MQ3 Vending Machine

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🧐 About

This repo contains circuit, firmware and backend for MQ3 Vending Machine 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.

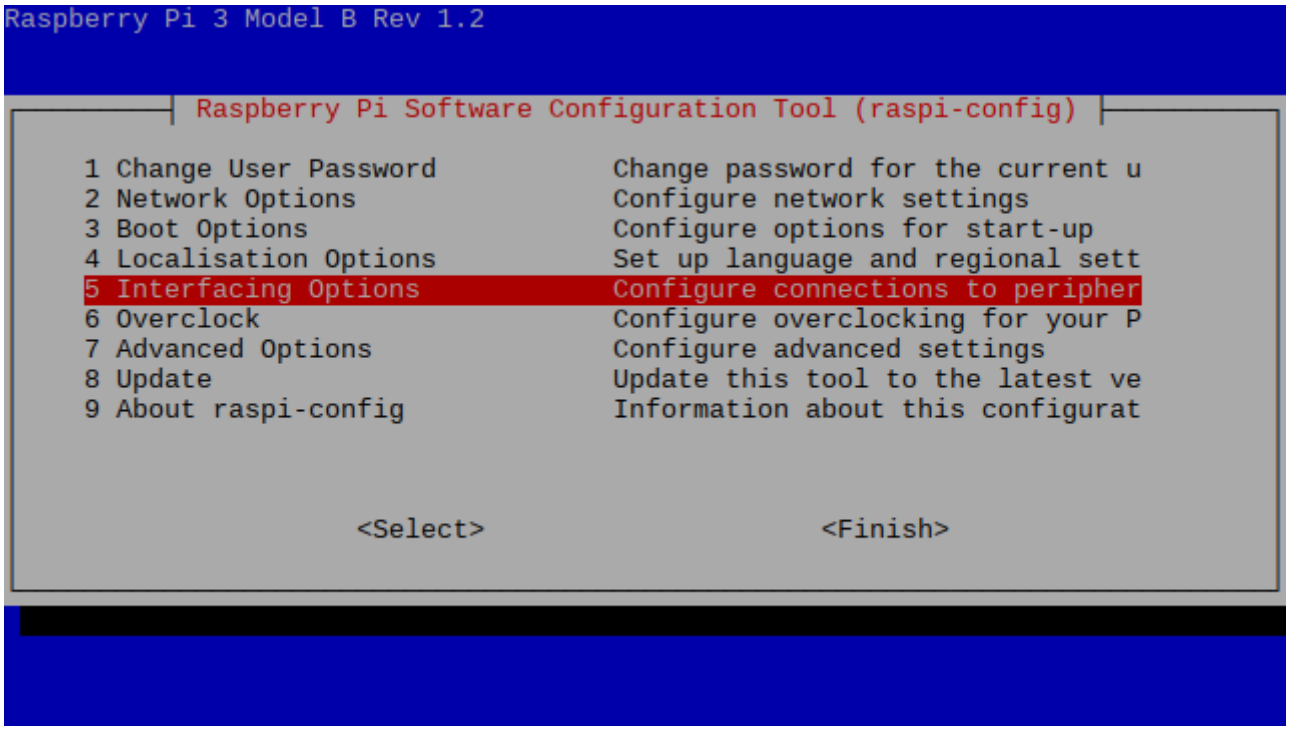
```
- Raspberry Pi Model 3B, 3B+, 4B or CM4
```

