

EET 2812

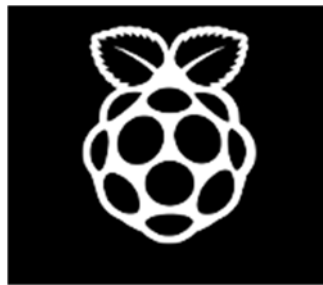
Activity 3

Single Board Computer (RPI)

Operating Systems

Cuyahoga Community College

Youth Technology Academy



NOOBS



RASPBIAN

ACTIVITY

RPi Setup

Overview: Connect the RPi to a laptop, download and install the Raspbian OS to the RPi, install PuTTY on the RPi, set up wifi, install xrdp, and remotely control the RPi from a laptop.

Vocabulary: Raspberry Pi, OS, GPIO pins, USB, serial, COM port, SD card, SD card adapter, wifi, ethernet cable

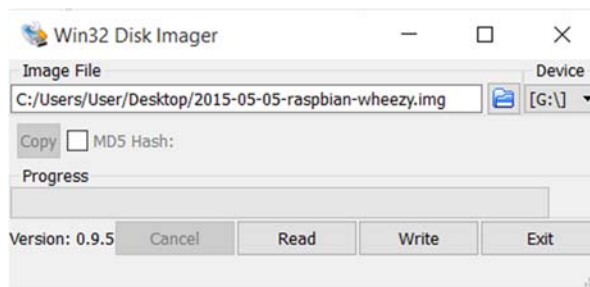


Installing OS on Raspberry Pi B+

1. Download Raspbian OS from: <https://www.raspberrypi.org/downloads/>
2. Download/install/run the SD Card Formatter on your computer. Quick format the SD card.

https://www.sdcard.org/downloads/formatter_4/

3. Download/Install and Run Win32 Disk Imager. Browse for Raspbian on the Desktop and Write it to the card.



4. Install the SD card on your RPi.

Using your Laptop to control your RPi

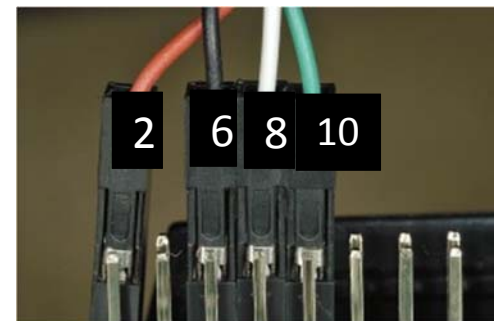
1. Install the PL2303 Prolific driver onto your computer.
2. Connect the USB to TTL serial cable to your RPi and your computer. Use the pictures below to connect the cables **Red-2, Black-6, White-8, Green-10** to the correct pins.



USB to ttl serial interface (with 3V3 logic)



