Raspberry Pi - Notes, tips and tricks

Tips, hints, and tricks when working on Raspberry Pi

#notes #raspberry-pi

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Setup Wireless

Refer to the official guide at Raspberry Pi Configuration. Note that there are two types of access points:

Routed wireless access point: Create a new local network, which is not connected any other existing network

```
                                    +- RPi -------+
                                +---+ 10.10.0.2   |          +- Laptop ----+
                                |   |     WLAN AP +-)))  (((-+ WLAN Client |
                                |   | 192.168.4.1 |          | 192.168.4.2 |
                                |   +-------------+          +-------------+
                +- Router ----+ |
                | Firewall    | |   +- PC#2 ------+
(Internet)--WAN-+ DHCP server +-LAN-+---+ 10.10.0.3   |
                |   10.10.0.1 | |   +-------------+
                +-------------+ |
                                |   +- PC#1 ------+
                                +---+ 10.10.0.4   |
                                    +-------------+
```

Bridged wireless access point: Extend an existing Ethernet network to wireless computers and devices

```
                                    +- RPi -------+
                                +---+ 10.10.0.2   |          +- Laptop ----+
                                |   |     WLAN AP +-)))  (((-+ WLAN Client |
                                |   |  Bridge     |          | 10.10.0.5   |
                                |   +-------------+          +-------------+
                +- Router ----+ |
                | Firewall    | |   +- PC#2 ------+
(Internet)--WAN-+ DHCP server +-LAN-+---+ 10.10.0.3   |
                |   10.10.0.1 | |   +-------------+
                +-------------+ |
                                |   +- PC#1 ------+
                                +---+ 10.10.0.4   |
                                    +-------------+
```

Python packages

Most packages can be installed using `sudo apt-get install` followed by `python-<packagename>` /* for Python2 */ or `python3-<packagename>`.

In some cases, a package is not available on the OS package manager, so install that packages via `pip` from python package manager.

Install `pip` first:

```
sudo apt install -y python-pip python3-pip
```

Then install the target package. For example:

```
sudo apt install -y python-ws4py python3-ws4py
```

is equivalent to:

```
pip install ws4py # python2 package
```

and

```
pip3 install ws4py # python3 package
```

Who is logged on?

Use `w` command from `procps` package.

```
    08:53:52 up  2:21,  2 users,  load average: 0.02, 0.06, 0.07
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
pi       pts/0    fe80::1936:b4d4: 06:34    0.00s  1.54s  0.05s w
```

Save power

Save power when running on battery by turning off unused peripherals, or features.

Turn OFF the USB chip:

```
echo '1-1' |sudo tee /sys/bus/usb/drivers/usb/unbind
```

Turn ON the USB chip:

```
echo '1-1' |sudo tee /sys/bus/usb/drivers/usb/bind
```

Turn OFF the HDMI output:

```
sudo /opt/vc/bin/tvservice -o
```

Turn ON the HDMI output:

```
sudo /opt/vc/bin/tvservice -p
```

Reduce the clock of the core by changing some parameters in the `/boot/config.txt` file:

/boot/config.txt

```
arm_freq_min=250
core_freq_min=100
sdram_freq_min=150
over_voltage_min=0
```

Disable Wi-Fi & Bluetooth

Starting from Raspberry Pi 3, WiFi and Bluetooth are added on hardware, so Raspbian has its method to control these signals in `/boot/config.txt` file:

/boot/config.txt

```
dtoverlay=pi3-disable-wifi
dtoverlay=pi3-disable-bt
```

> ℹ️ It's correct to use the word `pi3` in the params's value, for other version of Raspberry Pi.

> 🔥 The `rfkill` command can be used to soft-block the wireless connections:
>
> ```
> rfkill list              # displays the state of the modules
> rfkill block wifi
> rfkill block bluetooth
> ```
>
> but this does not completely turn off the hardware of the WiFi and the Bluetooth module. They will still draw a little power in the background.

Disable on-board LEDs

Add below params to the `/boot/config.txt` file:

/boot/config.txt

```
dtparam=act_led_trigger=none
dtparam=act_led_activelow=on
```

---

1. Add a form in Markdown:

```
<form
    role="search"
    target="_blank"
    action="https://packages.debian.org/search"
>
    <div>
        <input
            type="search"
```

```
            id="mySearch"
            name="keywords"
            placeholder="Enter package name..."
            aria-label="Search for a package name"
            style="border:1px solid gray; padding: .25em .5em;"
        />
        <button type="submit" class="md-button">Search</button>
    </div>
</form>
```

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