Ecole Nationale Supérieure d'Ingénieurs de Tunis

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 !!

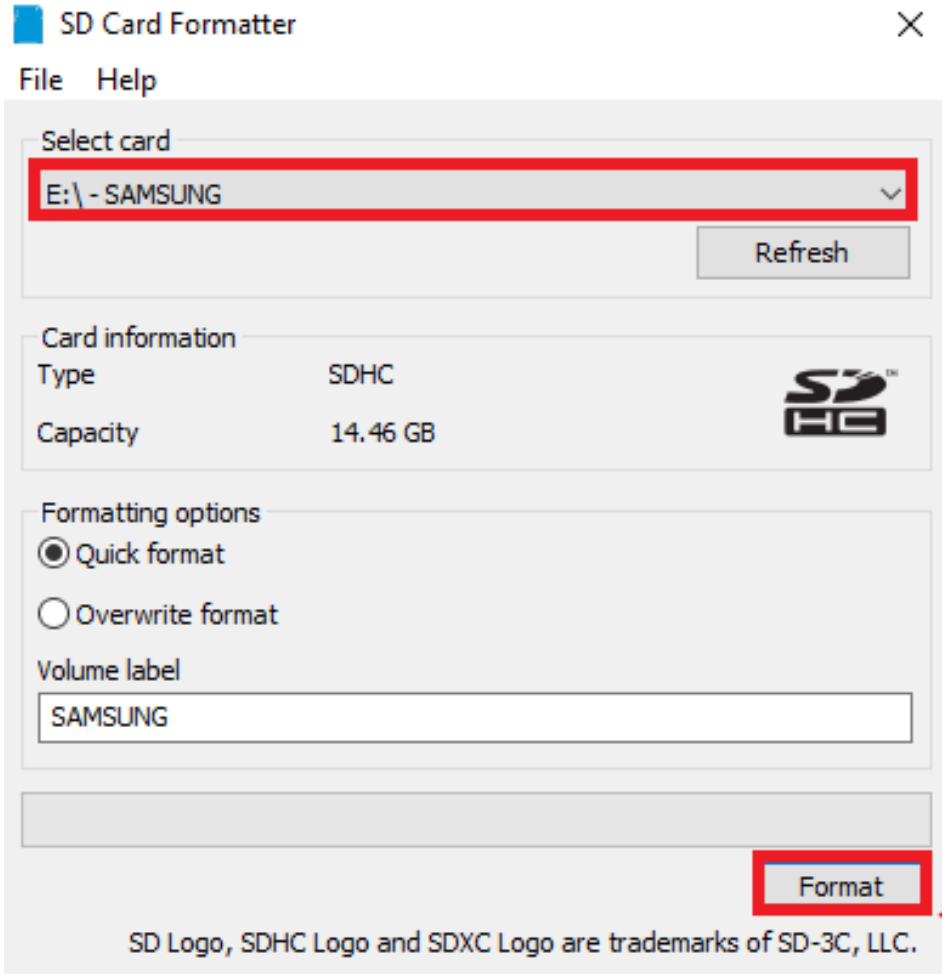
Software required

Download and install the following :

