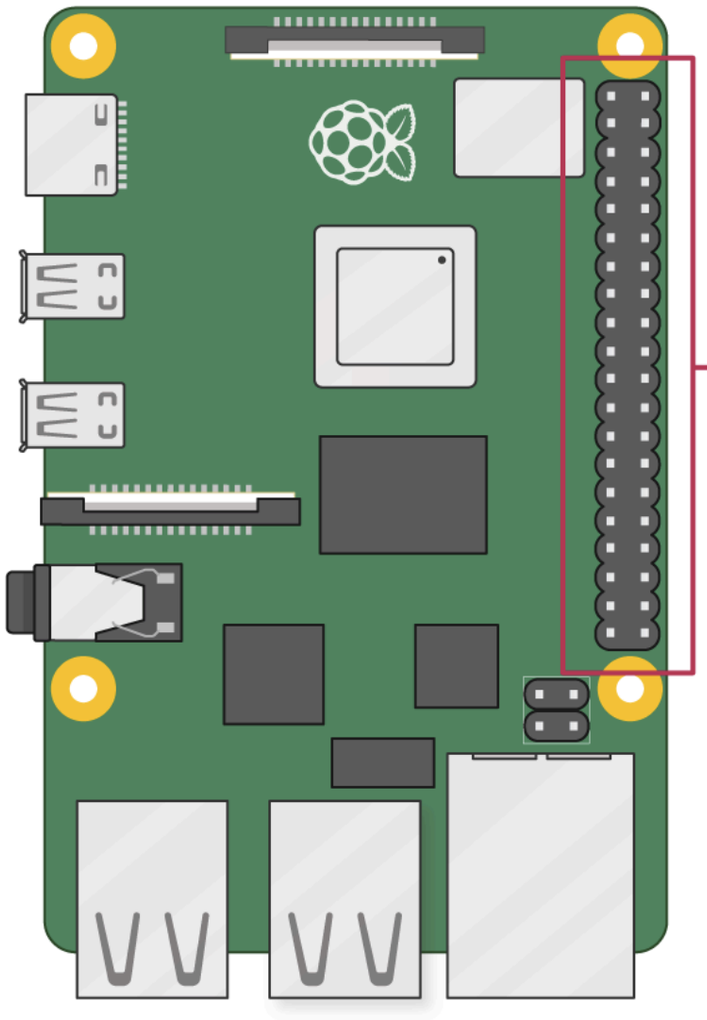
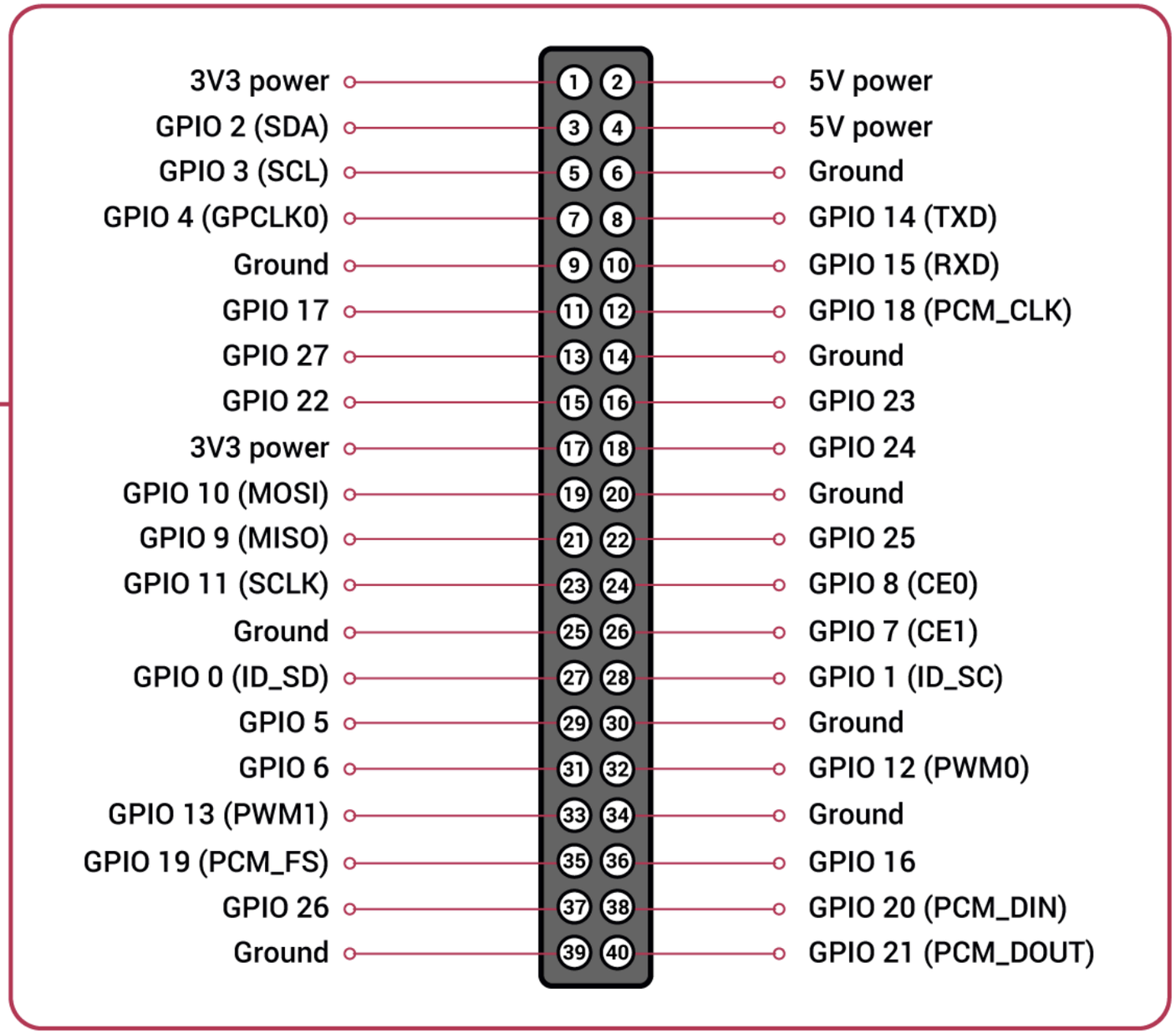
MP FLASHLOADER TOOL V2.7

