

# Setup Raspberry PI



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- Raspberry uses as programming language:



- It needs:

Screen

Keyboard

Mouse

HDMI cable

SD Card

# Raspberry PI 1st use

- Step 1 : Prepare the SD Card
- Step 2 : Connect the Pi to an access point
- Step 3 : Enable SSH
- Step 4 : Enable VNC
- Step 5 : Access via VNC
- Step 6 : Install OpenCV
- Step 7 : Enjoy !!

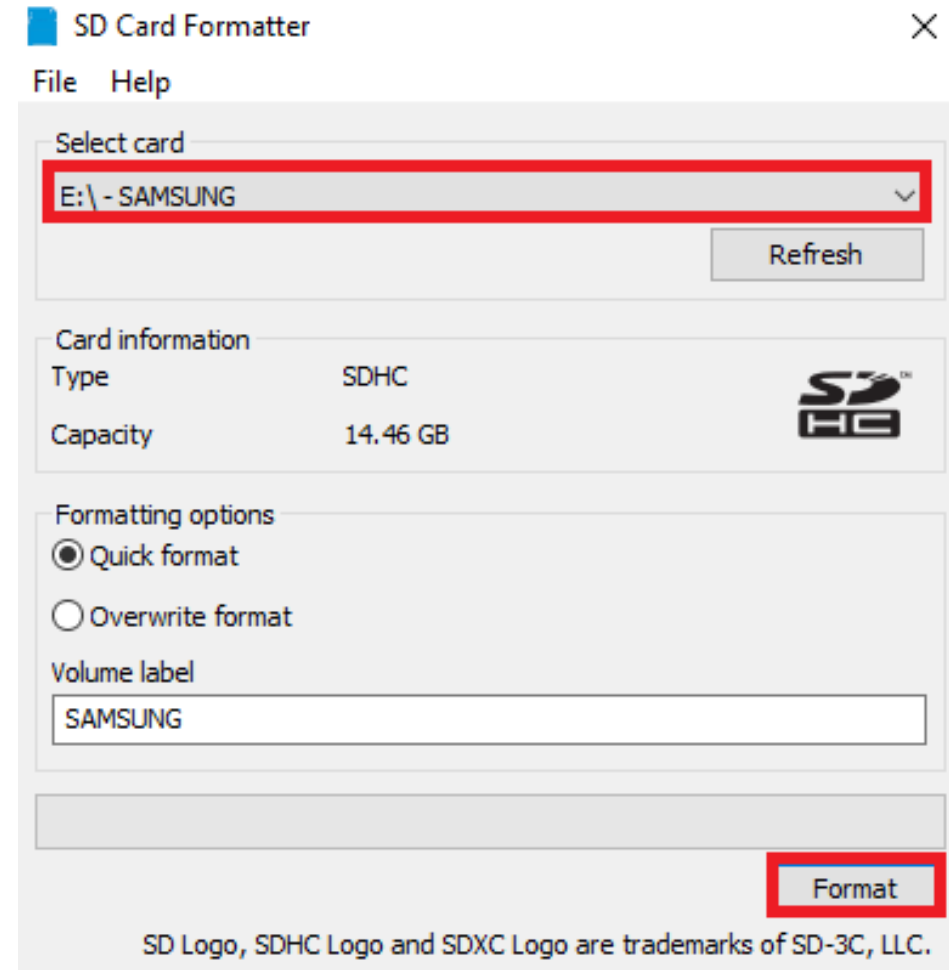
# Software required

Download and install the following :

- SD Card Formatter
- Win32 Disk Imager
- Raspbian Jessie
- VNC Viewer

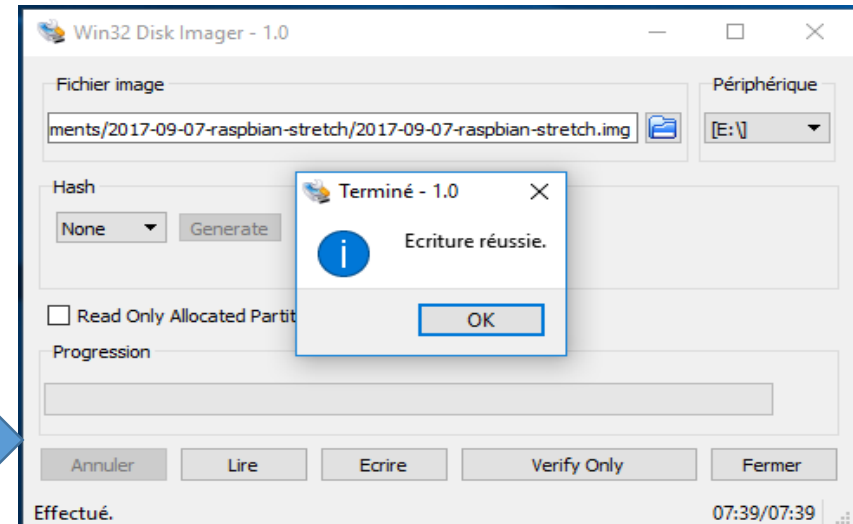
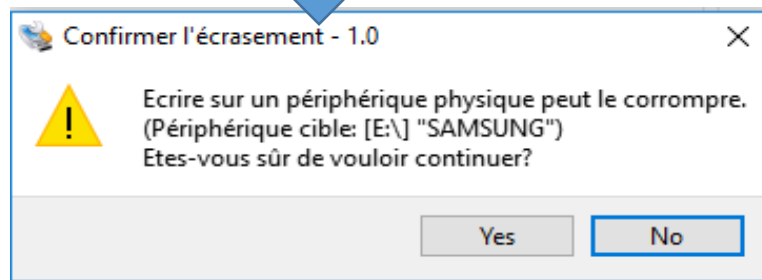
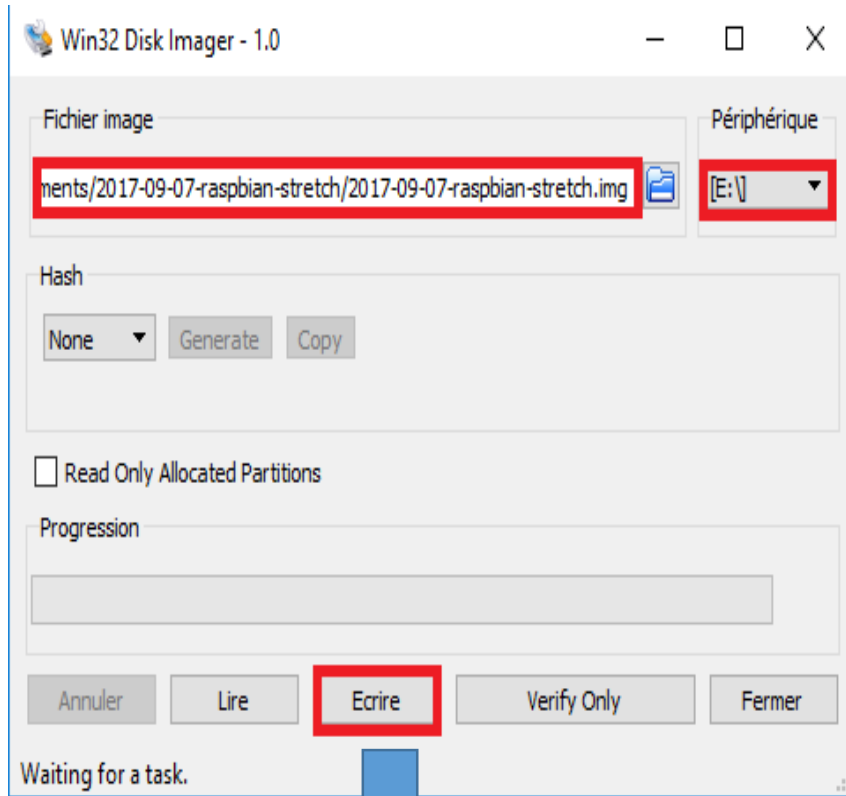
# Step 1: Memory Card formatter

