Smart In-Car Display

status active

Smart In-Car Display

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About

This repo contains circuit, firmware for Smart In-Car Display Project.

Getting Started

These instructions will get you a copy of the project up and running on your local machine for development and testing purposes. See deployment for notes on how to deploy the project on a live system.

Prerequisites

What things you need to install the software and how to install them.

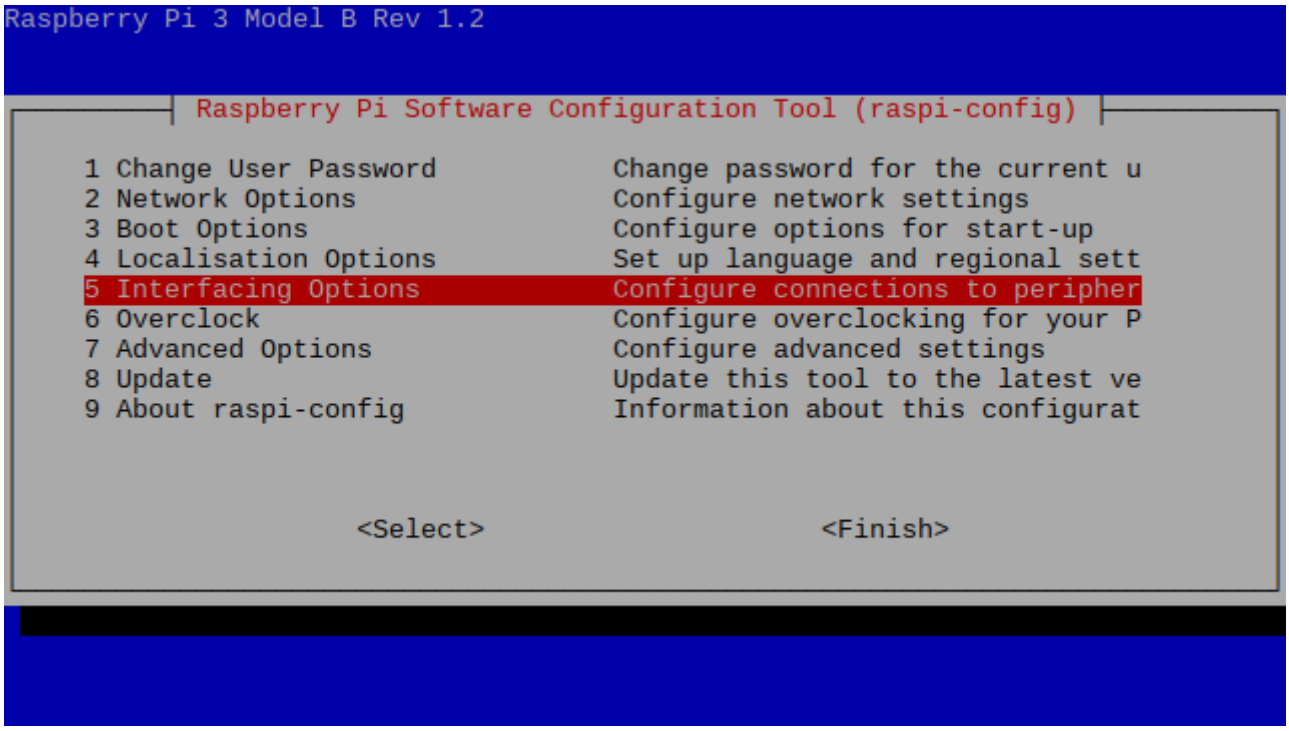