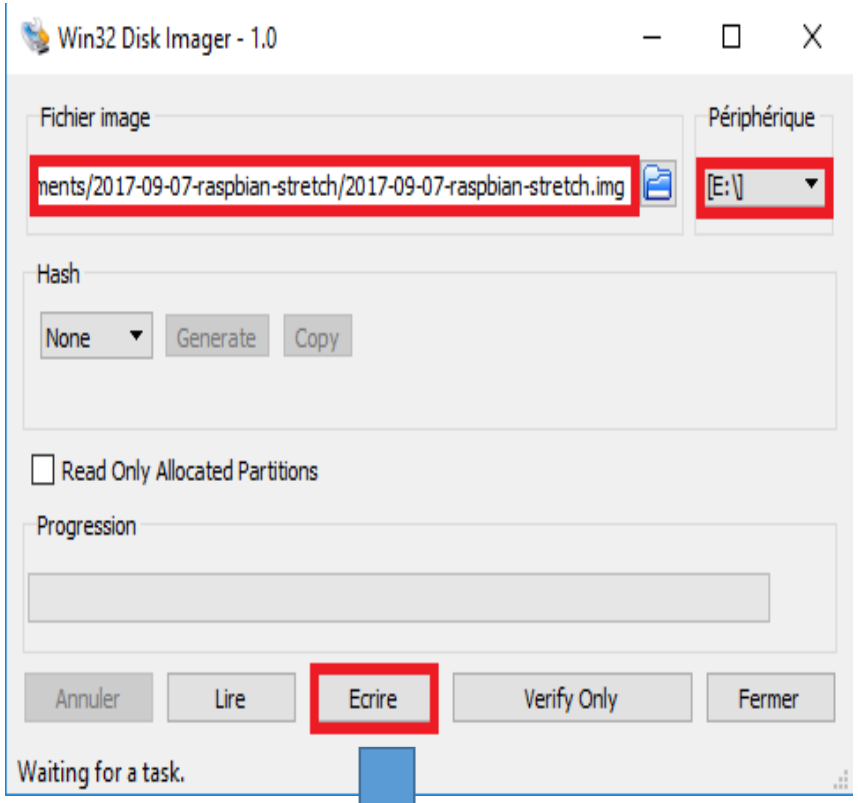
- SD Card Formatter
- Win32 Disk Imager
- Raspbian Jessie
- VNC Viewer

