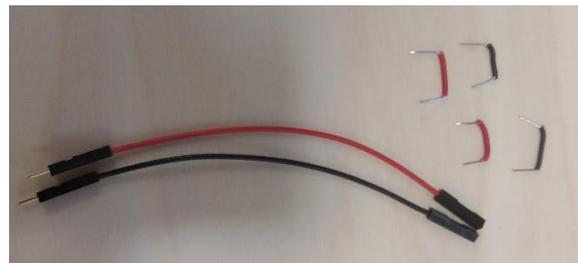
How to connect A/D Converter and RPi

SOSCON

연결 순서

SOSCON
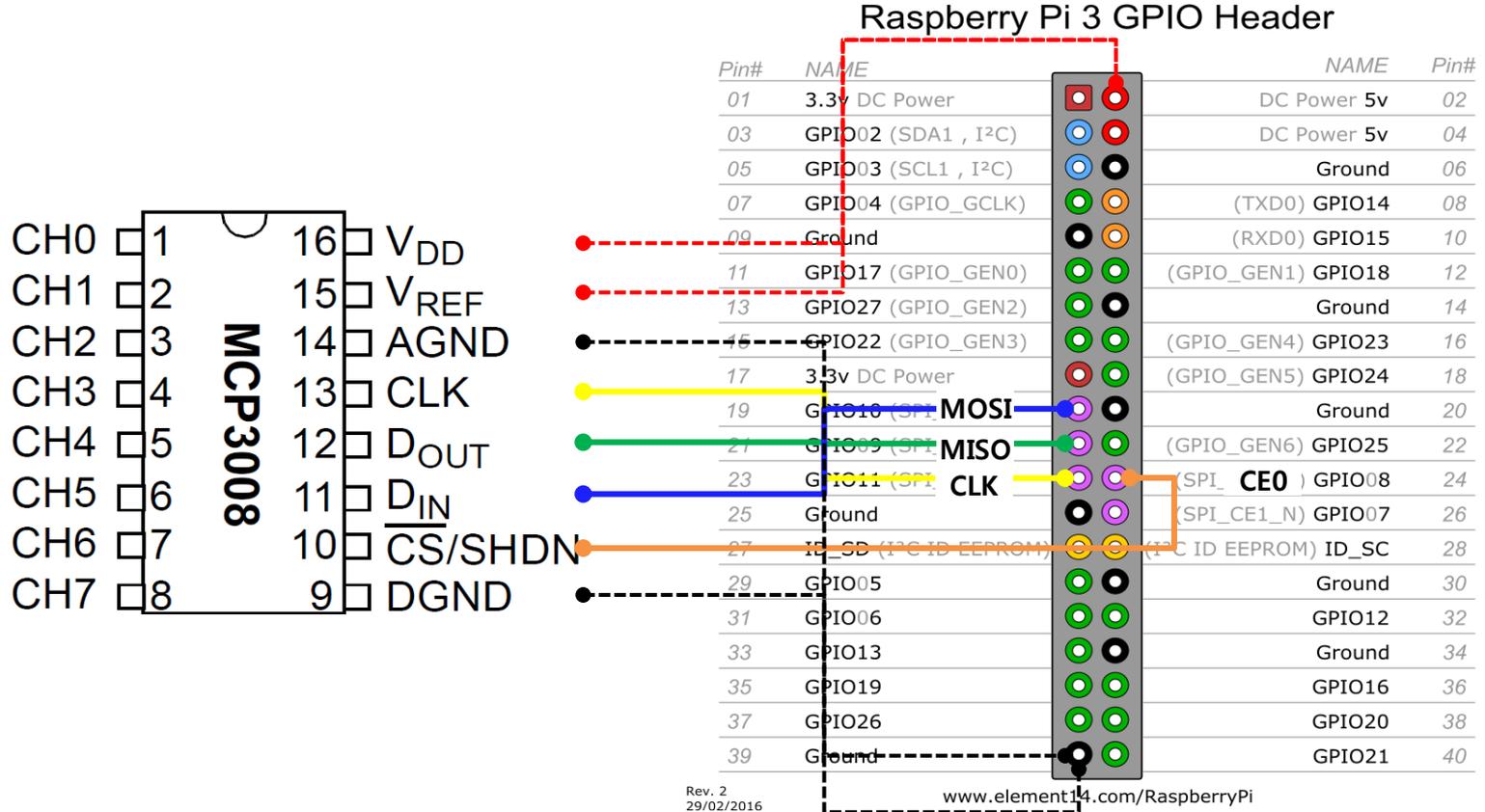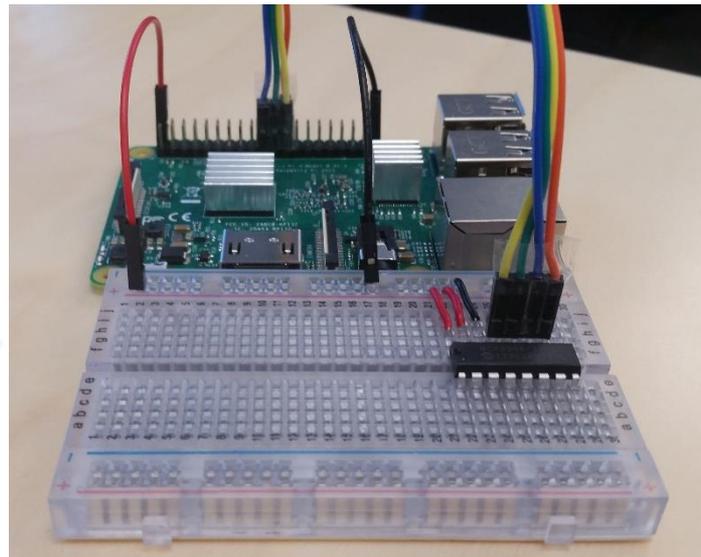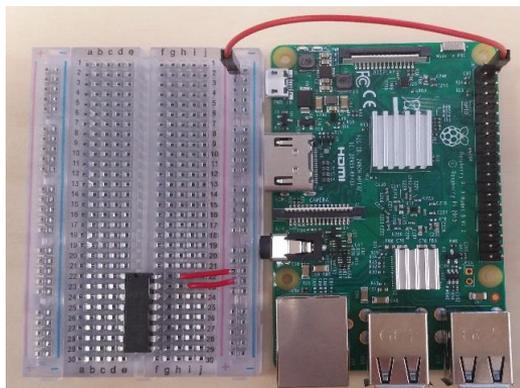
How to connect analog sound sensor