```
- Raspberry Pi Zero W
```

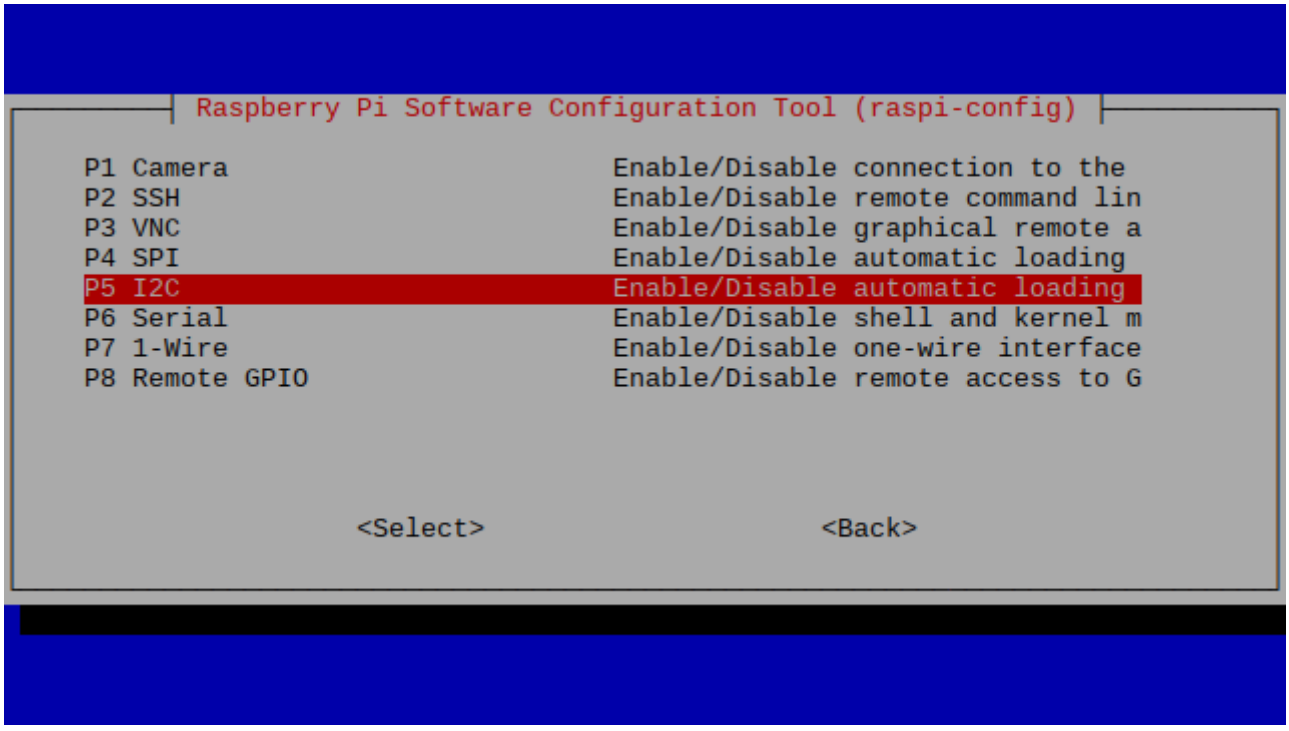
Installation and Configuration

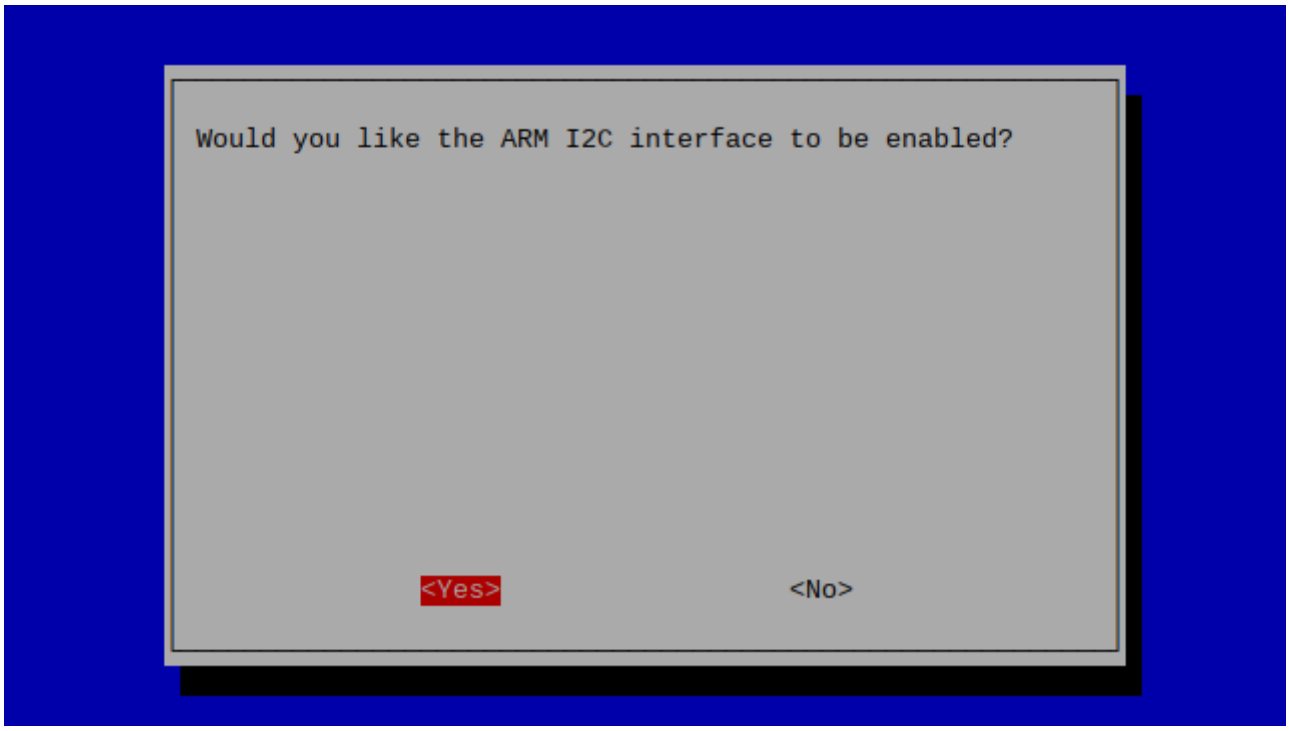
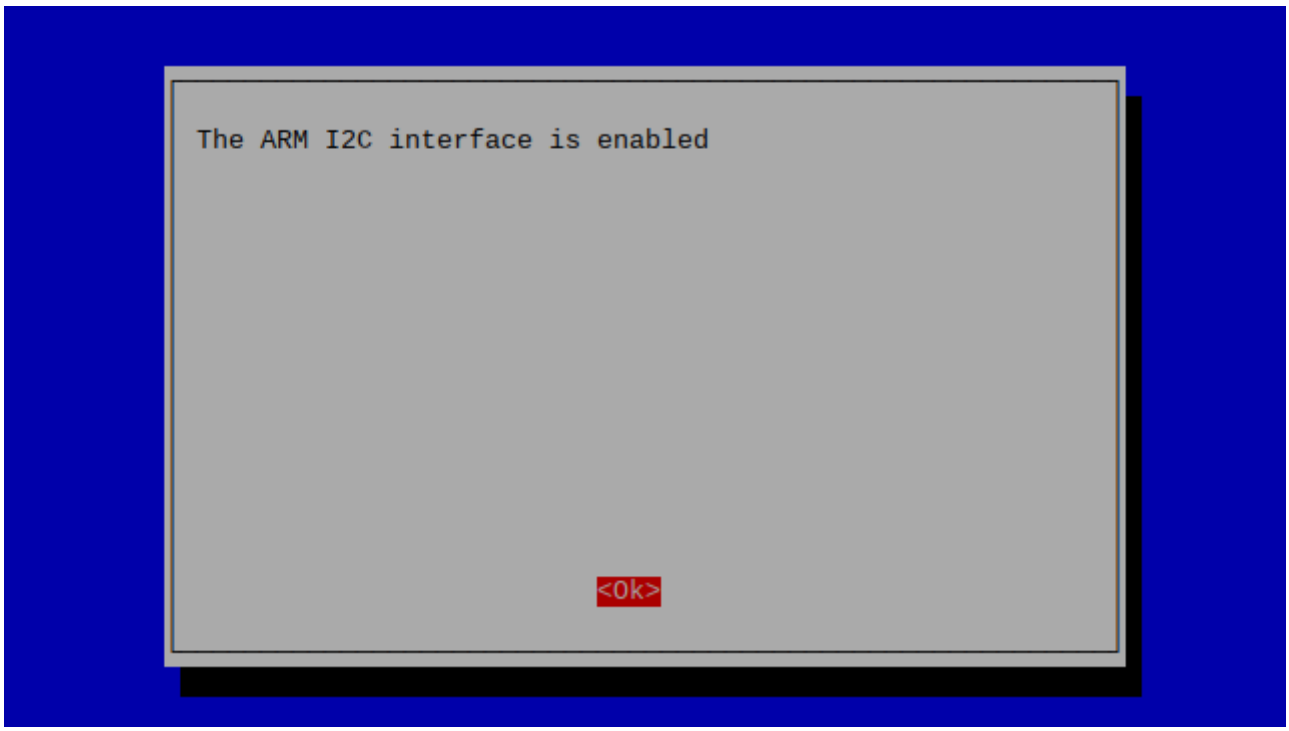
A step by step series that covers how to get the Firmware running.