1. Plug the SD Card
2. Open “SD Card Formatter”
3. Select you SD Card
4. Press Format



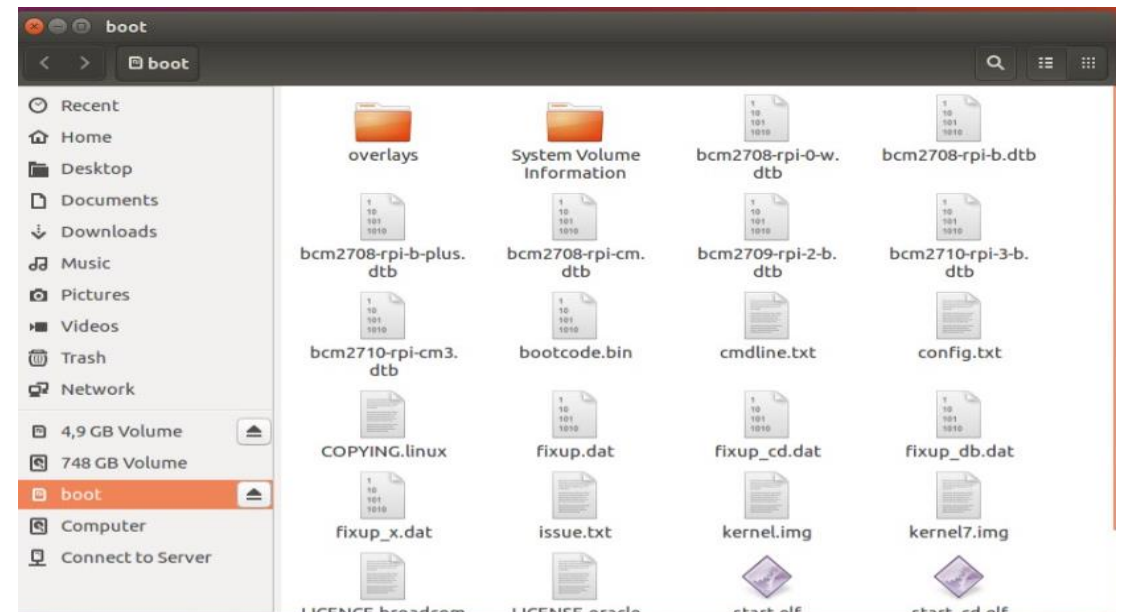
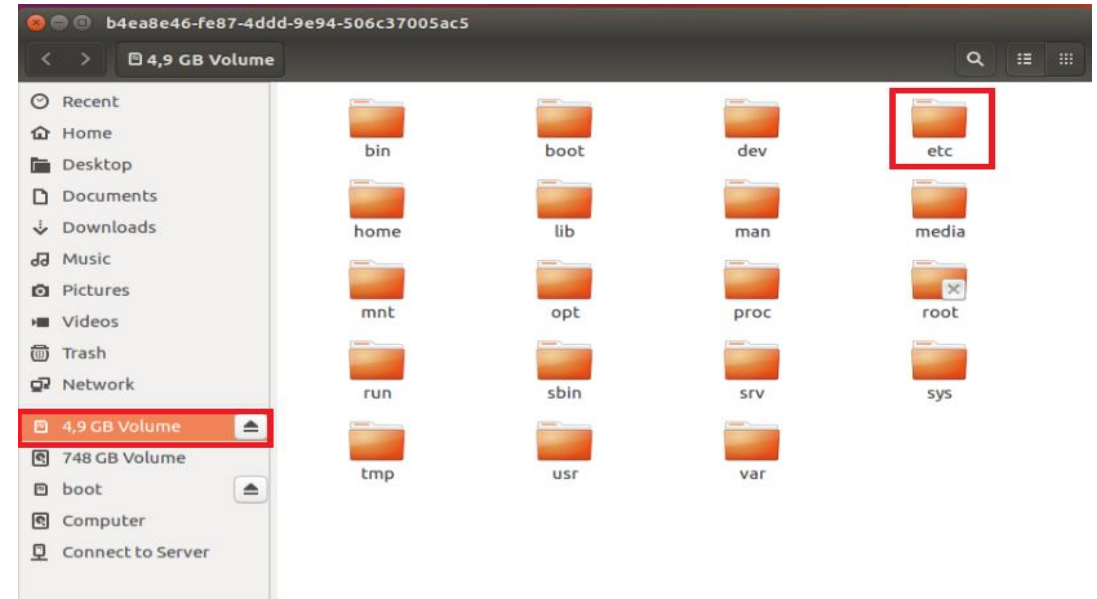
# Step 1 : Extraction of the Raspbian with Win32 Disk

1. Open “Win32 Disk Imager”
2. Browse to the location of raspbian-stretch.img
3. Press “Write”
4. Press “yes”



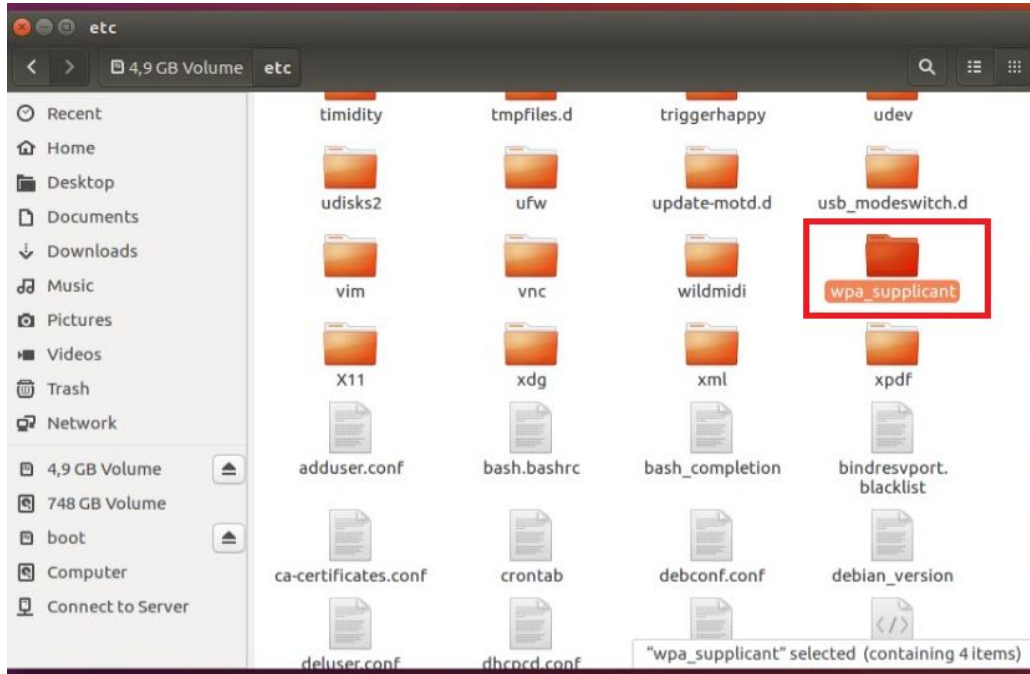
## Step 2 : Connect the Pi to an access point

- To access the Raspbian' files system, the SD Card must be plugged in Unix based operating system.
- The SD card is divided into 2 partitions.
- Choose the partition which contains the folder named "etc"



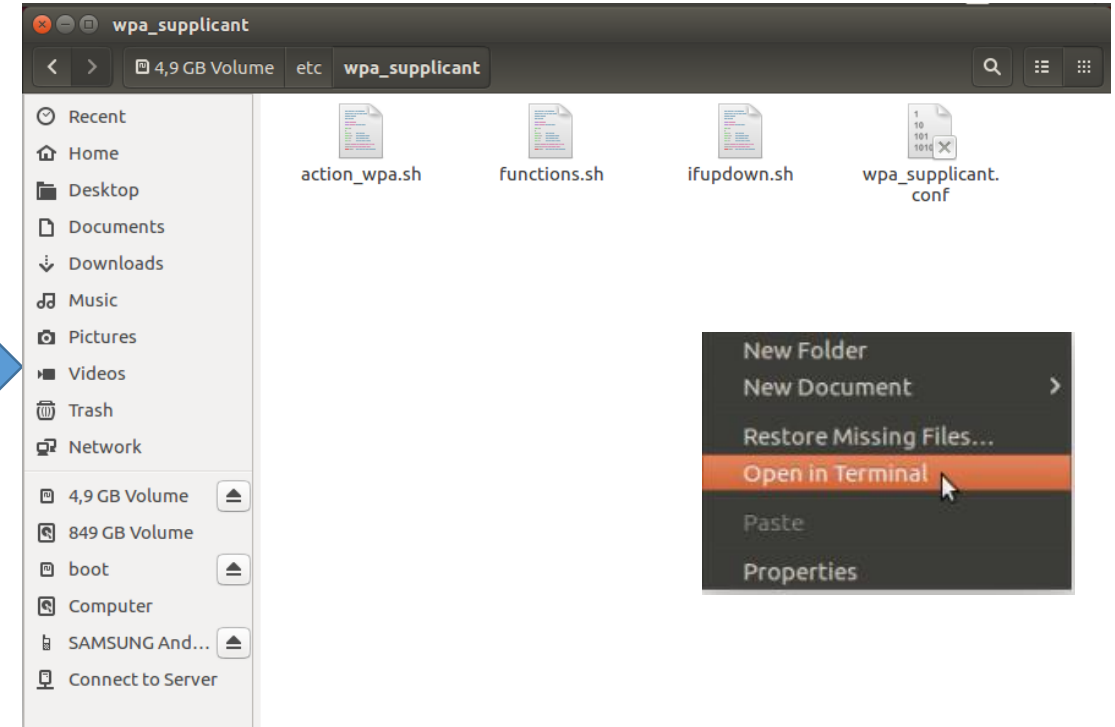
1/

- Open the folder “etc”
- Open folder “wpa\_supplicant”