연결 모습
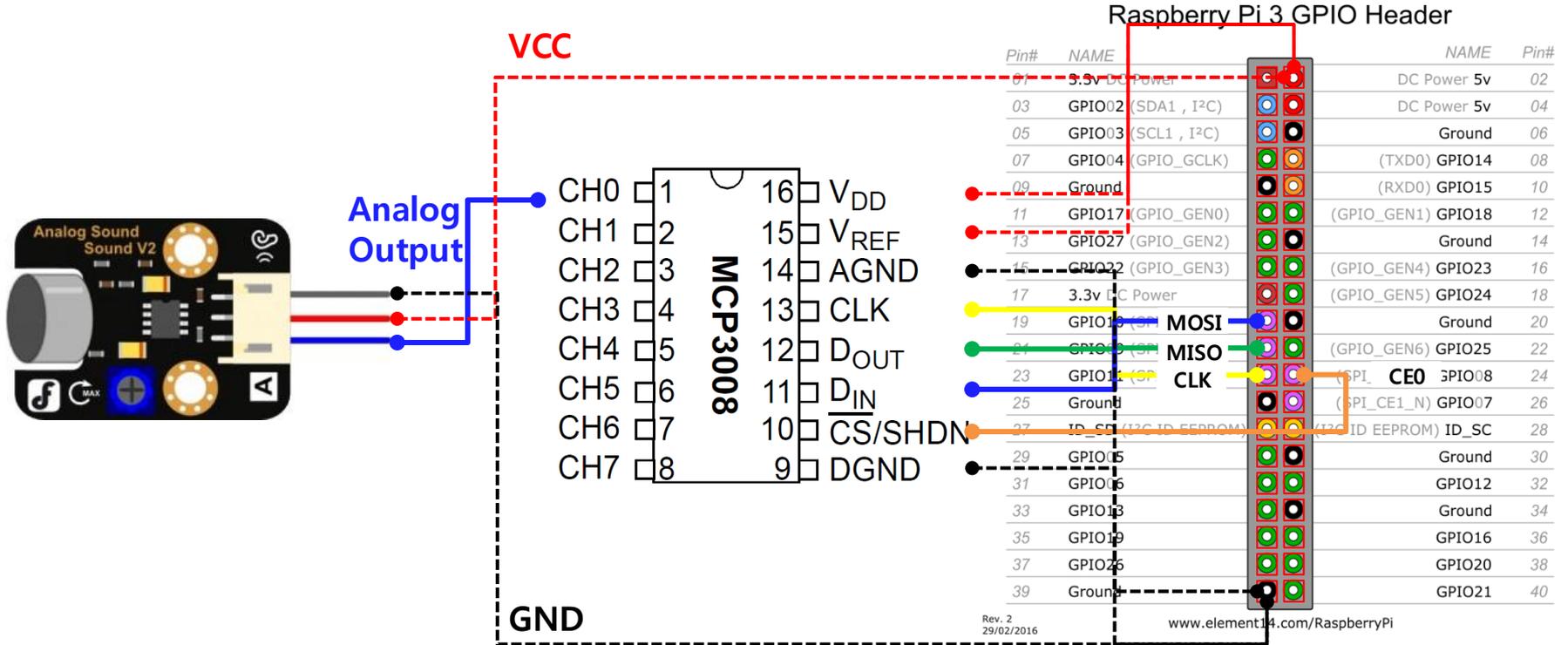