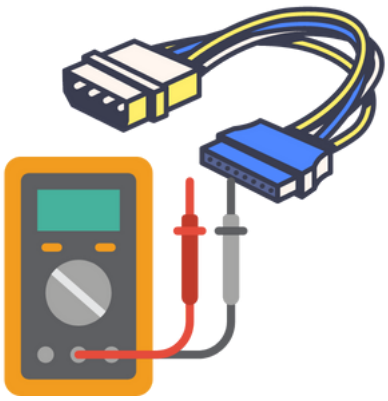

RPi Cable Tester

status active

RPi Cable Tester

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About

This repo contain files and detailed instructions on running the RPi Cable Tester Program.

Getting Started

Prerequisites

1. This program is tested on `Raspbery Pi 3B`.
2. You will need at least `16 GB Class 10 SD Card` restoring the provided .img file.

- For manual running, copy the Firmware folder to the Destkop of your Raspberry Pi.

AutoStart on Boot

Open the terminal on your Raspberry Pi and execute the following command

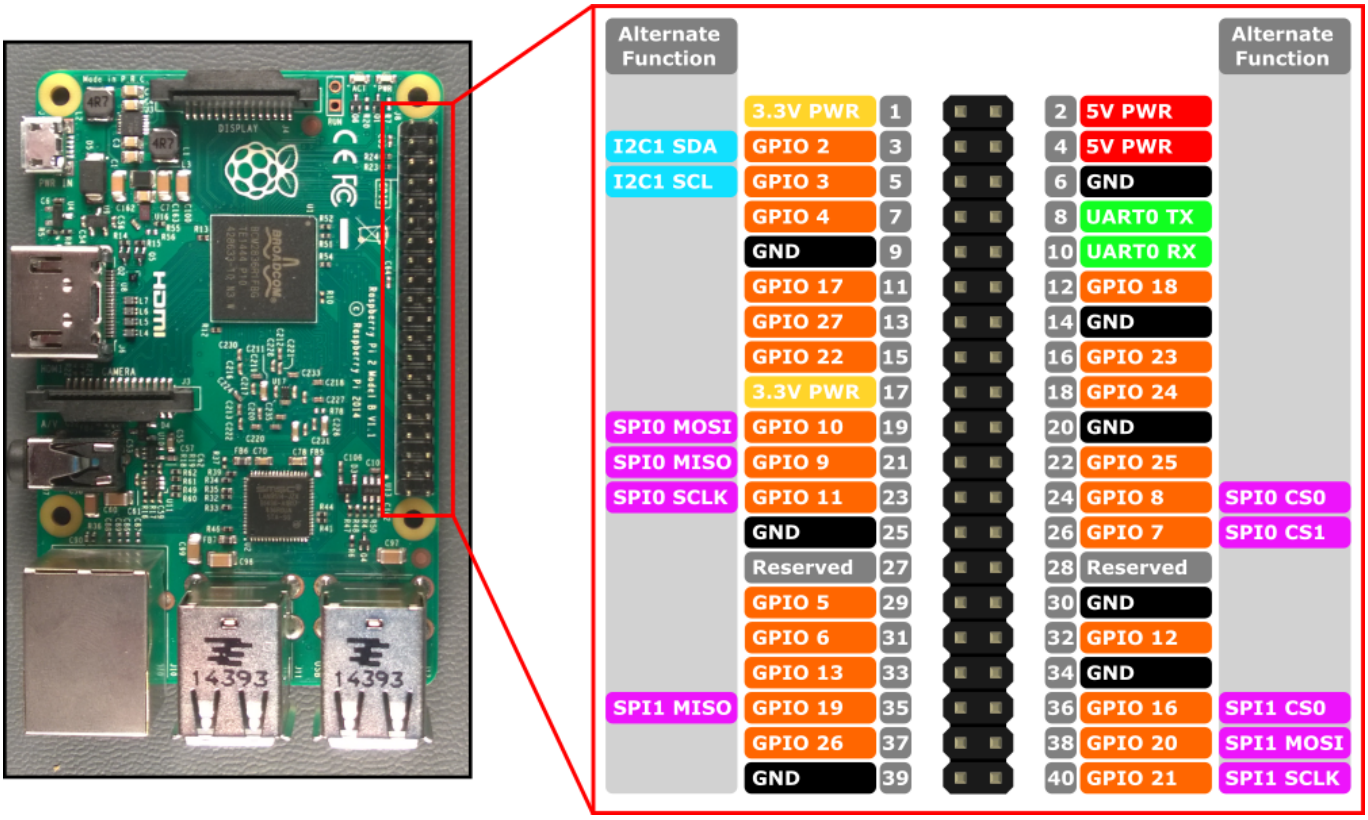
- `sudo nano /etc/rc.local`

Then put the following line before `exit 0`

- `(sleep 5; sh /home/pi/Desktop/Firmware/starter.sh)&`
- Press CTRL+O and CTRL+X to save and exit.

Circuit

Raspberry Pi Pinout



Pins Used

```
Green LED
```

Raspberry Pi Pin	LED Pin
GPIO 12	LED Possitive
GND	LED Negative

```
Y-Cable (Connector 1)
```

Raspberry Pi Pin	Connector
GPIO 4	Connector 1 Pin 1
GPIO 17	Connector 1 Pin 2
GPIO 27	Connector 1 Pin 3
GPIO 22	Connector 1 Pin 4
GPIO 10	Connector 1 Pin 5
GPIO 9	Connector 1 Pin 6

```
Y-Cable (Connector 2)
```

Raspberry Pi Pin	Connector
GPIO 11	Connector 2 Pin 1
GPIO 5	Connector 2 Pin 2
GPIO 6	Connector 2 Pin 3
GPIO 13	Connector 2 Pin 4
GPIO 19	Connector 2 Pin 5
GPIO 26	Connector 2 Pin 6

```
Y-Cable (Connector 3)
```

Raspberry Pi Pin	Connector
GPIO 18	Connector 3 Pin 1
GPIO 23	Connector 3 Pin 2
GPIO 24	Connector 3 Pin 3
GPIO 25	Connector 3 Pin 4
GPIO 8	Connector 3 Pin 5
GPIO 7	Connector 3 Pin 6

Logic Details