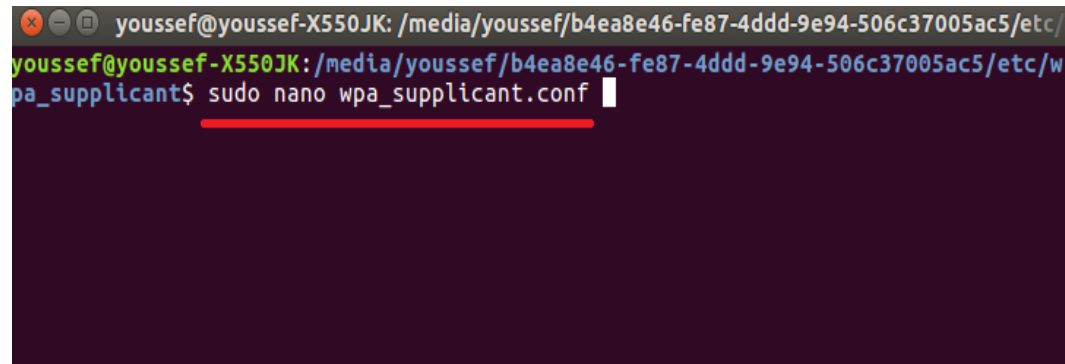
2/

- Right Click & Select “Open in Terminal”



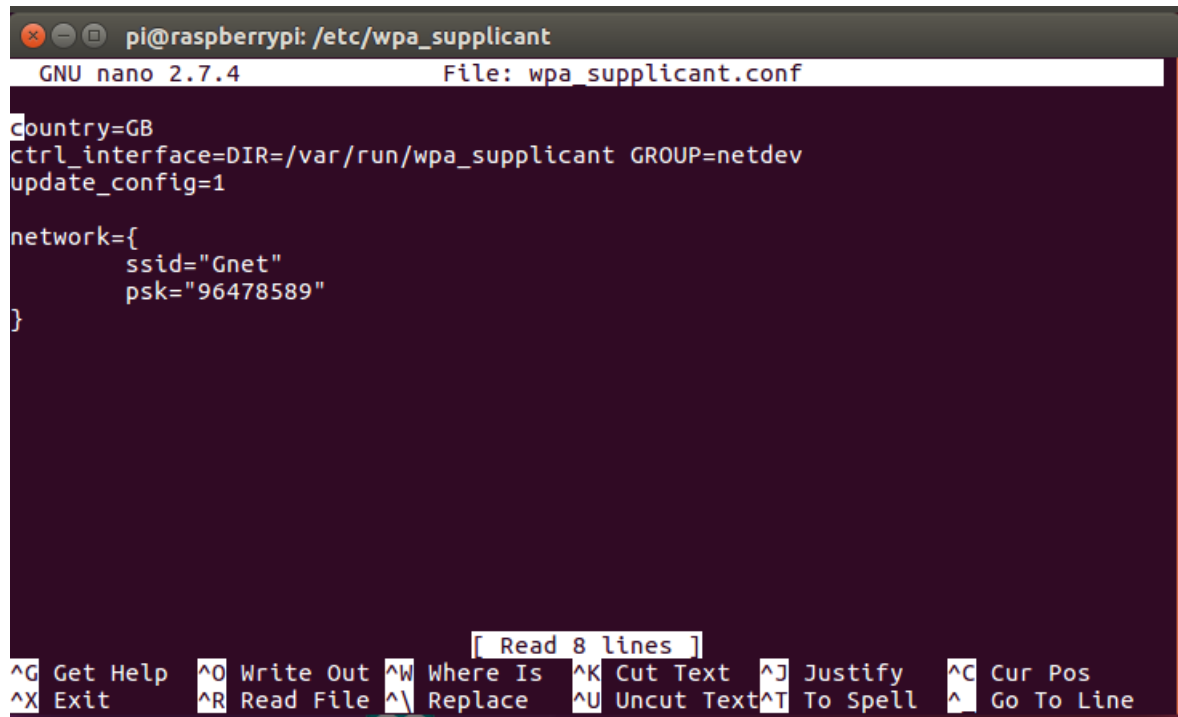
3/

Run the command :  
“Sudo nano wpa\_supplicant.conf”





# Connect Raspberry Pi to an Access Point



```
pi@raspberrypi: /etc/wpa_supplicant
GNU nano 2.7.4      File: wpa_supplicant.conf

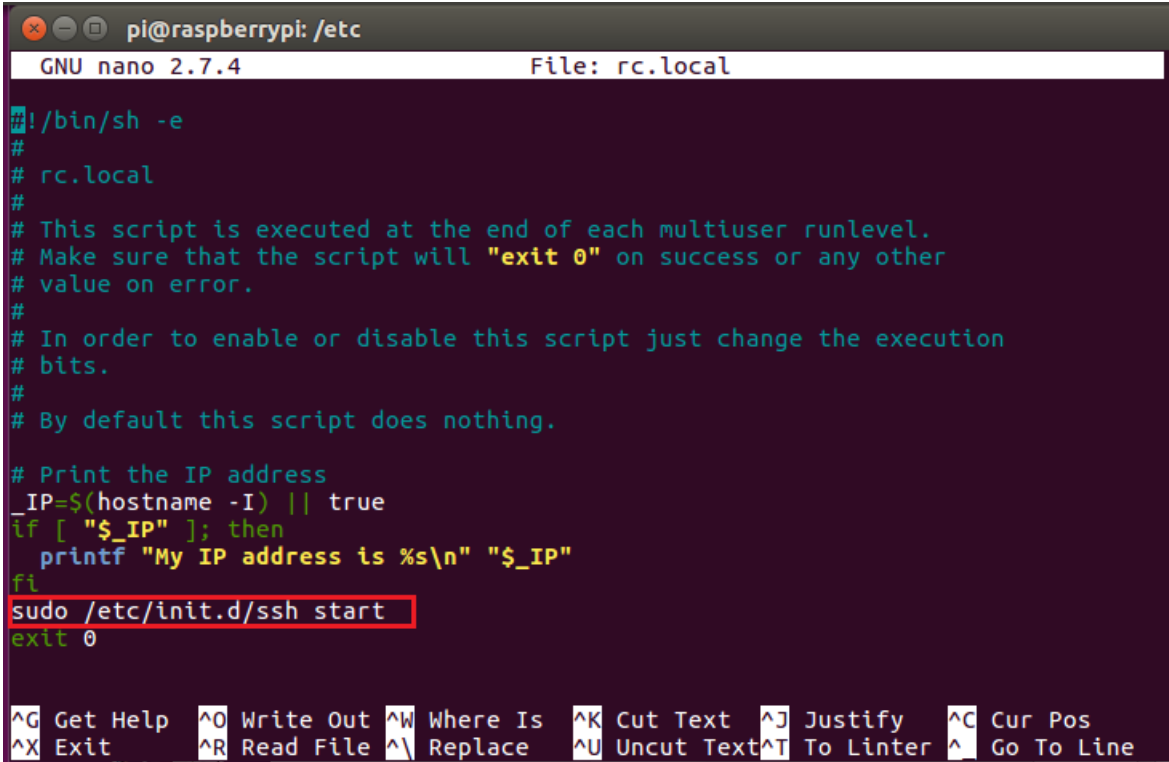
country=GB
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1

network={
    ssid="Gnet"
    psk="96478589"
}

[ Read 8 lines ]
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos
^X Exit      ^R Read File ^\ Replace   ^U Uncut Text ^T To Spell  ^_ Go To Line
```