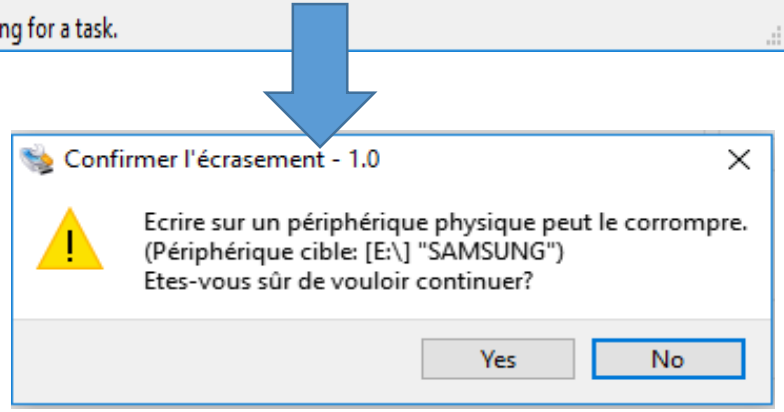
Step 1: Memory Card formatter

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

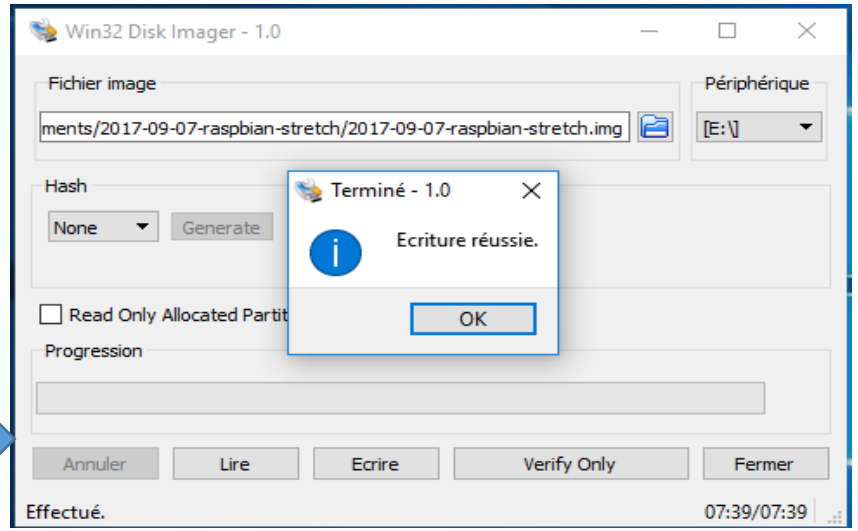


Step 1 : Extraction of the Raspbian with Win32 Disk



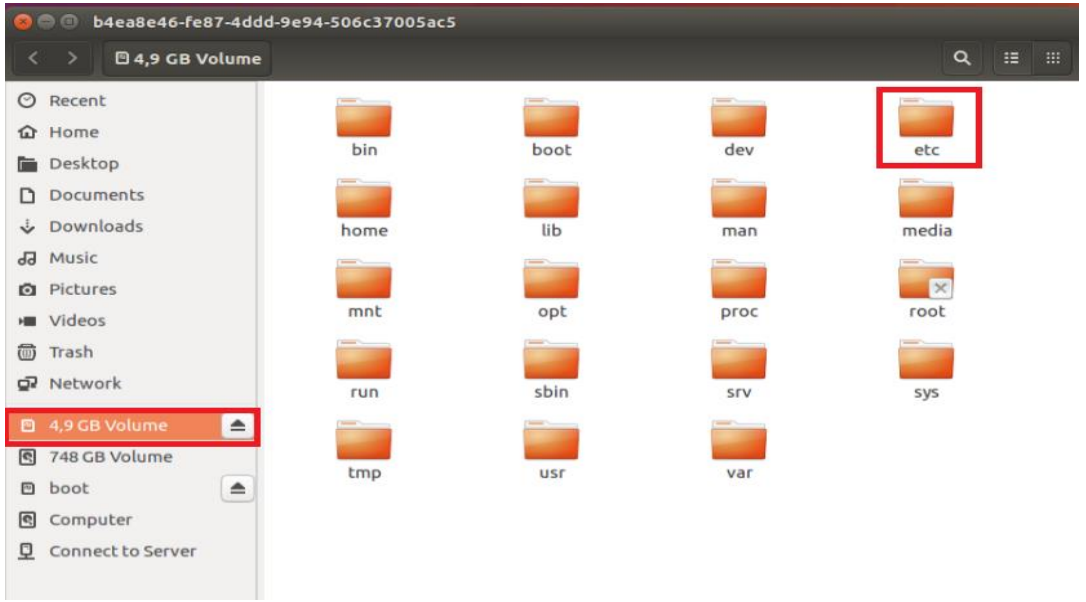


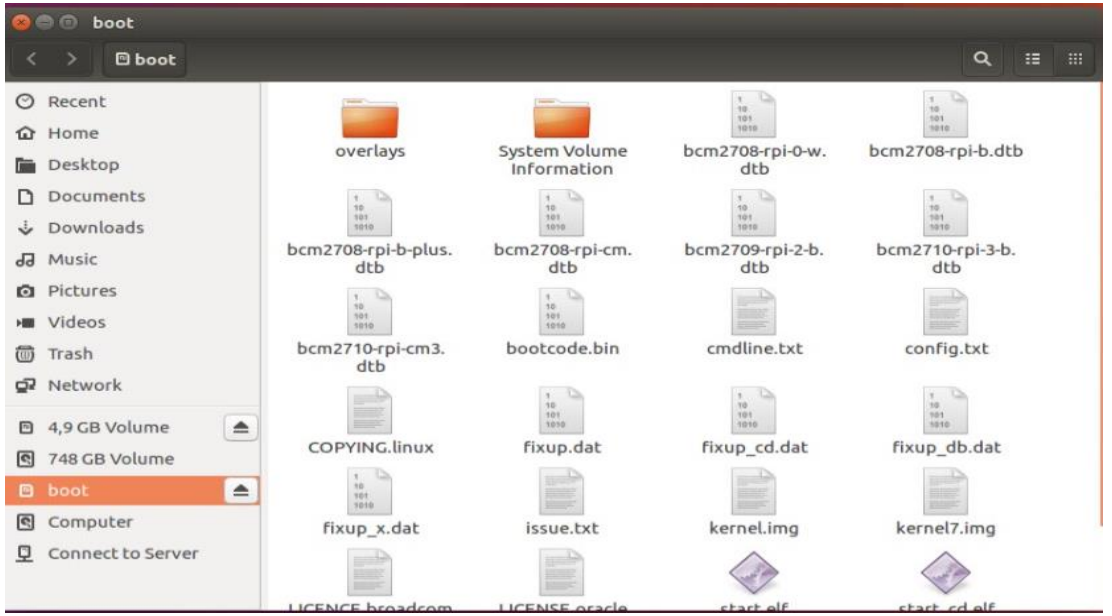
1. Open “Win32 Disk Imager”
2. Browse to the location of raspbian-stretch.img
3. Press “Write”
4. Press ”yes”