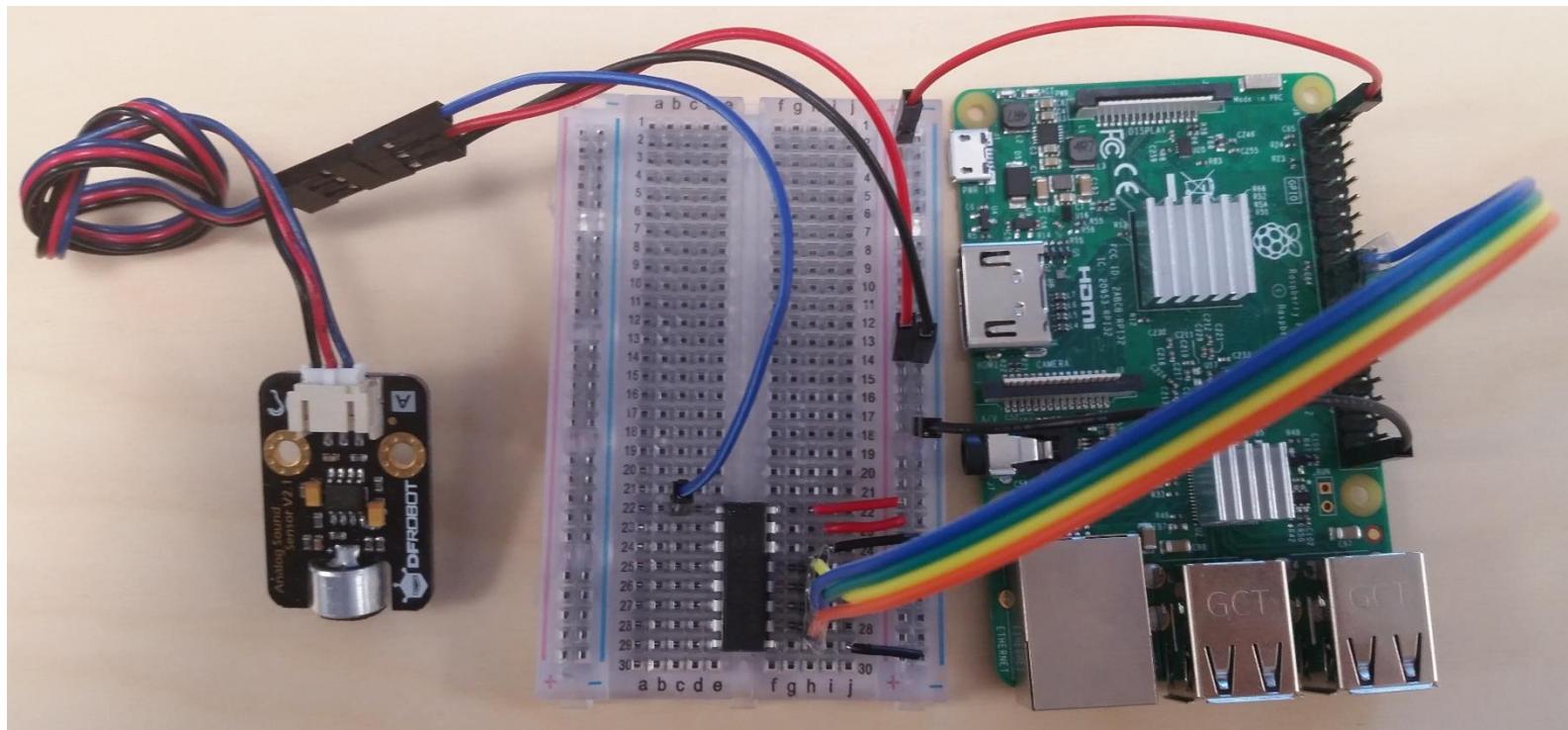
Set duration for reading sensor values