1. Add these lines:  
network={  
    ssid="SSID"  
    psk="PWD"  
}
2. Press ctrl+o => Enter => ctrl+x
3. Now the raspberry is able to connect to a wifi

# Step 3: Enable SSh



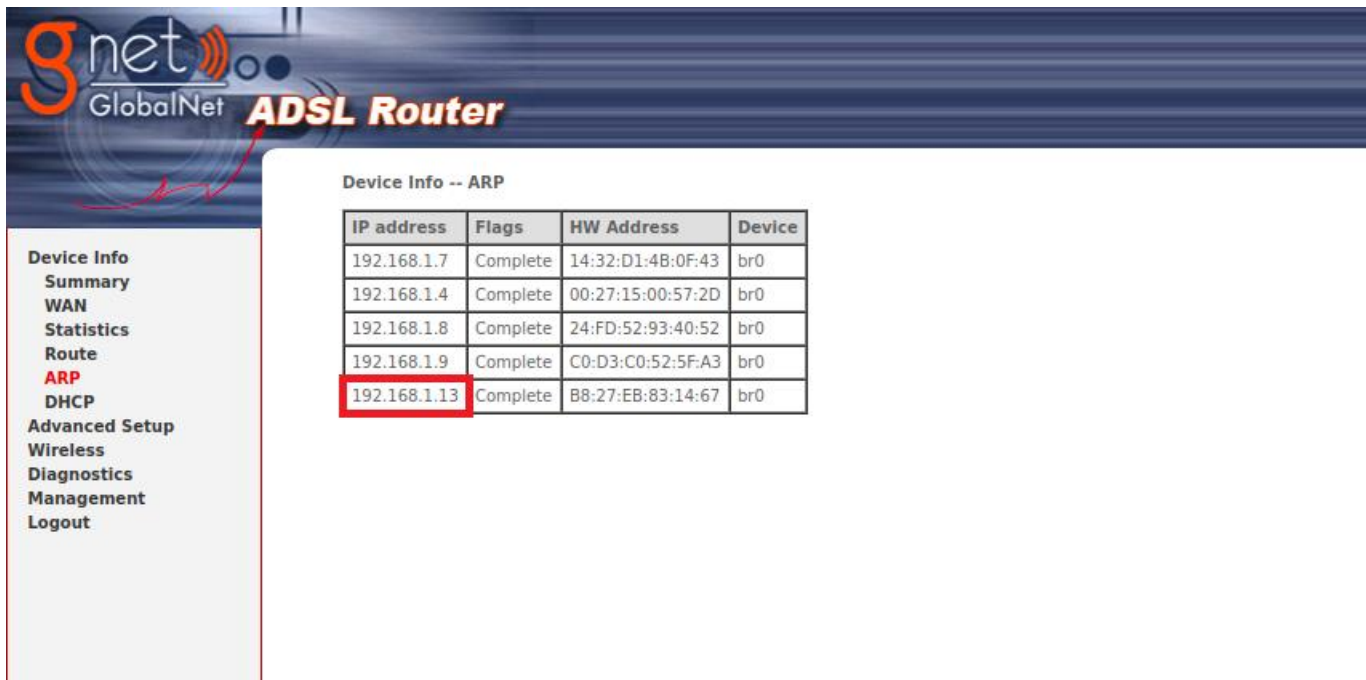
```
pi@raspberrypi: /etc
GNU nano 2.7.4 File: rc.local

#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.
#
# Print the IP address
_IP=$(hostname -I) || true
if [ "$_IP" ]; then
    printf "My IP address is %s\n" "$_IP"
fi
sudo /etc/init.d/ssh start
exit 0

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Linter ^_ Go To Line
```

- As in Step2 :
- Open “etc”
- Right Click and select “Open in Terminal”
- Run the command  
    `sudo nano rc.local`
- Add before “exit 0”  
    `sudo /etc/init.d/ssh start`

# Recover the IP Address of the Pi



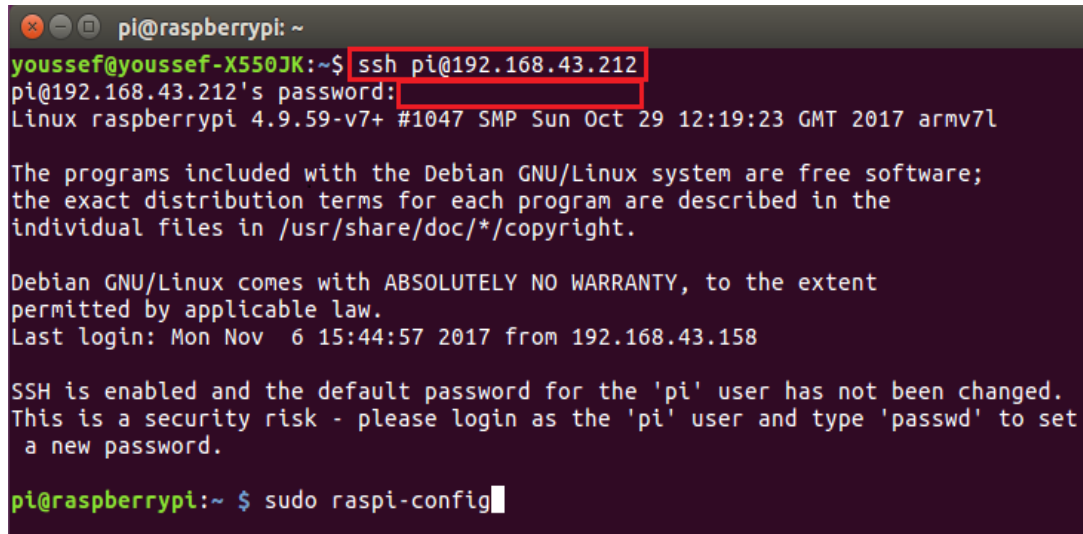
The screenshot shows the GlobalNet ADSL Router web interface. On the left is a navigation menu with options: Device Info, Summary, WAN, Statistics, Route, ARP (highlighted in red), DHCP, Advanced Setup, Wireless, Diagnostics, Management, and Logout. The main content area is titled 'Device Info -- ARP' and contains a table with the following data:

IP address	Flags	HW Address	Device
192.168.1.7	Complete	14:32:D1:4B:0F:43	br0
192.168.1.4	Complete	00:27:15:00:57:2D	br0
192.168.1.8	Complete	24:FD:52:93:40:52	br0
192.168.1.9	Complete	C0:D3:C0:52:5F:A3	br0
192.168.1.13	Complete	B8:27:EB:83:14:67	br0

- Fetch the Raspberry Pi IP from your router.