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"





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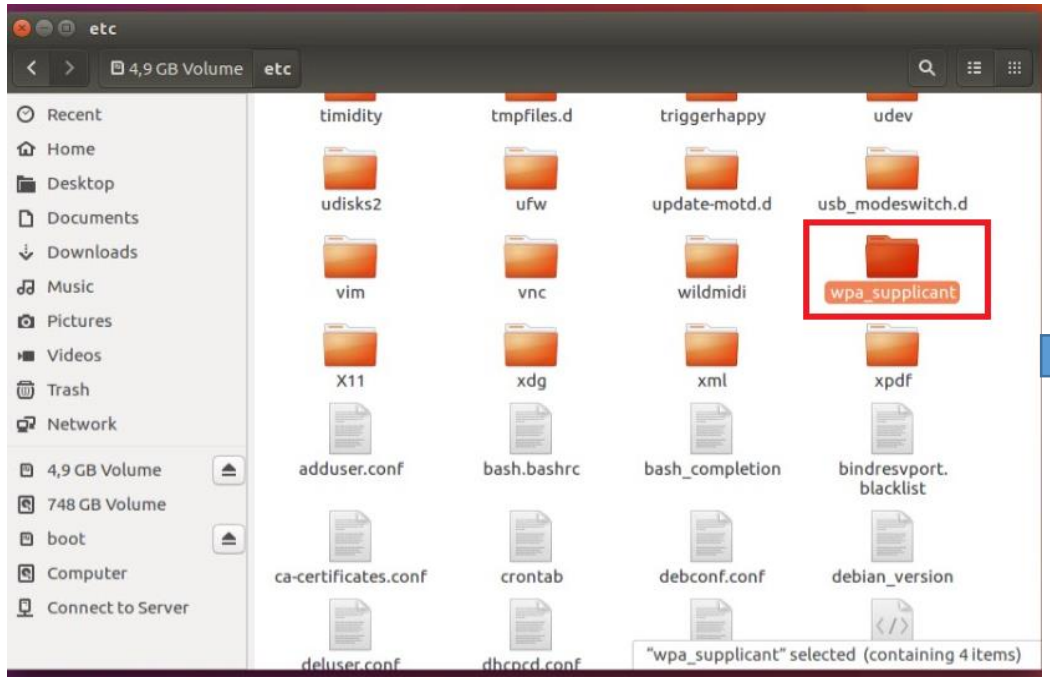
- Open the folder “etc”
- Open folder “wpa_supplicant”