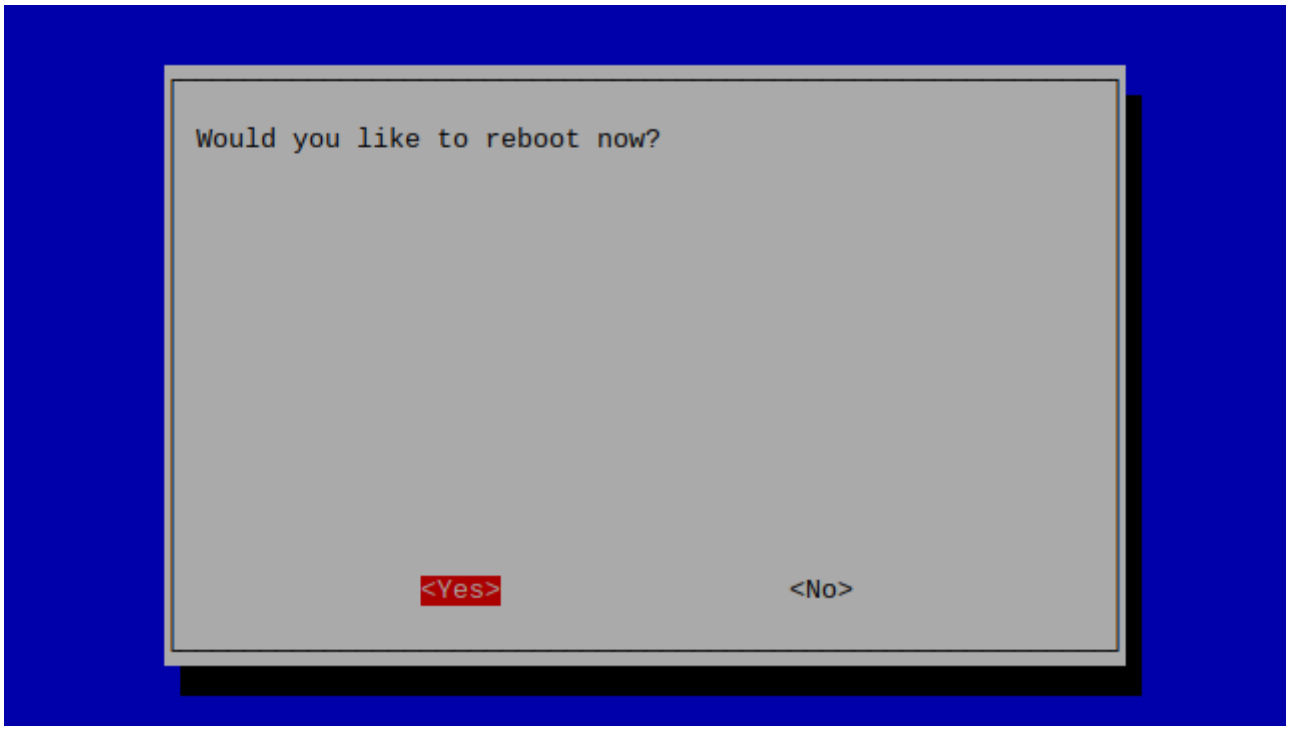
Raspberry Pi Firmware Pre-Reqs

1. Download and install the latest Raspberry Pi OS Desktop image to your SD card
2. Open the terminal and execute the following command `sudo raspi-config`
3. Then follow the following pictures to enable I2C bus on you raspberry pi