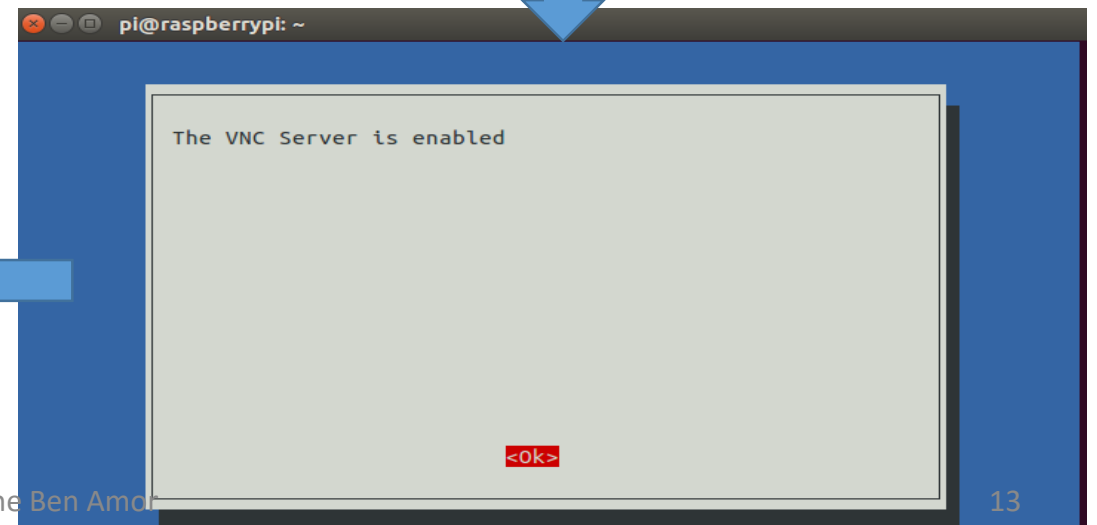
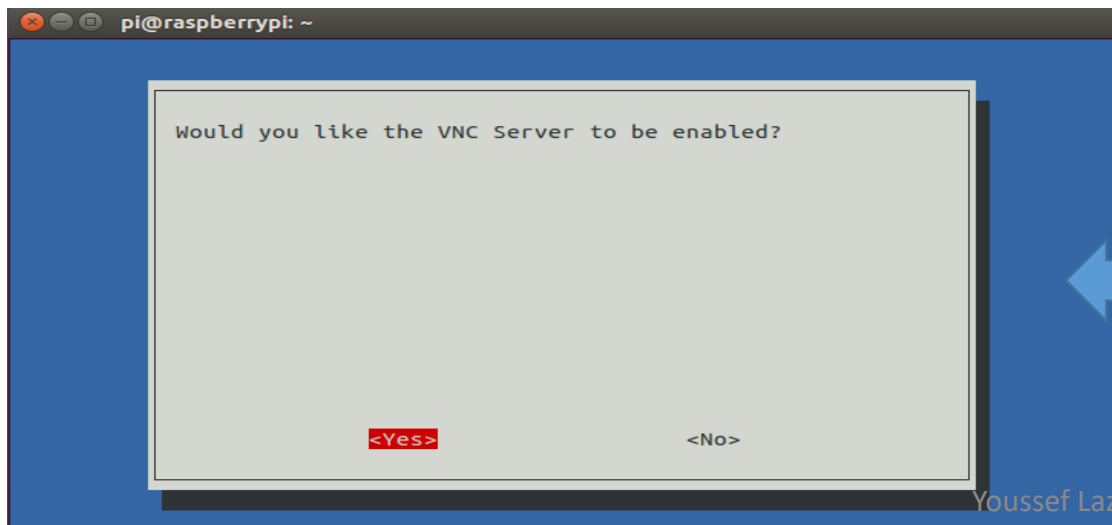
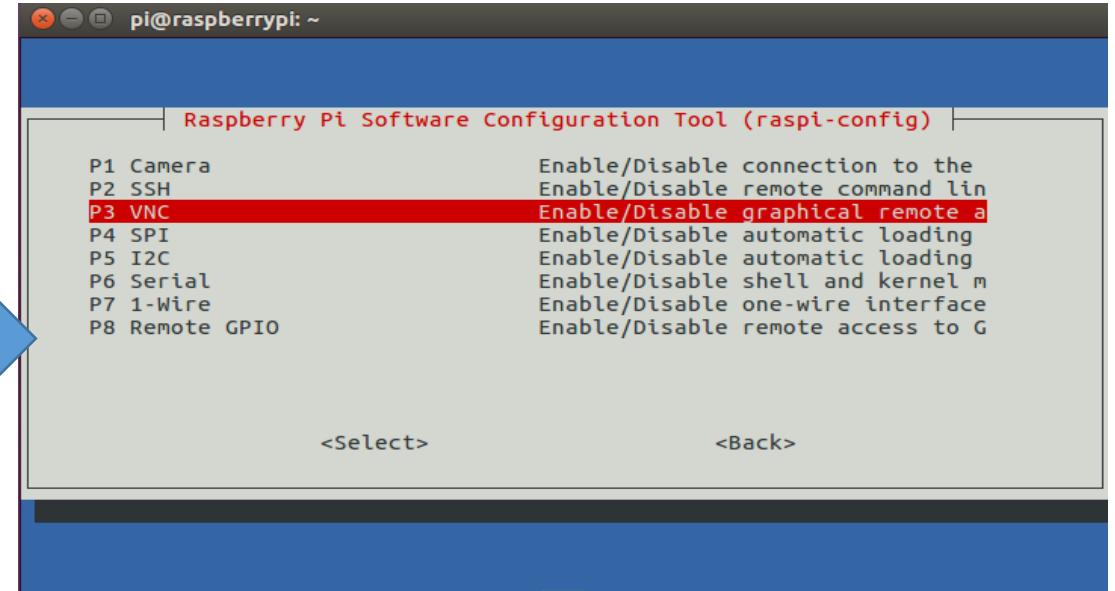
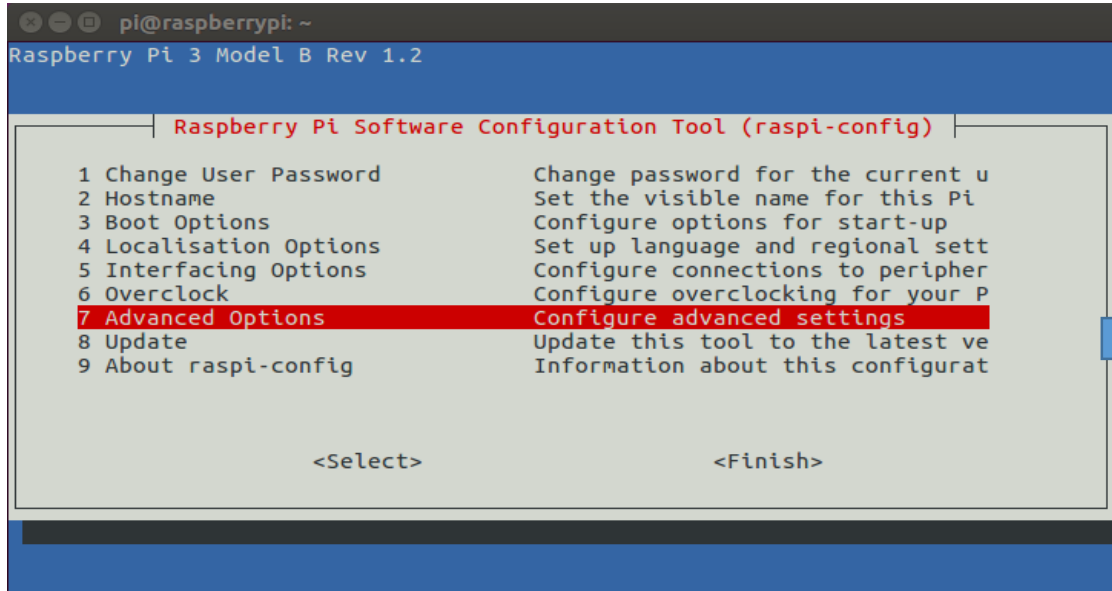
# Step 4: Enable VNC

1. Run command  
`ssh pi@<Raspberry IP>`
2. Type “raspberrypi” default password for any Pi.
3. Run command  
`sudo raspi-config`