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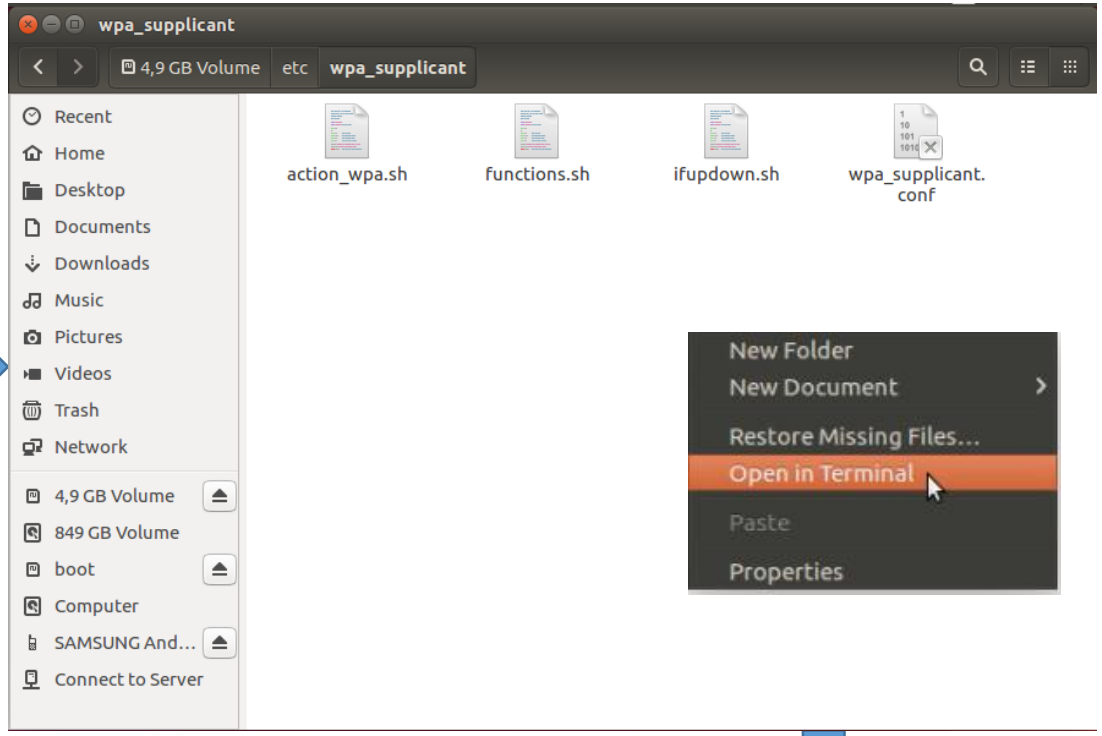
- Right Click & Select “Open in Terminal”



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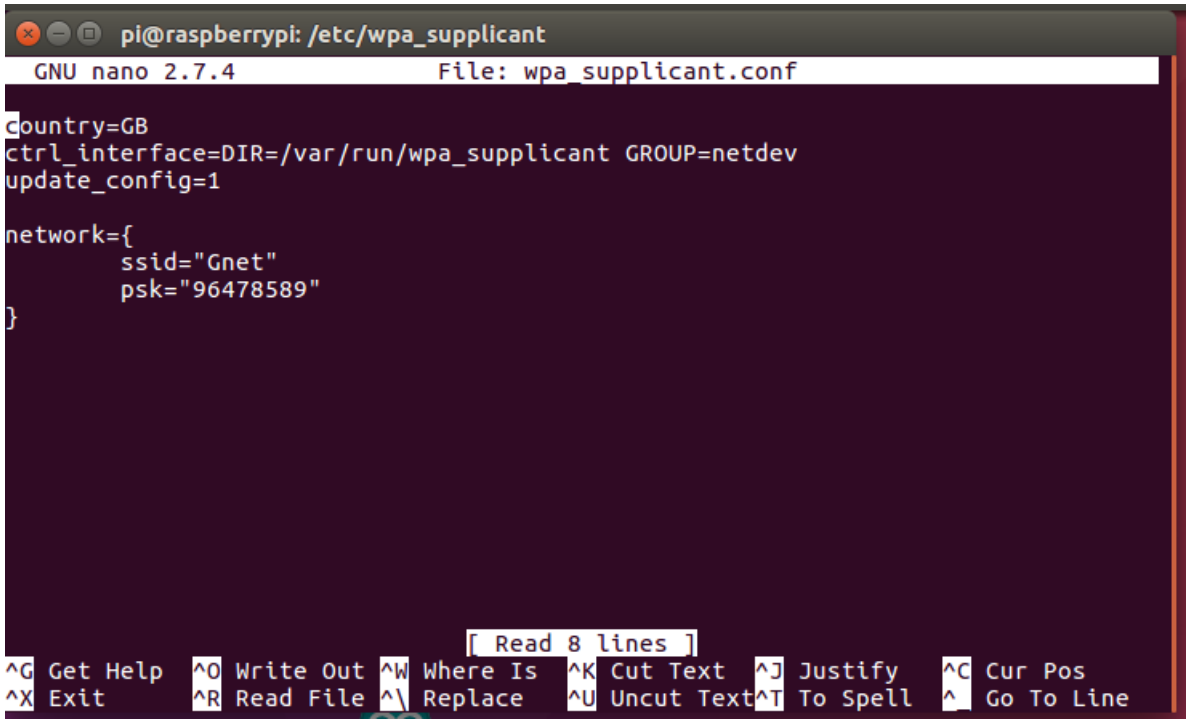
Run the command :