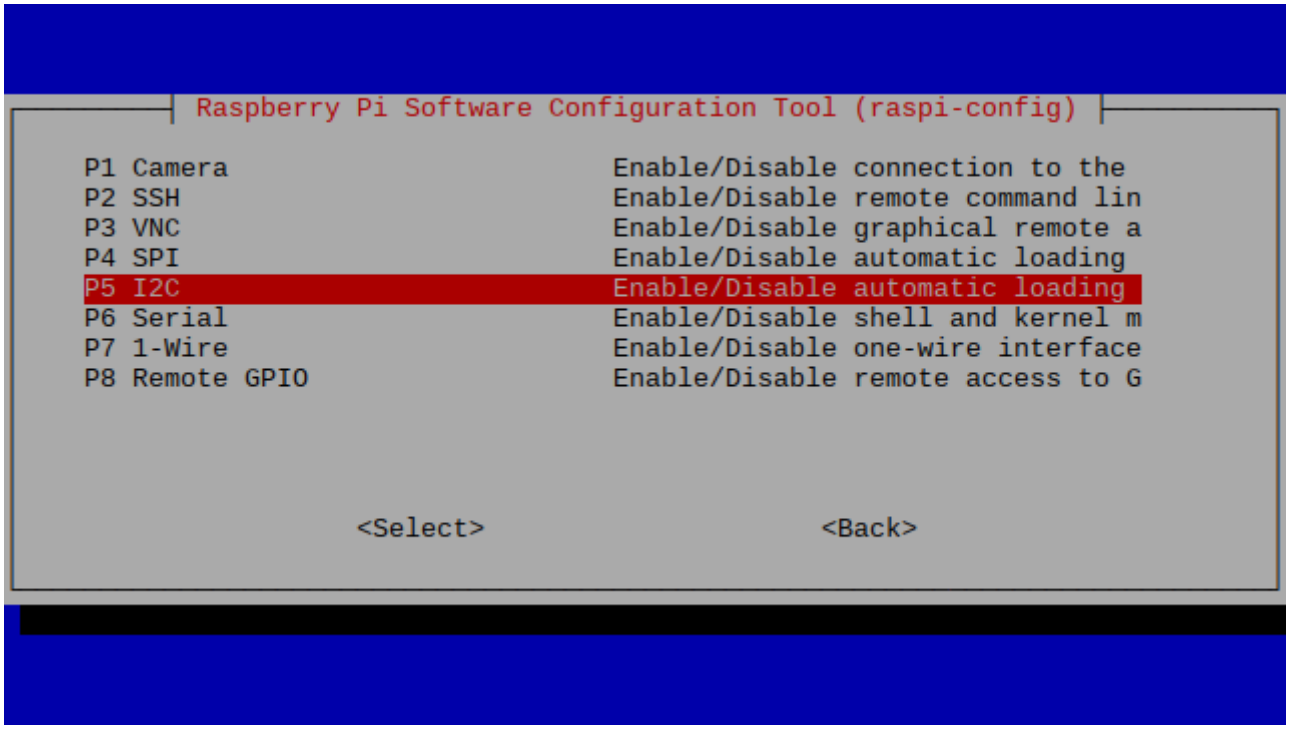
Installation and Configuration

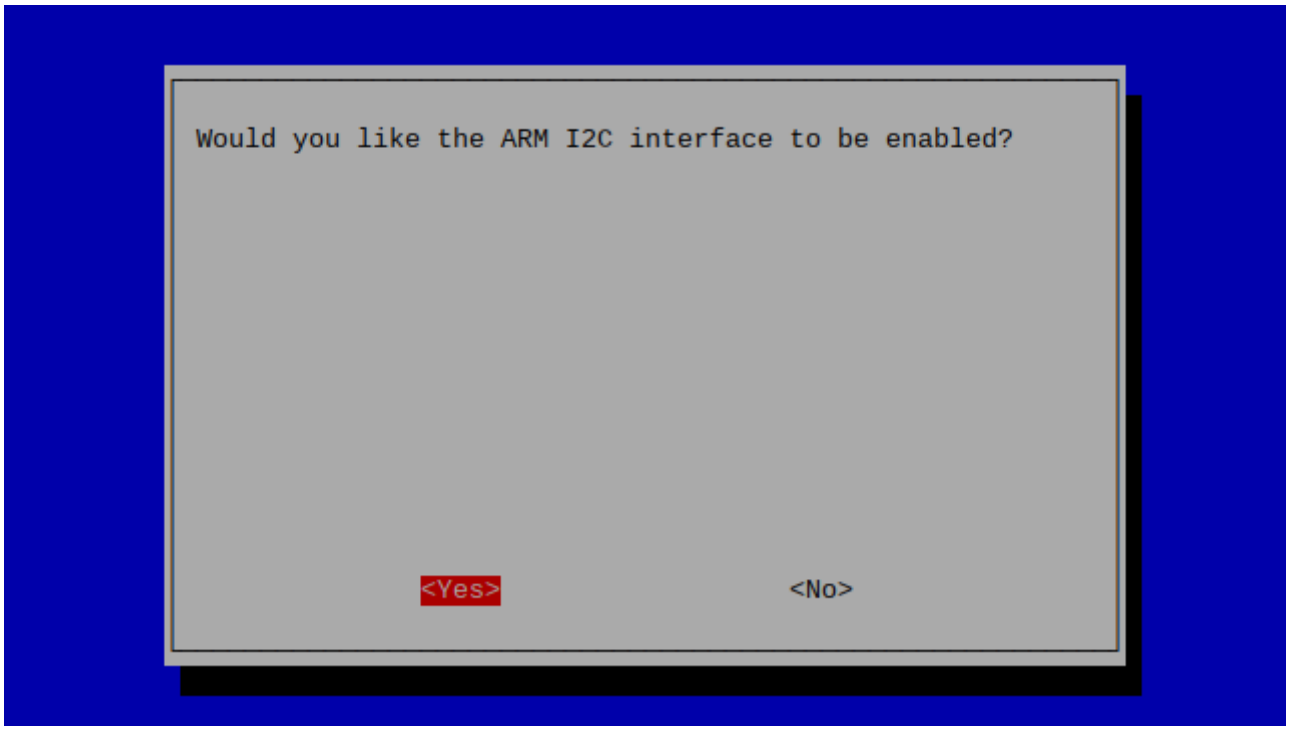