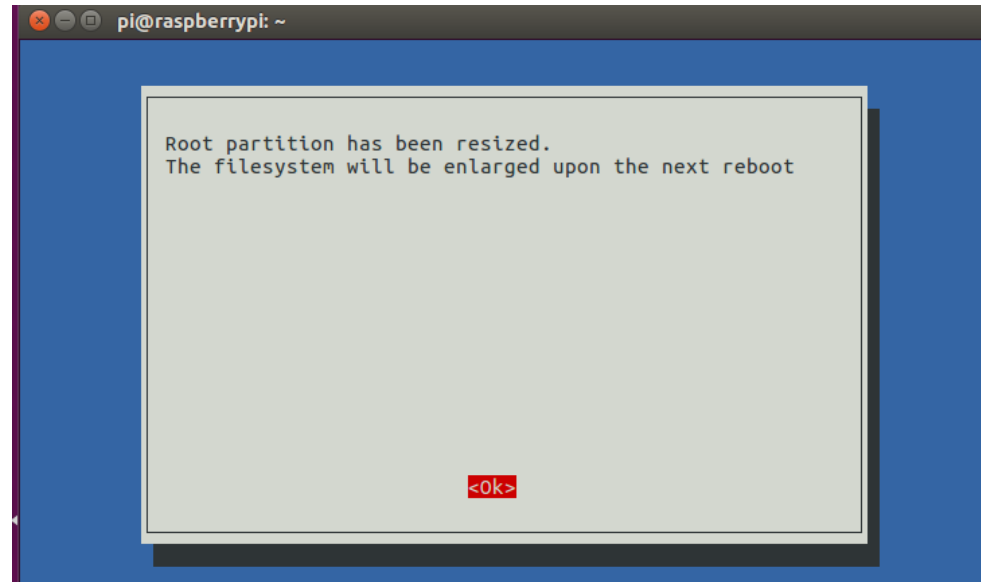
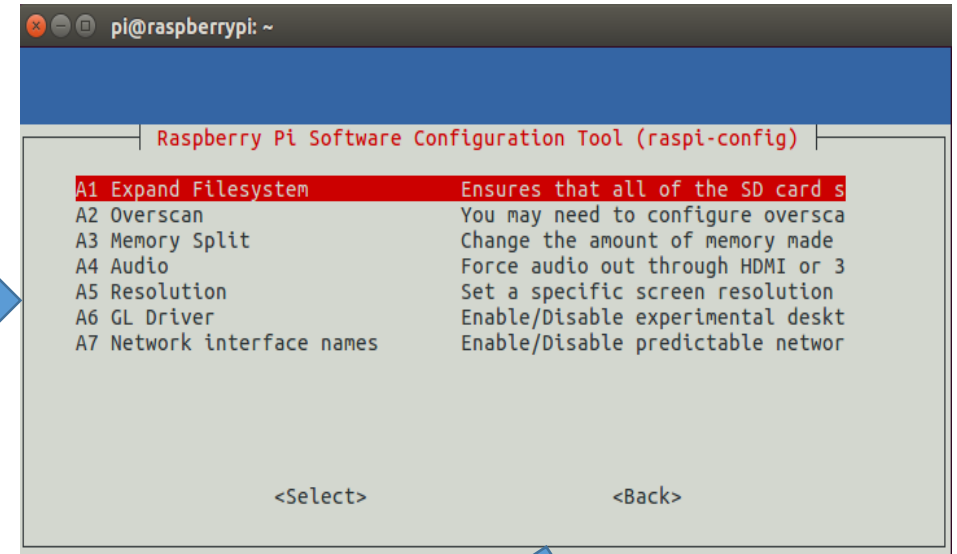
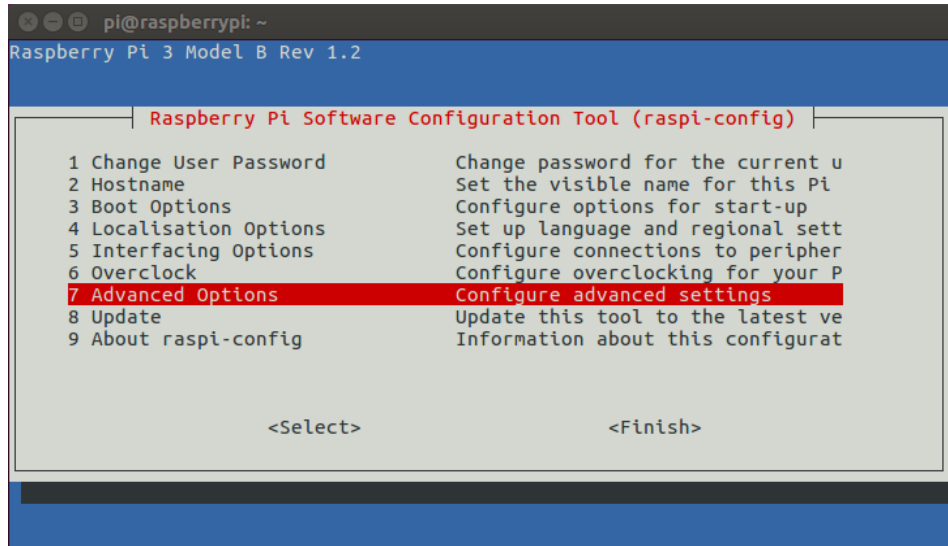


```
pi@raspberrypi: ~  
youssef@youssef-X550JK:~$ ssh pi@192.168.43.212  
pi@192.168.43.212's password:   
Linux raspberrypi 4.9.59-v7+ #1047 SMP Sun Oct 29 12:19:23 GMT 2017 armv7l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Mon Nov  6 15:44:57 2017 from 192.168.43.158  
  
SSH is enabled and the default password for the 'pi' user has not been changed.  
This is a security risk - please login as the 'pi' user and type 'passwd' to set  
a new password.  
  
pi@raspberrypi:~ $ sudo raspi-config
```

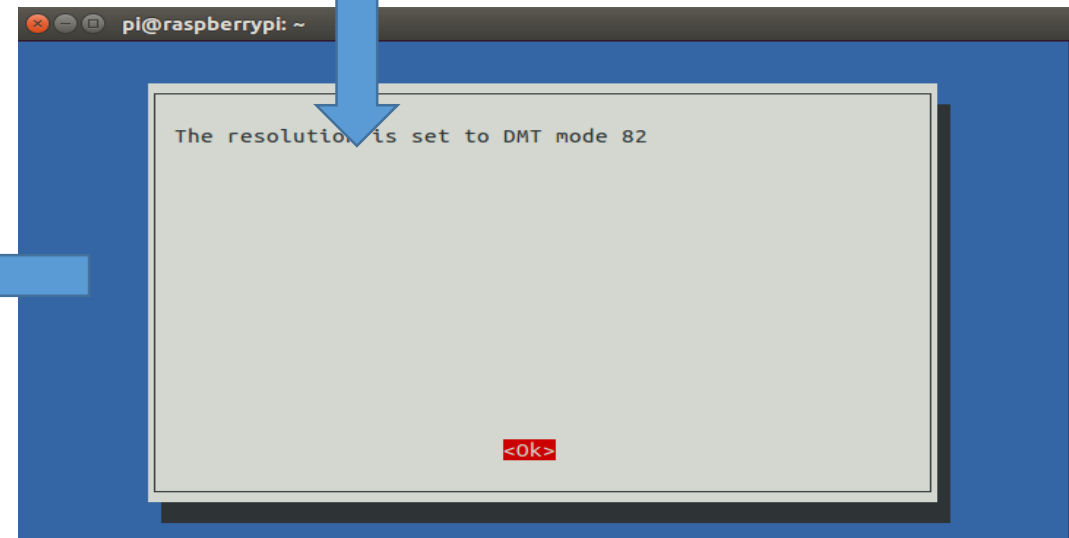
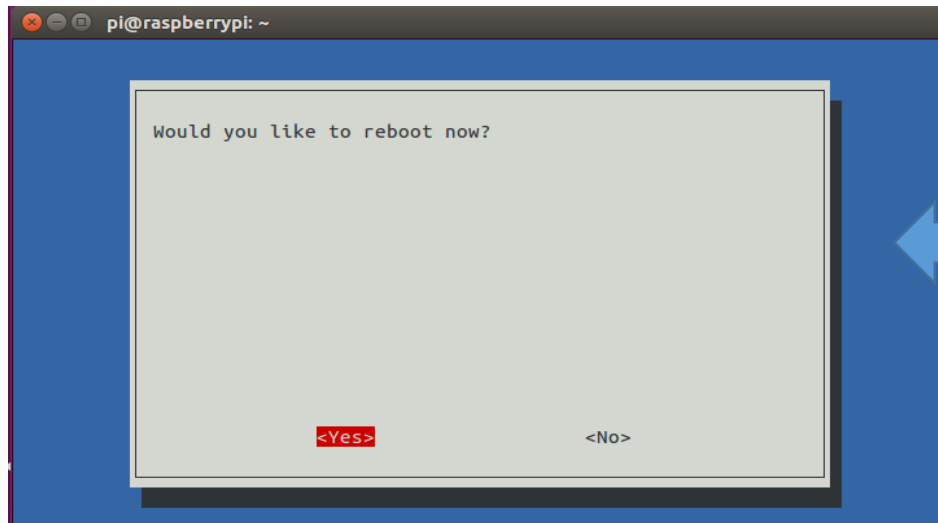
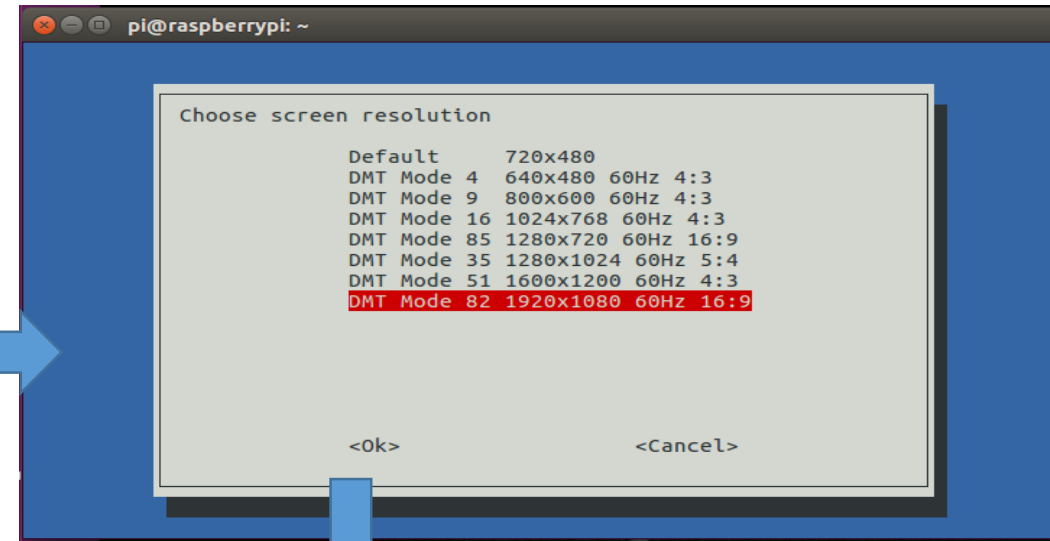
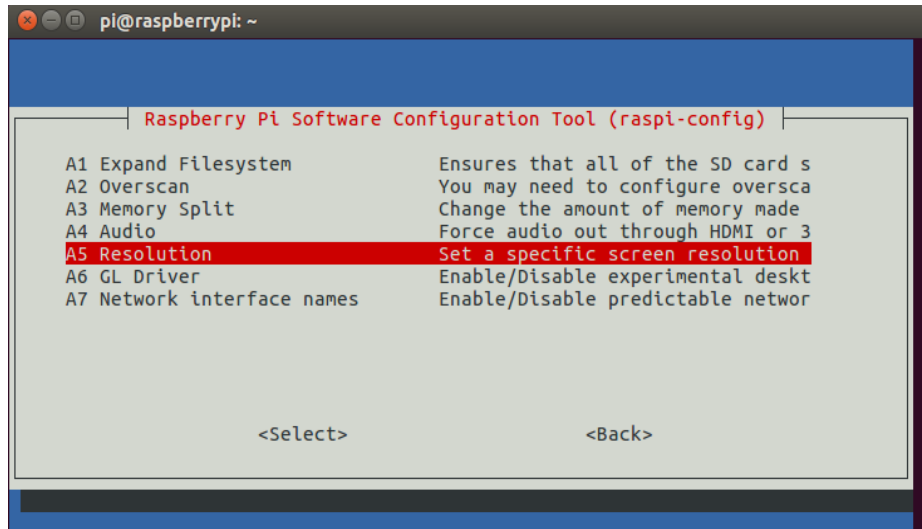
# Enable VNC