“Sudo nano wpa_supplicant.conf”

Connect Raspberry Pi to an Access Point



1. Add these lines:

network={

ssid="SSID"

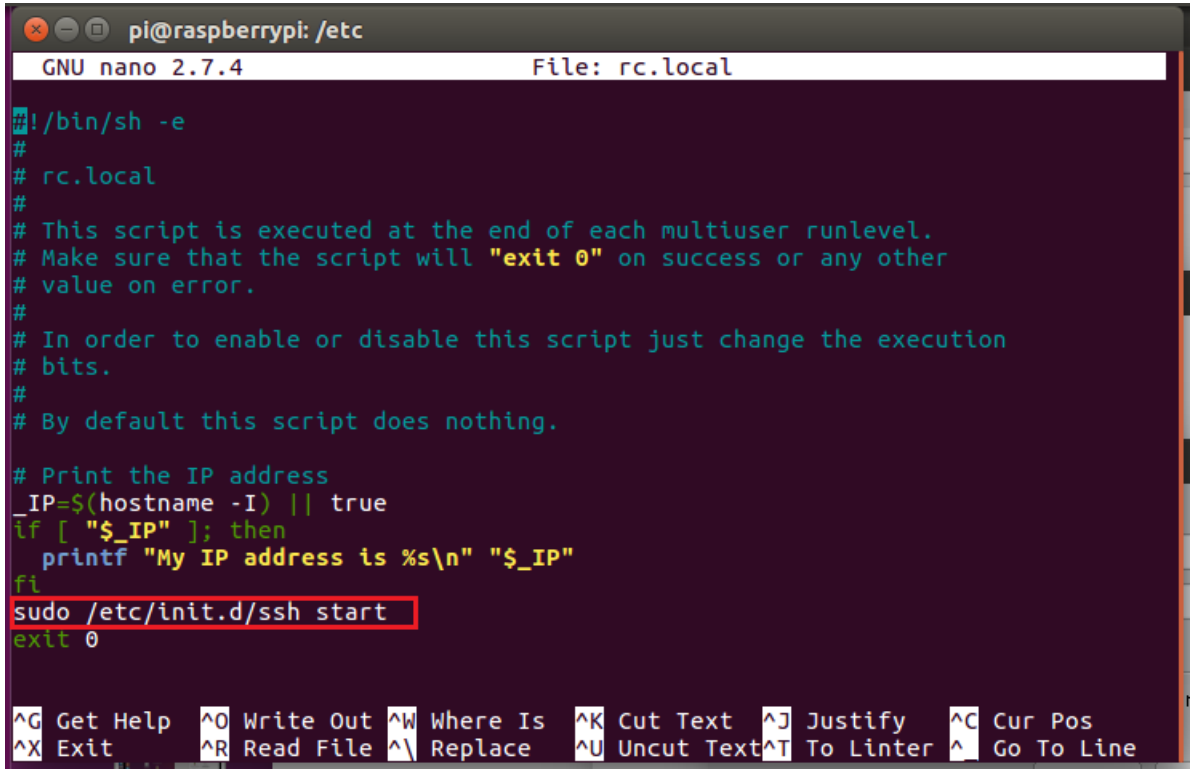
psk="PWD"