in controller.c

```
static bool service_app_create(void *data)
{
    …
    ad->getter_timer = ecore_timer_add(0.01f , control_sensors_cb, ad);
    …
    …
    return true;
}
```

Read sensor values in timer callback function

in <u>controller.c</u>

```
static Eina_Bool control_sensors_cb(void *data)
{
    unsigned int sl_value = 0;
    ...
    resource_read_sound_level_sensor( 0 , &sl_value);
    ...
    return ECORE_CALLBACK_RENEW;
}
```

※ 참고
https://git.tizen.org/cgit/apps/native/position-finder-server/plain/src/resource/resource_adc_mcp3008.c
https://git.tizen.org/cgit/apps/native/position-finder-server/plain/inc/resource/resource_sound_level_sensor.h
https://git.tizen.org/cgit/apps/native/position-finder-server/plain/src/resource/resource_sound_level_sensor.c

Check the sensor values

Run the project on RPi3
Run > Run As > …

Open a shell
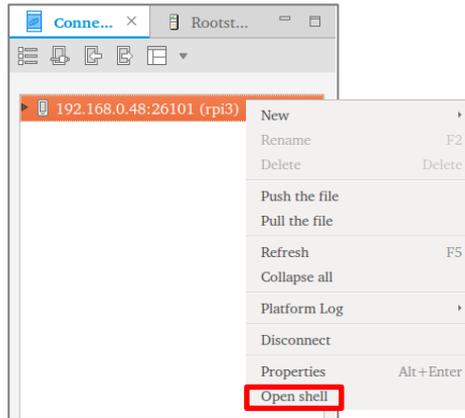
See logs
Execute *dlogutil* in the opened shell.

```
$ dlogutil TT
```

THANK YOU

SOSCON
SAMSUNG
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CONFERENCE