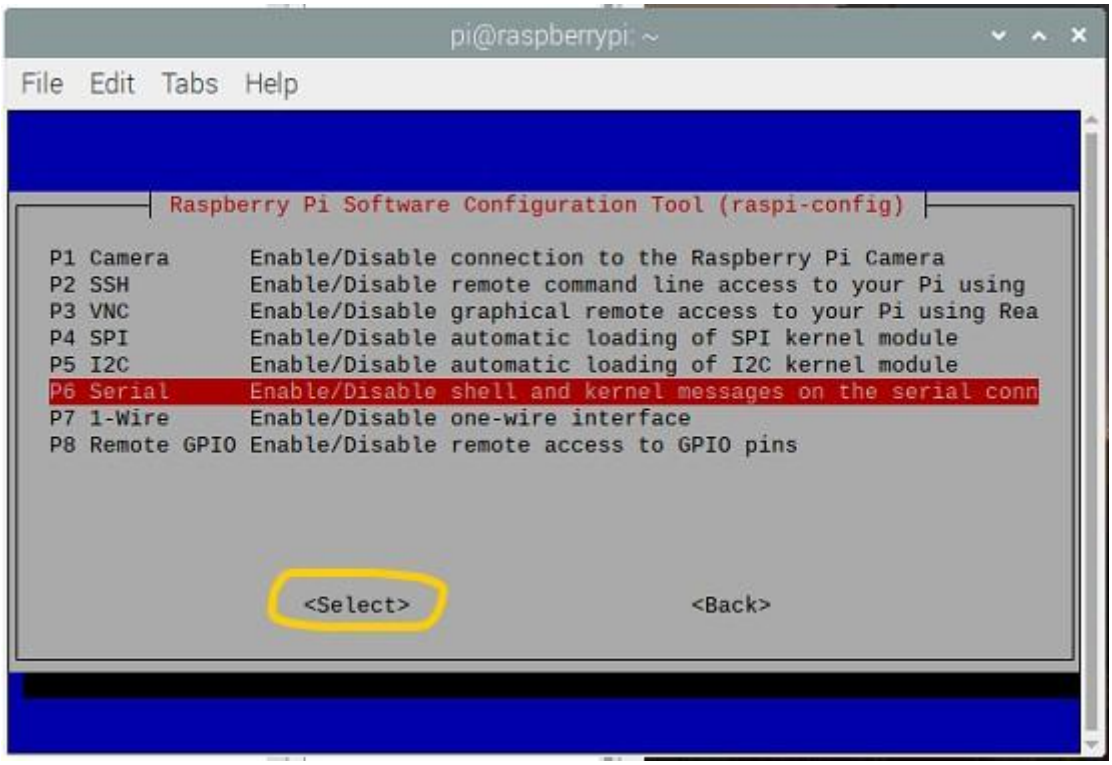




- 
Would you like the ARM I2C interface to be enabled?
<Yes>
<No>
- 
The ARM I2C interface is enabled
<Ok>

- 

- Then do the same for Serial(UART)

- 

Configuring Raspberry Pi and Running the UI

1. Copy Firmware folder to the desktop of your Raspberry Pi, open the terminal of your Raspberry Pi and execute the following commands

- `sudo apt-get update`
- `sudo apt-get upgrade`
- `sudo apt install python3-pip`
- `sudo pip3 install pillow`
- `sudo pip3 install python3-dev`

- `sudo python3 -m pip install --upgrade pip setuptools wheel`
- `sudo pip3 install Adafruit_DHT`
- `git clone https://github.com/pimoroni/hyperpixel2r`
- `cd hyperpixel2r`
- `sudo ./install.sh`
- `cd ~/Desktop/Firmware`
- `sudo chmod a+rx starter.sh`