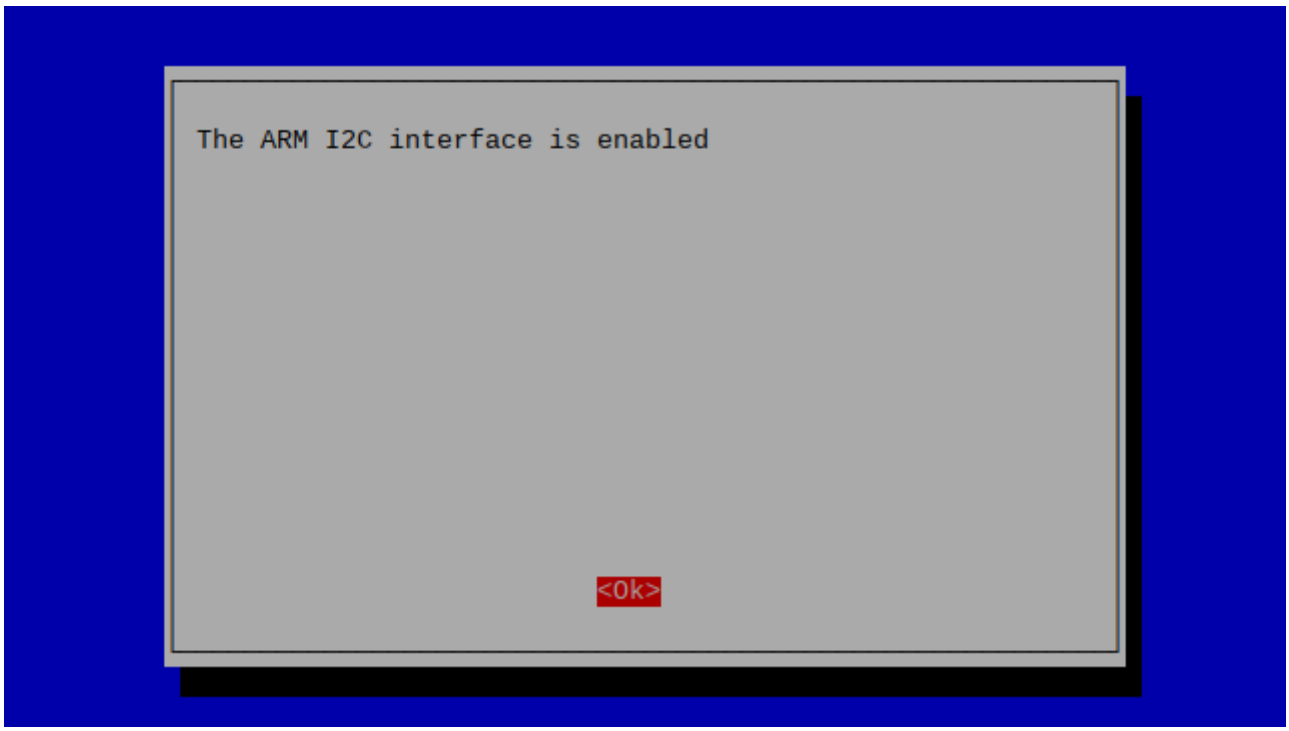
A step by step series that covers how to get the Firmware running.