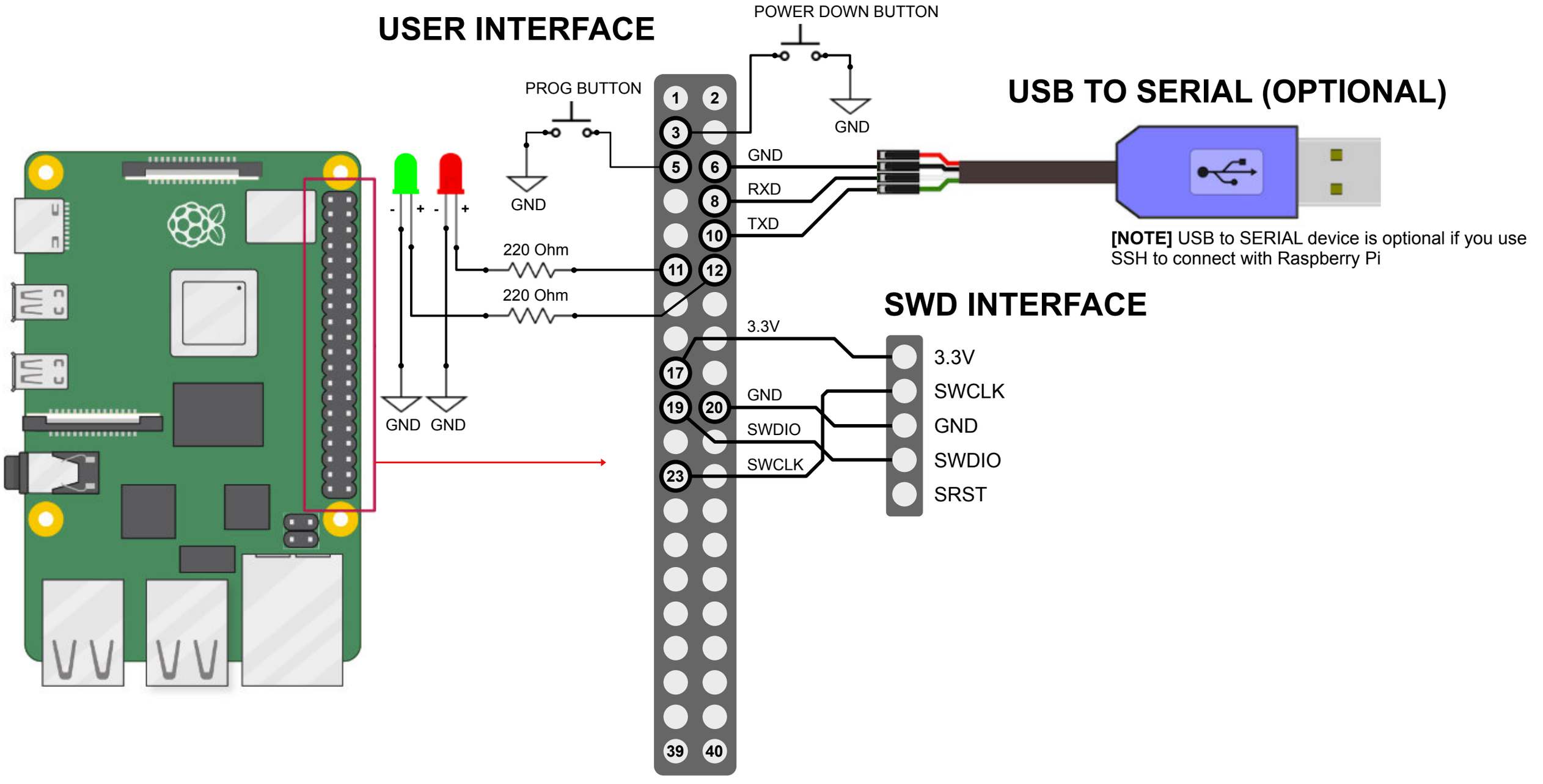
USER GUIDE

Raspberry Pi pinout





Hardware Setup



Raspberry Pi Installation

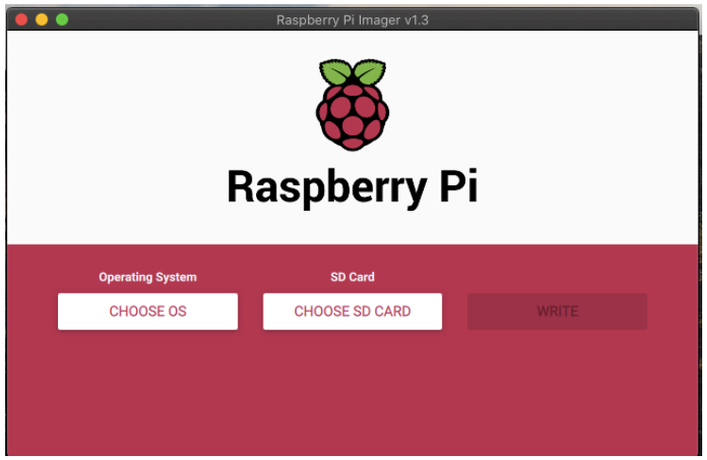
- Please use following image for raspberry pi:
  - **Raspberry Pi 3 Model:**

    http://downloads.raspberrypi.org/raspbian_lite/images/raspbian_lite-2018-11-15/2018-11-13-raspbian-stretch-lite.zip

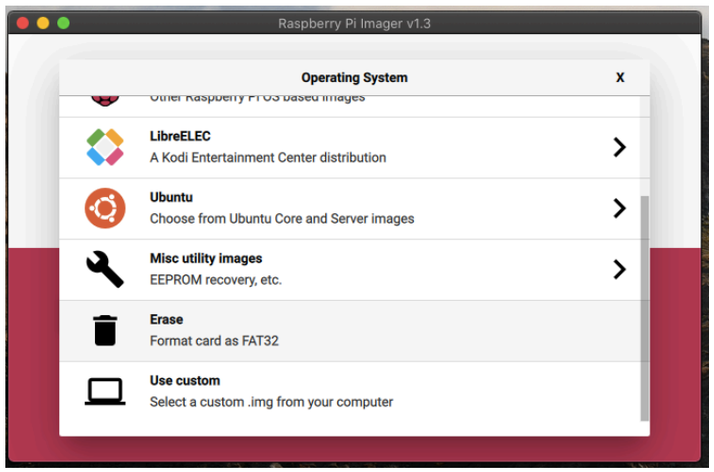
  - **Raspberry Pi 3 Model B+ or Raspberry Pi 4:**