# Other Configuration



# Adjust Resolution



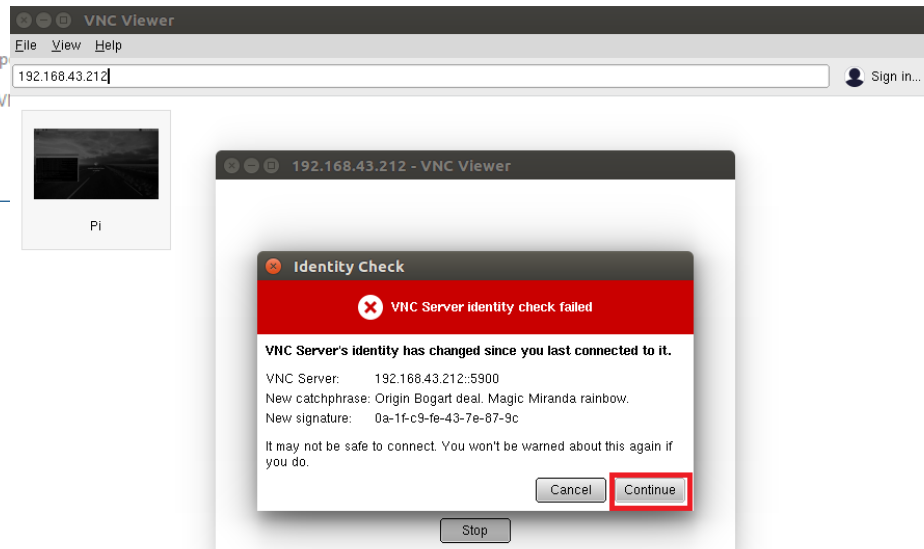
# Step 5: Raspberry remote access



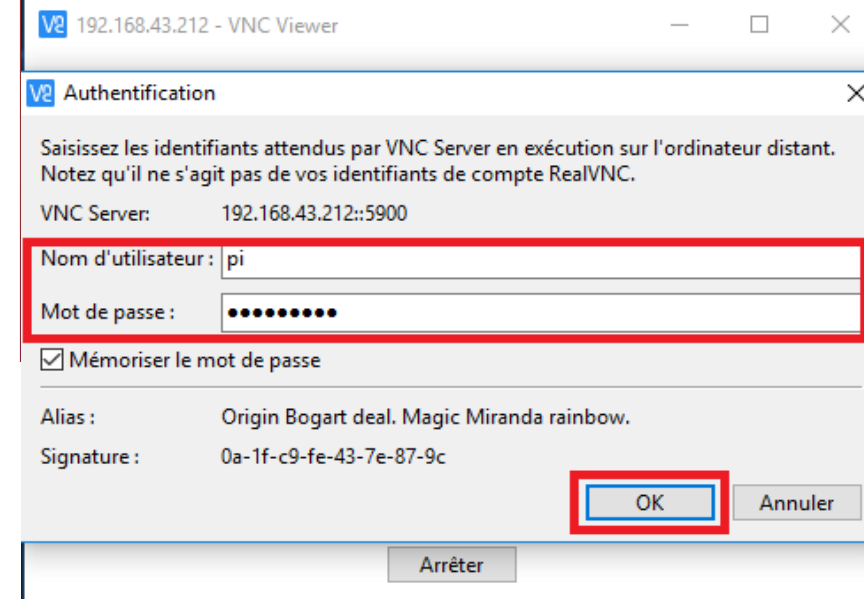
2/  
• Press continue



1/  
• Start VNC Viewer in Windows  
• Write the IP address

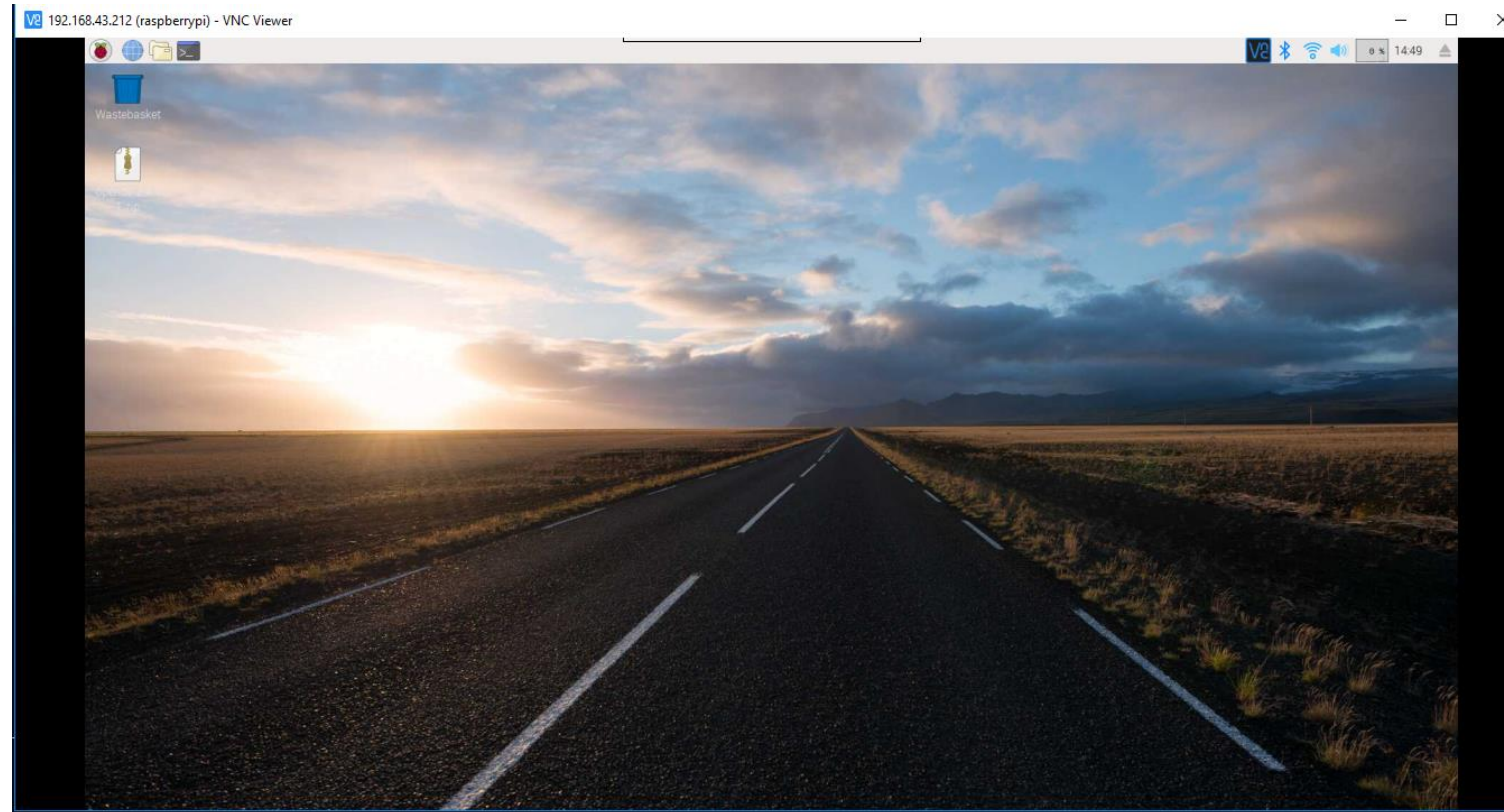


3/  
Login : pi  
Pwd : raspberry  
• Press "ok"



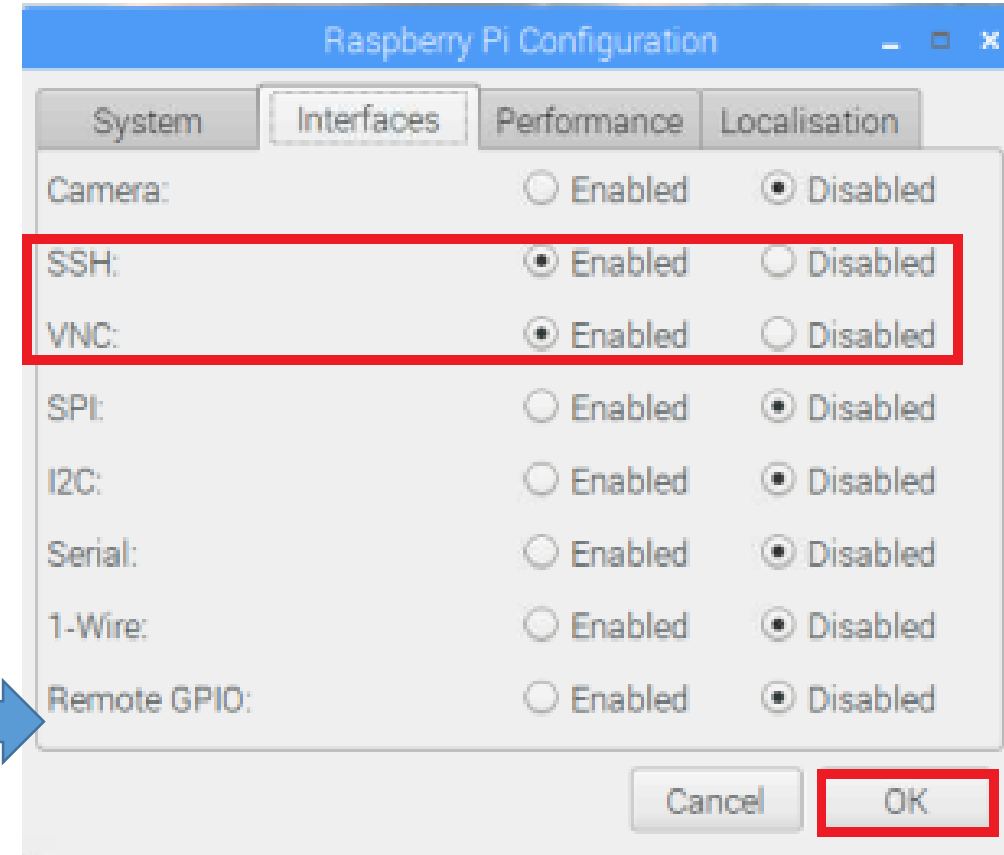
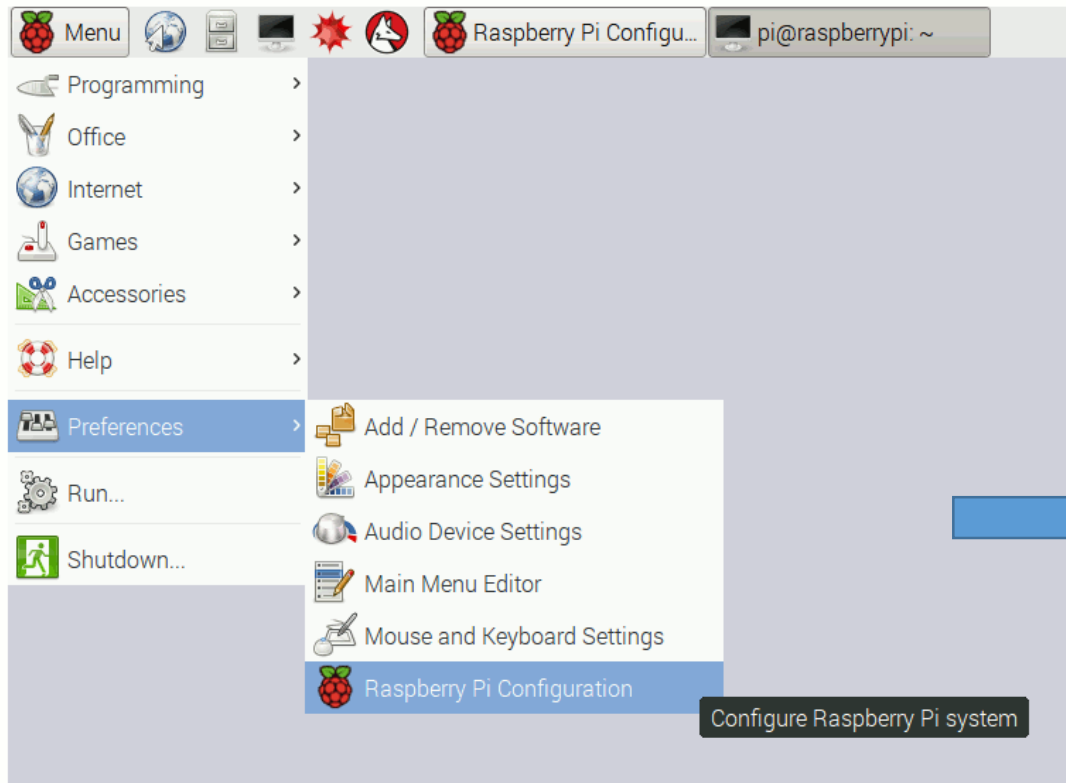


# Welcome to Raspberry Pi



# Check the new configuration

Go to Menu=> Preferences=>Raspberry Pi Configuration



# Step 6 : Install OpenCV

## 1. Install dependencies :

```
sudo apt-get -y update
```

```
sudo apt-get -y upgrade
```

```
sudo apt-get purge -y wolfram-engine
```

```
sudo apt-get install build-essential cmake pkg-config
```

```
sudo apt-get install libjpeg-dev libtiff5-dev libjasper-dev libpng12-dev
```

```
sudo apt-get install libavcodec-dev libavformat-dev libswscale-dev libv4l-dev
```

```
sudo apt-get install libxvidcore-dev libx264-dev
```

```
sudo apt-get install libgtk2.0-dev
```

```
sudo apt-get install libatlas-base-dev gfortran
```

# Install OpenCV

## 2. Download and install OpenCV

```
wget http://downloads.sourceforge.net/project/opencvlibrary/opencv-unix/2.4.11/opencv-2.4.11.zip
```

```
unzip opencv-2.4.11.zip
```

```
cd opencv-2.4.11
```

```
mkdir build && cd build
```

```
cmake -D CMAKE_BUILD_TYPE=RELEASE -D  
CMAKE_INSTALL_PREFIX=/usr/local ..
```

```
make -j4
```

```
sudo make install
```