How to connect the serial-USB adaptor

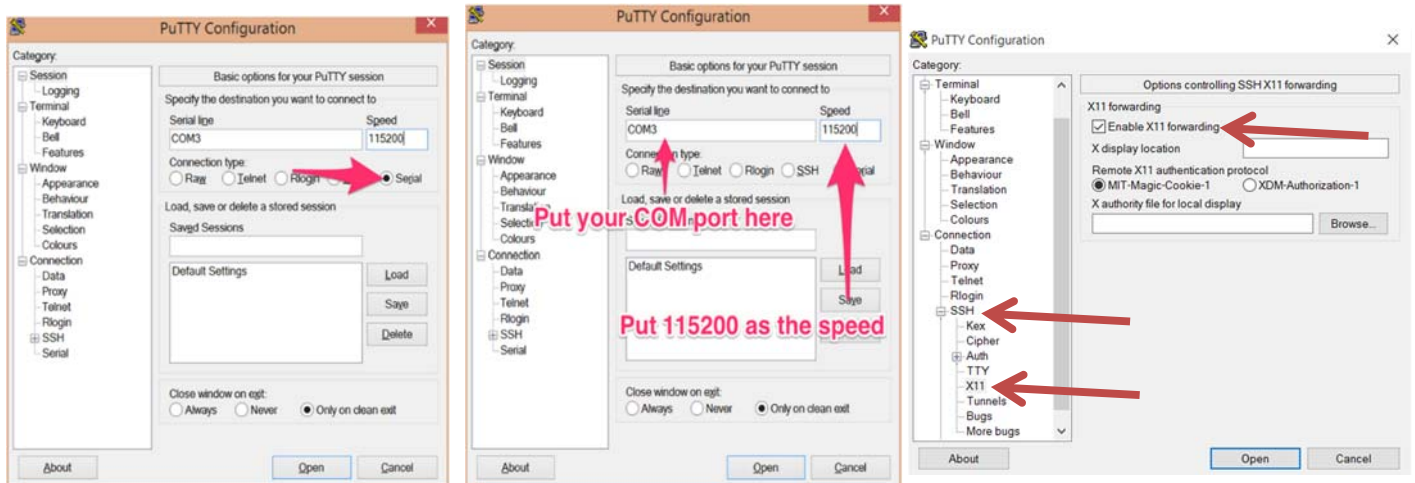


A closer look

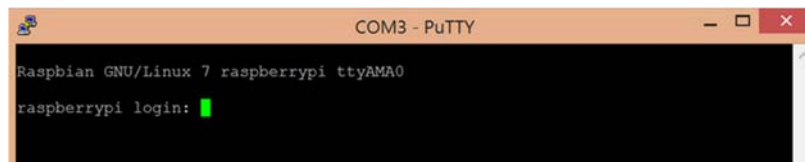


Install/Run PuTTY

1. Download and Install Prolific USB driver
2. Restart the computer
3. Open Control Panel and select View Devices and Printers under Hardware and Sound
4. Find the Com Port used by Prolific USB-to-Serial Com Port and press
5. Start PuTTY and configure it as shown below then select Open. Select SSH and click on X11 and enable X11 forwarding



You should now be at the RPi log in screen. If not, press Enter



Set Up wifi on RPi

1. At the Command Prompt type: `sudo nano /etc/network/interfaces`

```
auto lo

iface lo inet loopback
iface eth0 inet dhcp

allow-hotplug wlan0
auto wlan0

iface wlan0 inet dhcp
    wpa-ssid "workshop"
    wpa-psk "internet"
```

For CSU's network this should be:
"CSU Guest"

2. Modify the file so it looks exactly like the following:
3. Now save the file by using the key combination `ctrl+O` (press the control button and the o button at the same time) Press 'return' to confirm the file name. Finally, to exit nano press `ctrl+X`.
4. We'll need to restart the network interface in order for it to connect to the network. We can do that with:

```
$sudo /etc/init.d/networking stop
```

```
$sudo /etc/init.d/networking start
```

Install xrdp on RPi

1. From the command prompt on your RPi type: **\$sudo apt-get install xrdp**
2. restart the RPi: **\$sudo reboot**
3. In the RPi command prompt type: **\$ifconfig**

Write down the eth0 inet addr: _____ - _____ - _____ - _____

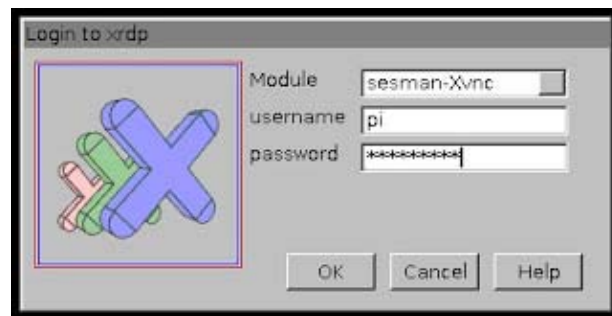
Connect the Ethernet cable to the RPi

Second Machine Setup

1. Launch Remote Desktop Connection which can be found at **Start->All Programs->Accessories->Remote Desktop Connection**
2. Type in the IP Address for your Pi which you noted above.



3. Click Connect (you may get a security warning at this stage just click OK if you do).
4. Leave the Module on the default of sesman-Xvnc and enter your username and password for your Pi. (The default is pi and raspberry).



You should now be at the RPi Desktop!

Important commands to update OS and upgrade programs on the pi

\$sudo apt-get update
minutes)

\$sudo apt-get upgrade

\$sudo apt-get dist-upgrade (takes minimum 30

Restart the RPi:

\$sudo reboot

Sign Off/Turn Off:

\$sudo halt