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Raspberry Pi Setup

When following this setup, keep a sticky note or a document up on your computer because there are several things, some of which are nonrecoverable, that you will need to remember.

1. Raspberry Pi Reference
    a. For more information go to
    https://www.raspberrypi.org/
2. Initial setup
    a. Follow the instructions on the “CanaKit Raspberry Pi Quick-Start Guide”
    b. Make sure to connect the Raspberry Pi to ethernet
    c. For more information go to
    https://www.raspberrypi.org/help/quick-start-guide/
    https://www.raspberrypi.org/help/noobs-setup/
3. Initial configuration
    a. From the terminal
        sudo raspi-config
    b. Username
        i. The default username is “pi”
    c. User Password
        i. The default password for the user “pi” is “raspberry”
        ii. To change the user password, use the arrow keys to highlight “Change User Password, press tab to highlight “<Select>”, and press enter.
        iii. Press enter to confirm.
        iv. Enter a unique password and press enter.
        v. Re-enter the password and press enter.
        vi. Press enter to confirm.
        vii. Write down the user password!
    d. Hostname
        i. The default hostname is “raspberrypi”
        ii. To change the hostname, use the arrow keys to highlight “Advanced Options”, press tab to highlight “<Select>”, and press enter.
        iii. Use the arrow keys to highlight “Hostname”, press tab to highlight “<Select>”, and press enter.
        iv. Press enter to proceed.
        v. Enter a unique hostname (e.g. makraspi)
        vi. Press tab to highlight “<Ok>” and press enter.
        vii. Write down the hostname!
    e. SSH
        i. Use the arrow keys to highlight “Advanced Options”, press tab to highlight “<Select>”, and press enter.
        ii. Use the arrow keys to highlight “SSH”, press tab to highlight “<Select>”, and press enter.
        iii. Use the arrow keys to highlight “<Enable>” and press enter.
        iv. Press enter to confirm.
    f. Internationalization
        i. Use the arrow keys to highlight “Internationalisation Options”, press tab to highlight “<Select>”, and press enter.
        ii. Local
            1. Use the arrow keys to highlight “Change Locale”, press tab to highlight “<Select>”, and press enter.

2. Use the arrow keys to navigate the Locales. Highlight “en_GB.UTF-8 UTF-8” and press the spacebar to de-select it. Highlight “en_US.UTF-8 UTF-8” and press the spacebar to select it. Press tab to highlight “<Ok>” and press enter.
3. Use the arrow keys to highlight “en_US.UTF-8 UTF-8”, press tab to highlight “<Ok>”, and press enter.

iii. Timezone
1. Use the arrow keys to highlight “Change Timezone”, press tab to highlight “<Select>”, and press enter.
2. For the Geographic Area, use the arrow keys to highlight “US”, press tab to highlight “<Ok>”, and press enter.
3. For the Time Zone, use the arrow keys to highlight “Central”, press tab to highlight “<Ok>”, and press enter.

iv. Keyboard Layout
1. Use the arrow keys to highlight “Change Keyboard Layout”, press tab to highlight “<Select>”, and press enter.
2. For the Keyboard Model, use the arrow keys to highlight the keyboard model closest to the one you are using, press tab to highlight “<Ok>”, and press enter.
3. For the Keyboard Layout, use the arrow keys to highlight “English (US)”, press tab to highlight “<Ok>”, and press enter.
4. For AltGr, use the arrow keys to highlight “The default for the keyboard layout”, press tab to highlight “<Ok>”, and press enter.
5. For Compose, use the arrow keys to highlight “No compose key”, press tab to highlight “<Ok>”, and press enter.
6. For Ctrl+Alt+Backspace, use the arrow keys to highlight “No” and press enter.

v. WiFi Country
1. Use the arrow keys to highlight “Change Wi-fi Country”, press tab to highlight “<Select>”, and press enter..
2. Use the arrow keys to highlight “US United States”, press tab to highlight “<Ok>”, and press enter.
3. Press enter to confirm the country.

vi. For more information go to http://rohankapoor.com/2012/04/americanizing-the-raspberry-pi/

g. Press tab to highlight “<Select>”, use the arrow keys to highlight “<Finish>”, and press enter.
h. Press enter to reboot.

4. Test the Internet connection
a. From the terminal
sudo ping google.com
5. Make sure it is up-to-date
a. This should be done often
b. From the terminal
sudo apt-get update
sudo apt-get upgrade
c. For more information go to https://www.raspberrypi.org/documentation/raspbian/updating.md
6. Install TightVNC Server
a. From the terminal
sudo apt-get install tightvncserver
b. For more information go to https://www.raspberrypi.org/documentation/remote-access/vnc/

7. Install the PIP Tool
    a. From the terminal
        sudo apt-get install python-pip
        sudo apt-get install python3-pip
    b. For more information go to https://www.raspberrypi.org/documentation/linux/software/python.md
8. Install the GPIO Python Library
    a. From the terminal
        sudo apt-get install python-dev
        sudo apt-get install python-rpi.gpio
    b. For more information go to
        https://learn.adafruit.com/adafruits-raspberry-pi-lesson-4-gpio-setup/configuring-gpio
9. Install the Camera Module Python Library
    a. From the terminal
        sudo apt-get install python-picamera
        sudo apt-get install python3-picamera
        sudo apt-get install python-picamera-docs
    b. For more information go to
        https://www.raspberrypi.org/documentation/usage/camera/python/README.md
        https://picamera.readthedocs.io/en/release-1.10/index.html
10. Install the Philips Hue Lighting Python Library
    a. From the terminal
        sudo pip install beautifulhue
        If the command doesn't work, try
        sudo easy_install beautifulhue
    b. For more information go to
        https://github.com/allanbunch/beautifulhue
        https://developer.ibm.com/recipes/tutorials/connecting-philips-hue-lights-to-internet-of-things-foundation/
11. Install the Paho MQTT Python Library
    a. From the terminal
        sudo pip install paho-mqtt
    b. For more information go to
        https://pypi.python.org/pypi/paho-mqtt/1.1
12. Install the IBM IoT Python Library
    a. From the terminal
        sudo pip install ibmiotf
    b. The library should be saved in
        /usr/local/lib/python2.7/dist-packages/ibmiotf
    c. The two important source files are
        device.py
        application.py
    d. For more information go to
        https://docs.internetofthings.ibmcloud.com/
13. Find and write down the IP Address, MAC Address, Hardware/Revision, Serial Number, and Firmware Version!
    a. IP Address
        i. From the terminal
            hostname -I
    b. MAC Address
        i. From the terminal
            ifconfig
        ii. Under "eth0", the MAC Address is"HWaddr"
    c. Hardware/Revision and Serial Number

i. From the terminal
cat /proc/cpuinfo

d. Firmware Version
i. From the terminal
uname -a