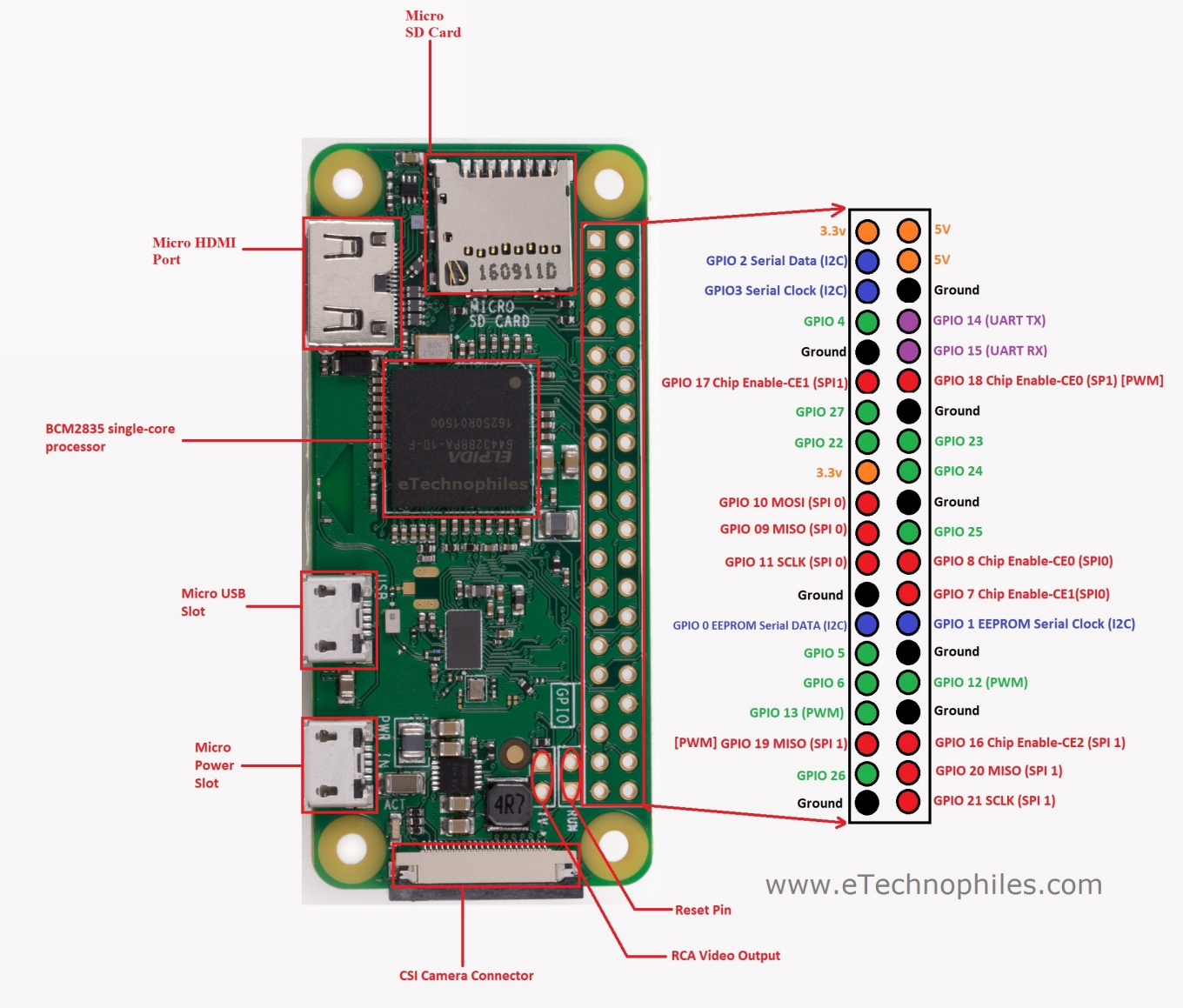
1. To run the program just double click on starter.sh file
2. or execute `python3 /home/pi/Desktop/Firmware/Firmware.py`

🔨 Testing

1. The Firmware can be tested on Raspberry Pi 3B, 3B+ or 4B with the following modifications
2. Connect the sensor as shown in the Circuit Diagram section below.