- The program logic for testing cable is simple. Connector 1 is connected to the 6 GPIO pins of Raspberry Pi acting as OUTPUT pins. Connector 2 and Connector 3 are connected to other set of GPIO pins of Raspberry Pi acting as INPUT Pins(with RPi internal PULL-UP Resistors).

- Connector 1 pins send signal(LOW) to Connector 2 and Connector 3 INPUT GPIOs and if all the GPIOs of Connector 2 and 3 becomes LOW, the GREEN LED lights up.

Usage

- Copy Firmware folder of this Repo to the Destkop of Raspberry Pi and run the program using the following command

```
python3 /home/pi/Desktop/Firmware.py
```

- Or follow `AutoStart on Boot` section of this README to make the program run automatically on Raspberry Pi boot.
- In case of auto boot, a log file is created in logs directory inside the Firmware folder.

SD-Card Image Backup Restore

- Extract the `rpicabletester.zip`, present in sd-card-img folder, preferably using 7-zip and use Raspberry Pi Disk Imager to write the extracted .img file to your SD Card.
- Raspberry Pi Disk Imager - For writing the .img file to SD Card.

Tests Performed

The program is tested throughly on the real hardware.

- Auto start on boot is tested and it is working.
- SDCard backup img is made and then restored on the 16GB SD Card to ensure the program works after restoration as well.

Demo

A demo video is present in the root of this repository which tires to mimic a Y-Cable connections and on any broken connection the Green LED turns off. If all connections are correct then the Green LED turns on.

🔨 Built Using

- Python - For programming

✍️ Authors

- @Nauman3S - Development