    http://downloads.raspberrypi.org/raspbian_lite/images/raspbian_lite-2019-09-30/2019-09-26-raspbian-buster-lite.zip

- Download and install raspberry pi imager

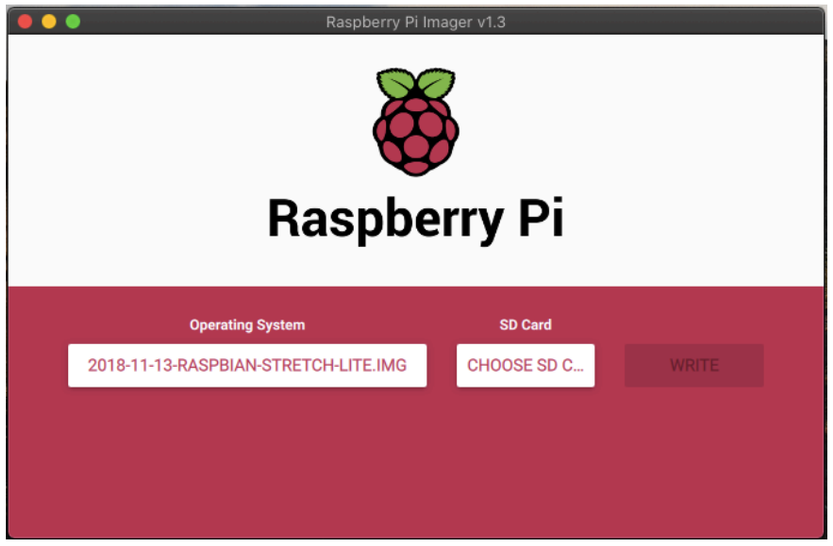


- Format sd-card as FAT-32



Raspberry Pi Installation

- Extract the image and store *.img file to sd-card



- Enable Raspberry Pi UART interface before installation
  - After load the *.img to sd-card usually sd-card will be renamed as “boot”. Open the boot sd-card and edit config.txt
  - Add **enable_uart=1** at the bottom of the config.txt and then save.