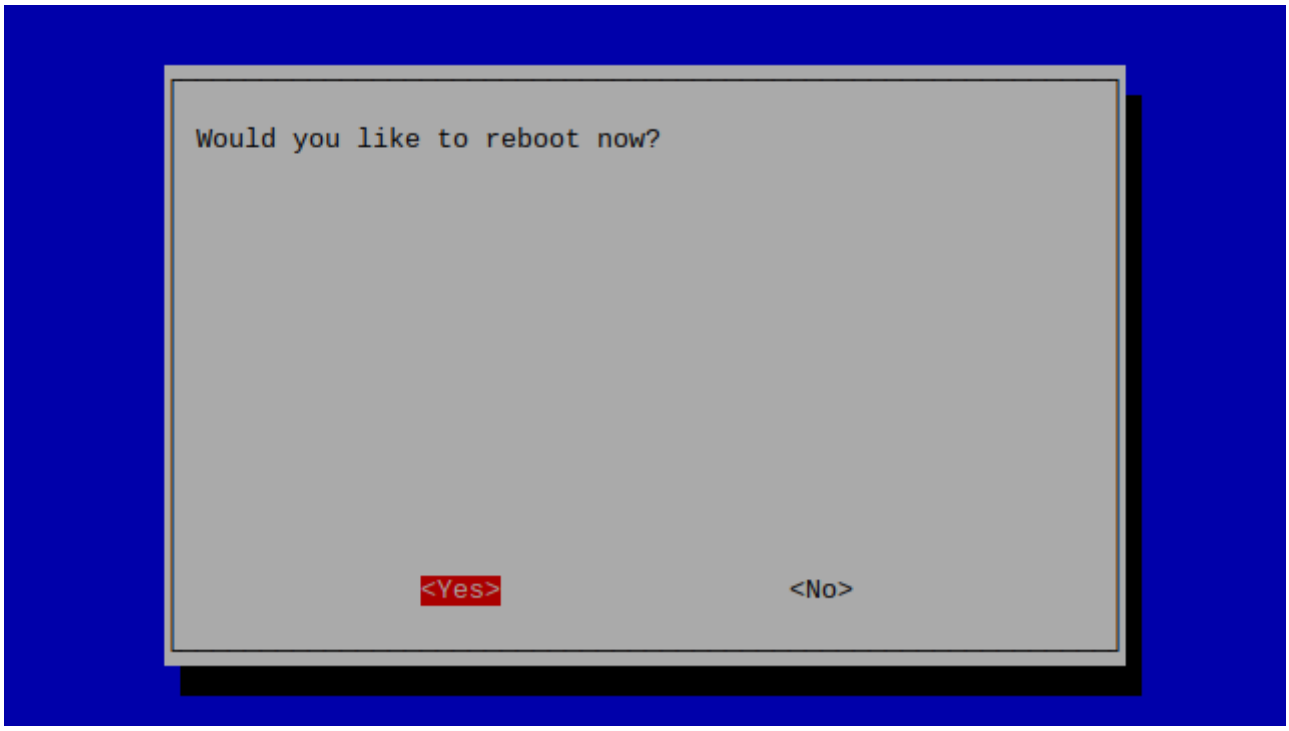
Raspberry Pi Firmware Pre-Reqs

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

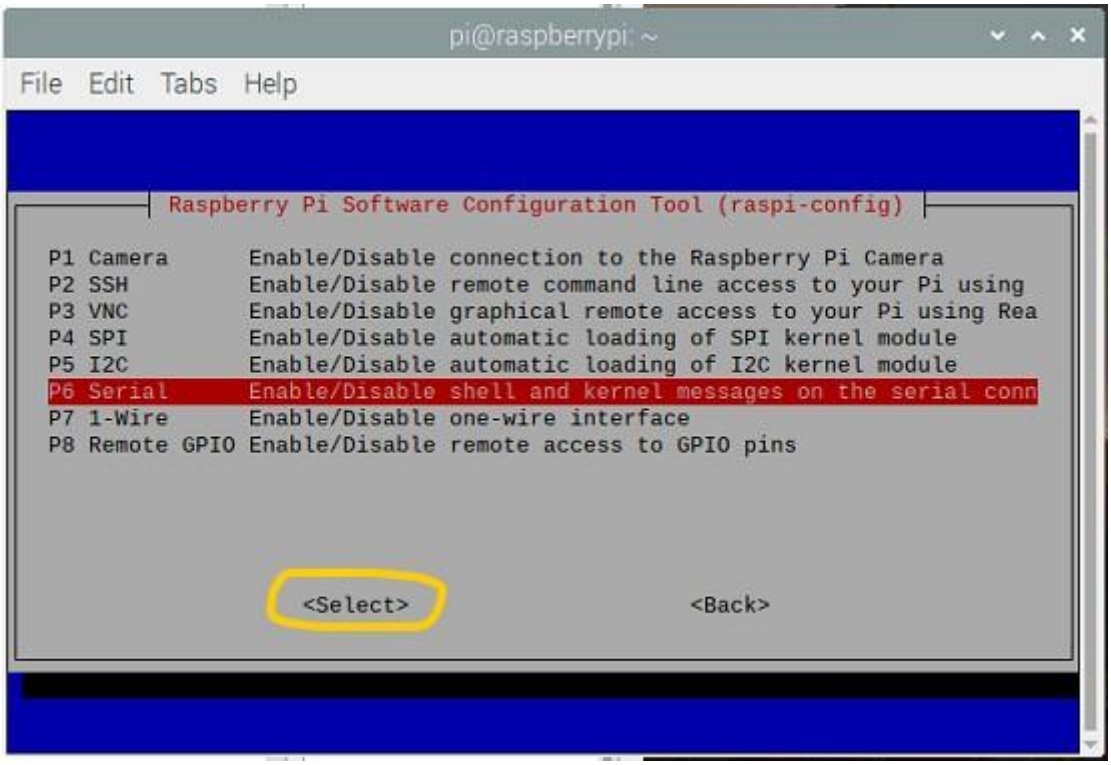




- 
Would you like the ARM I2C interface to be enabled?
<Yes>
<No>
- 
The ARM I2C interface is enabled
<Ok>

- 

- 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 gas-detection`
- `cd ~/Desktop/Firmware`