🔌 Circuit Diagram

- RPi 3,4 GPIOs Pinout



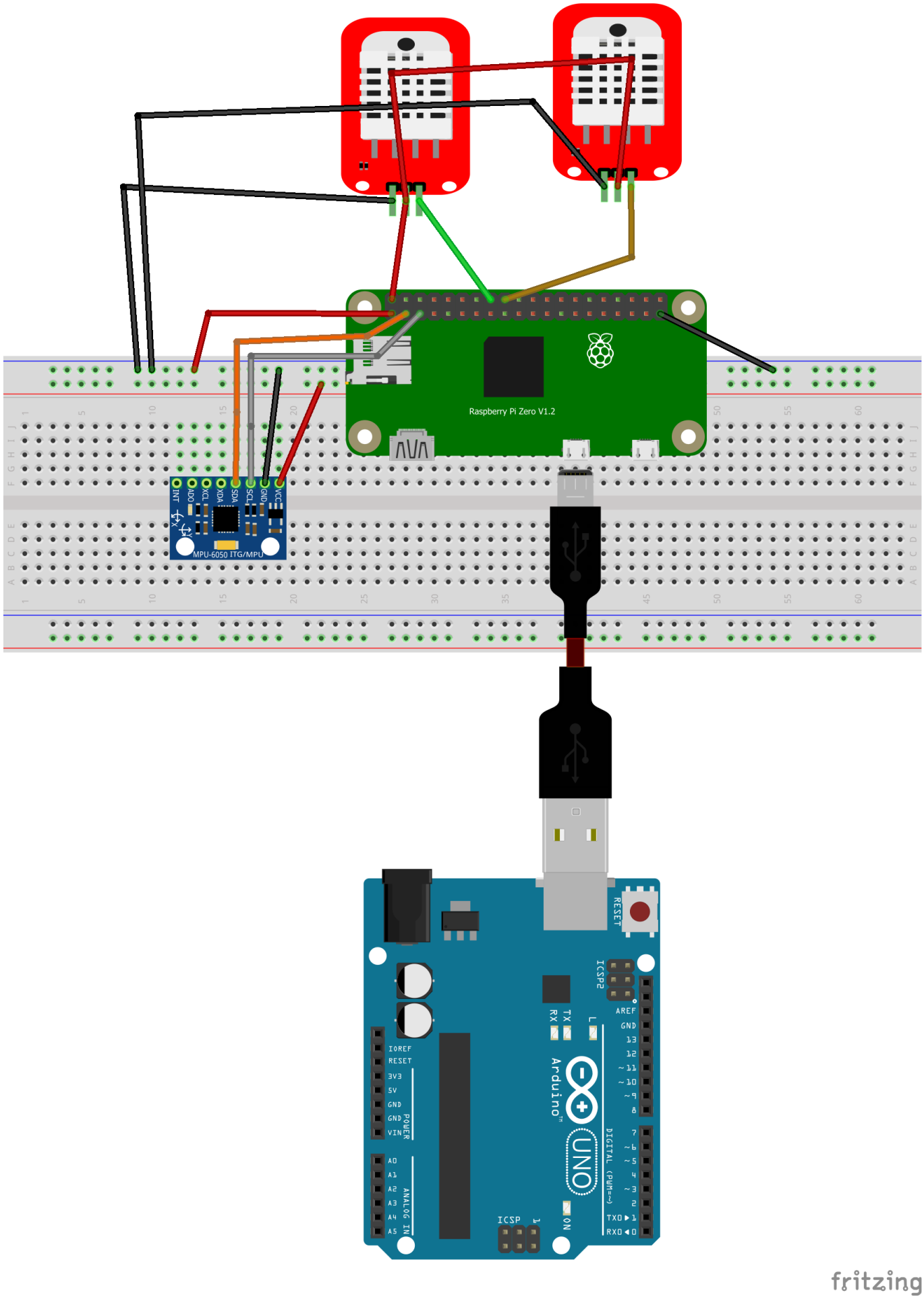
Circuit

```
Pins connections
```

DHT22 Inside	Raspberry Pi
DOUT	GPIO16
VCC	5V
GND	GND

DHT22 Outside	Raspberry Pi
DOUT	GPIO18
VCC	5V
GND	GND

MPU6050	Raspberry Pi
SCL	GPIO5(SCL)
SDA	GPIO3(SDA)
VCC	3.3V
GND	GND



Components Used

1. Raspberry Pi Zero W
2. Hyperpixel Display
3. DHT22 Modules
4. MPU6050
5. Any Arduino
6. USG OTG Cable

🔨 Built Using

- Python3 - Raspberry Pi FW
- Flutter - Cross-Platform Smartphone App Development Framework

✍️ Authors

- @Nauman3S - Development and Deployment