- Finally put the sd-card to Raspberry Pi and power on. You should see the boot message in the UART console.
  - After boot is finished Raspberry Pi will ask you to login:
    - username: **pi**
    - password: **raspberry**

[IMPORTANT]: after login to raspberry pi, you need to enable SPI interface in raspberry pi.

- sudo raspi-config -> Interface Options -> SPI -> Yes
- sudo reboot (reboot raspberry pi after enabling SPI interface)

Flashloader Setup

- Copy **flashloader_bundle_v2_7.tgz** to **/home/pi/** directory.
- Extract the bundle: **tar -xvzf flashloader_bundle_v2_7.tgz**
- This bundle contains:
    - main.py (python script to run the flashloader)
    - **source** folder (this folder contains openocd source files)

- Install openocd:
    - prerequisite:
        - **sudo apt-get update**
        - **sudo apt-get upgrade**
        - **sudo apt-get install git autoconf libtool make pkg-config libusb-1.0-0 libusb-1.0-0-dev**
    - **cd source/openocd** (change to openocd directory)
    - Inside openocd directory run the following commands:
        - **./bootstrap**
        - **./configure --enable-sysfsgpio --enable-bcm2835spi**
        - **make**
        - **sudo make install**
        - **openocd --version** (see whether the installation is succeed or not)

- Install script prerequisite:
    - **sudo apt-get install pmount ntfs-3g exfat-fuse**
    - **sudo apt-get install python-pip python-gpiozero python3-gpiozero**
    - **sudo reboot**

- Run main.py script manually:
    - **python main.py**

Flashloader Setup

- Run the script automatically after boot up using “crontab”:
    - **Note [IMPORTANT]:**
        - Before you set the script to run automatically make sure you can successfully run the main.py script manually. Type Ctrl+C then ‘y’ to exit the script when it run manually

    - run: **crontab -e** (to edit the cron table)
    - Select the editor: The first time you run crontab you’ll be prompted to select an editor; If you are not sure which one to use, choose **nano** by pressing **Enter.**
    - Then add this line at the end of the file: **@reboot python /home/pi/main.py &**
    - **sudo reboot** (after reboot the main.py will run automatically and the LED indicator will start)
        - Note:
            You still can log in to your RPi if you need to do other stuff and it wont affect the flashloader main.py script. In other words the script is still running.
- To disable crontab running main.py - you need to edit crontab again by running **crontab -e** to comment **#@reboot python /home/pi/main.py &** and then **sudo reboot**

LED Operation State & Guidelines

State	Status	LED 🔴	LED 🟢	Actions Available	Note
1	No *.bin File or Multiple *.bin Files is detected	**Blinking**	**OFF**	Add *.bin file by plug-in the USB drive (with the *.bin file) to RPi and long press the button for ~5 seconds. Make sure there is only one *.bin file in your USB drive.	After press the button for ~5 seconds, the RED led will start or keep blinking. If the *.bin file is successfully added the GREEN led will be ON and RED led will be OFF.
2	Valid *.bin File	**OFF**	**ON**	Short clicked the button to start the programming or long pressed the button (~5 seconds) if you want to updated the *.bin file from USB drive.	If you long pressed the button (~5 seconds) the RPi will try to update the current *.bin image in RPi with the *.bin file from the USB Drive. Make sure there is only one *.bin file on your USB drive. If there is not usb drive or not *.bin file in the usb drive current *.bin file in RPi will not be updated.
3	In-Programming	**Blinking**	**Blinking**	None	Wait until one of the LED is OFF to see the programming result.
4	Programming SUCCEED	**OFF**	**ON**	Same as state 2.	At this state *.bin is successfully programmed and verified to the MCU.
5	Programming FAILED	**ON**	**OFF**	You can retry the programming process by short clicked the button to see if it is still failed. But do not update the *.bin file at this state.	If it’s keep failing try to test the other MCU first. It might be the MCU problem.
6	POWER DOWN in PROGRESS	**Blinking**	**Blinking**	None	Long pressed the **power down button** for ~4 seconds (until the GREEN and RED led start blinking) and then wait until those led are OFF. It is safe to wait about 10 more seconds before you completely plug off the power.