- `sudo chmod a+rx starter.sh`

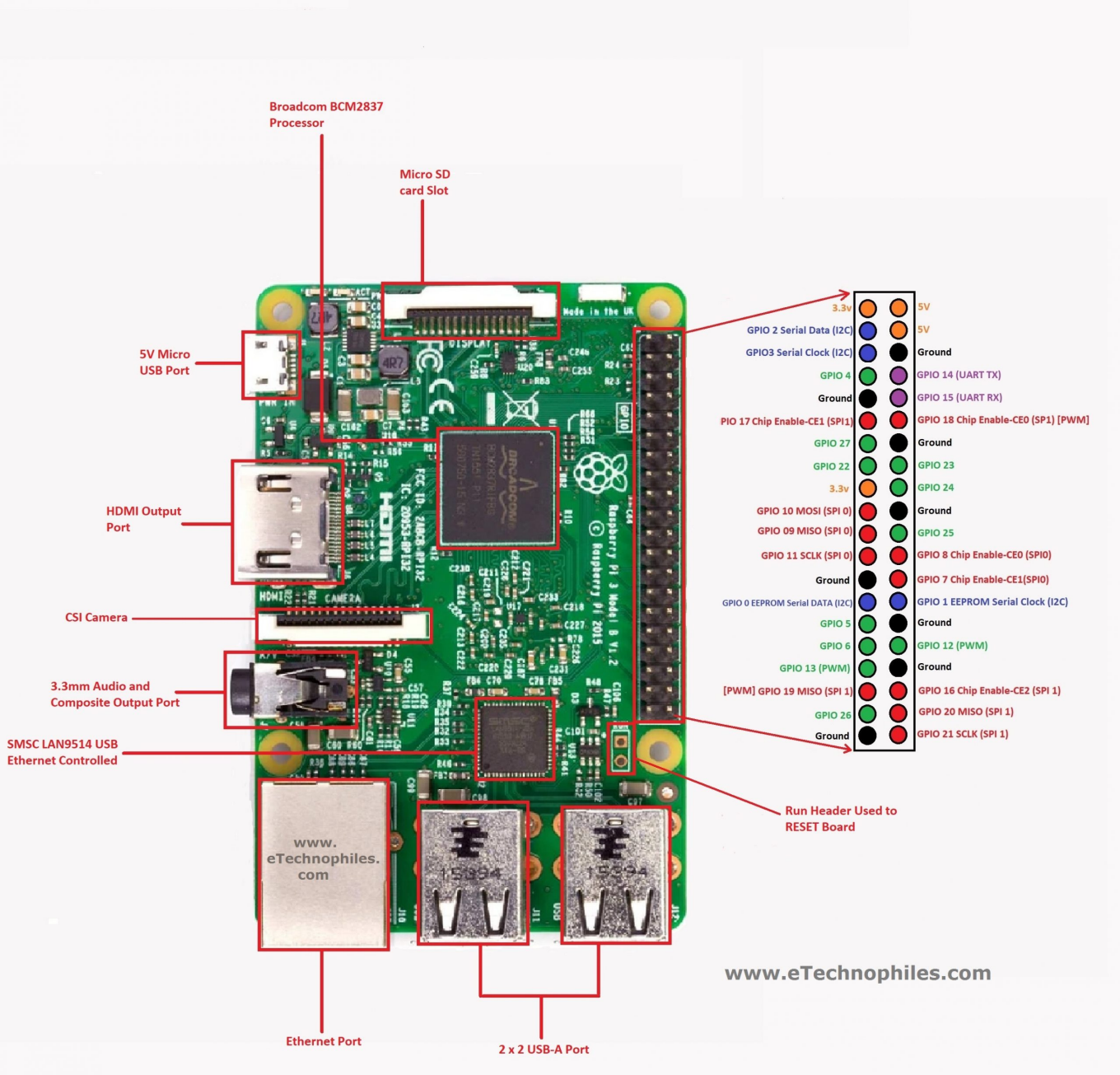
1. To run the program just double click on starter.sh file
2. or execute `python3 /home/pi/Desktop/Firmware/Firmware.py`

⛏ 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



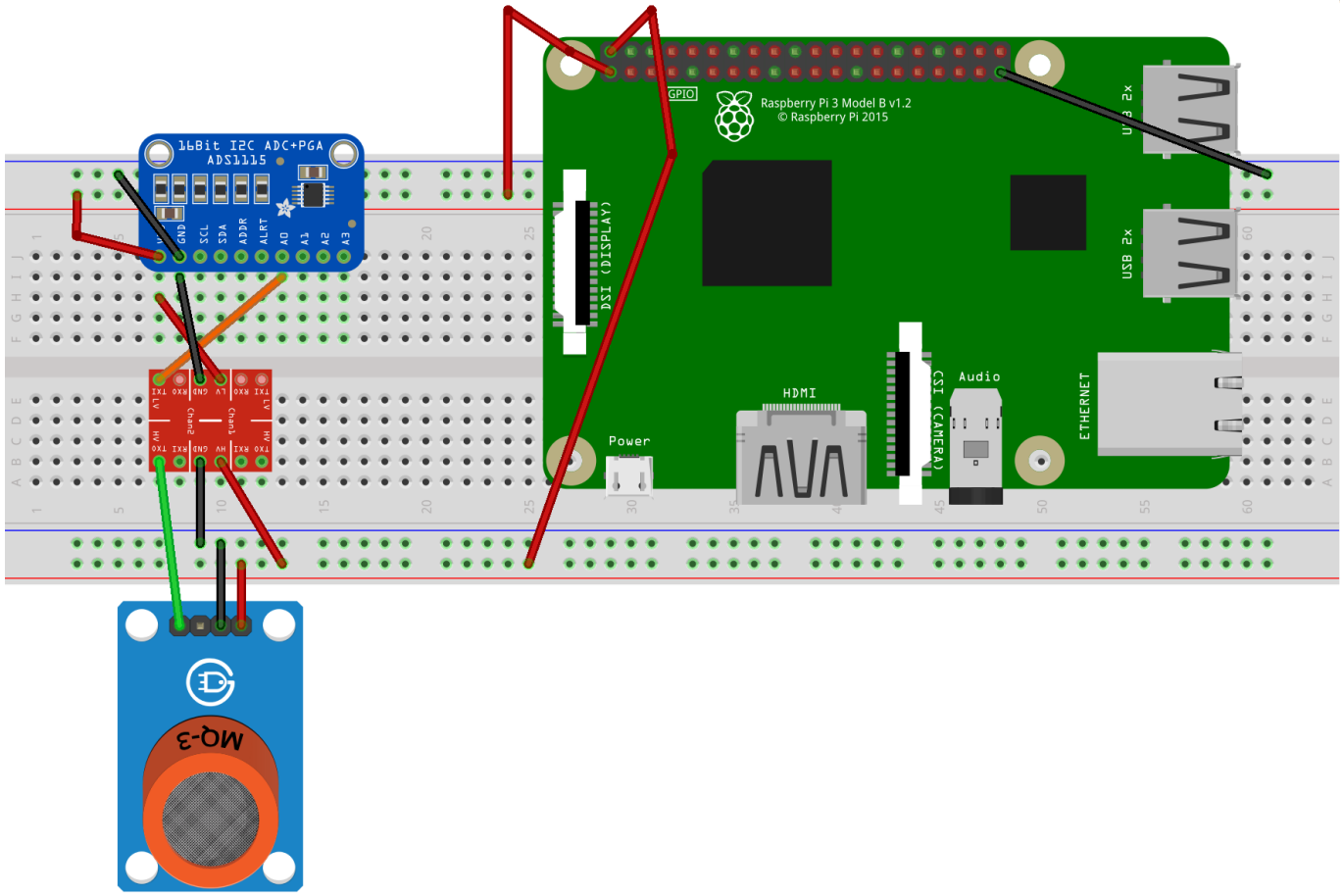
Circuit

```
Pins connections
```

MQ3	Logic Level Shifter
A0	TX0
GND	GND
VCC	5V

Logic Level Shifter	ADS1115
TX1	A0
GND	GND
LV	3.3V
HV	5V

ADS1115	Raspberry Pi
SCL	GPIO2
SDA	GPIO3
VCC	3.3V
GND	GND



Components Used

1. Any Raspberry Pi (https://www.amazon.com/CanaKit-Raspberry-Micro-Supply-Listed/dp/B01C6FFNY4/ref=sr_1_1?dchild=1&keywords=raspberry+pi+3&qid=1632029848&sr=8-1)
2. MQ3 Sensor(https://www.amazon.com/ACROBOTIC-Alcohol-Breakout-Raspberry-Breathalyzer/dp/B07CSNGS87/ref=sr_1_5?dchild=1&keywords=mq3&qid=1632029867&sr=8-5)
3. ADS1115(https://www.amazon.com/ADS1115-16-Bit-ADC-Programmable-Amplifier/dp/B00QIW4MGW/ref=sr_1_3?dchild=1&keywords=ads1115&qid=1632029889&sr=8-3)
4. Logic Level Converter(https://www.amazon.com/SparkFun-Logic-Level-Converter-Bi-Directional/dp/B01N30ZCW9/ref=sr_1_6?crid=2NOGIA43AG9OS&dchild=1&keywords=logic+level+converter&qid=1632029917&sprefix=logic+level%2Caps%2C463&sr=8-6)

⛏ Built Using

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

✍ Authors

- @Nauman3S - Development and Deployment