}

2. Press ctrl+o => Enter => ctrl+x

3. Now the raspberry is able to connect to a wifi

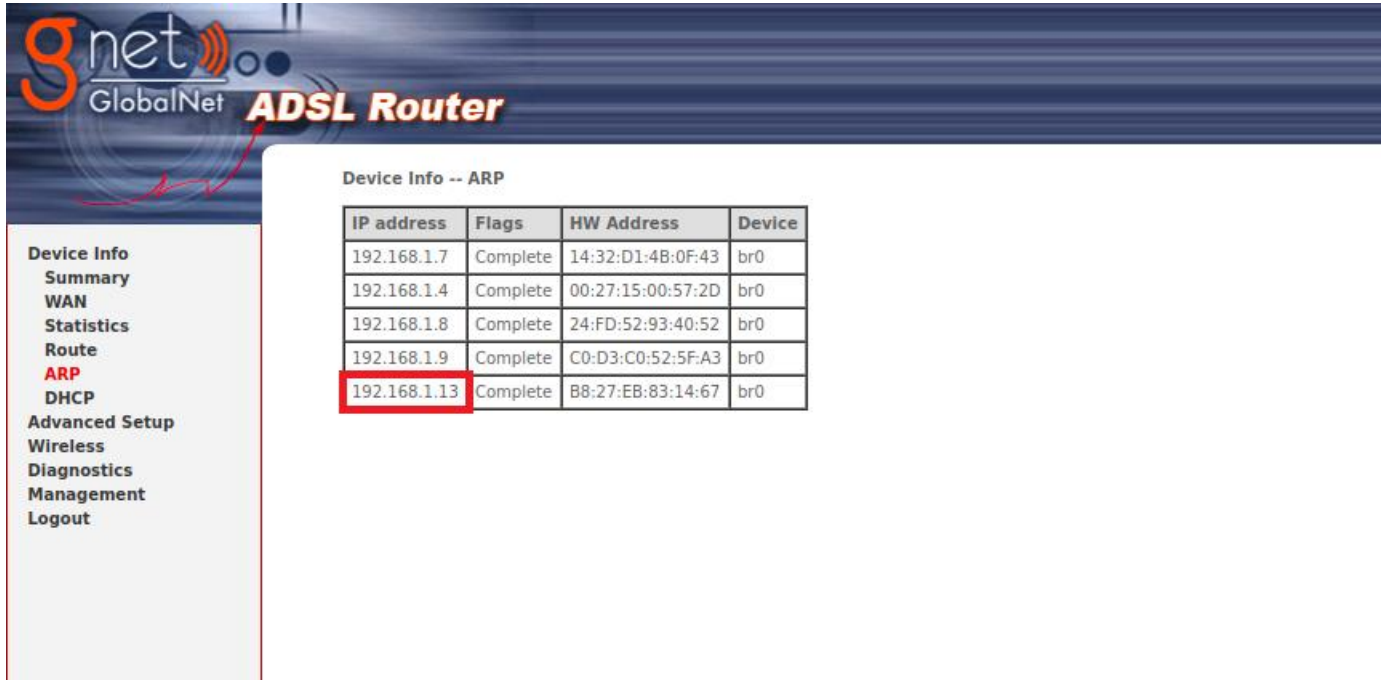
Step 3: Enable SSh



- As in Step2 :
- Open “etc”
- Right Click and select “Open in Terminal”
- Run the command
  sudo nano rc.local

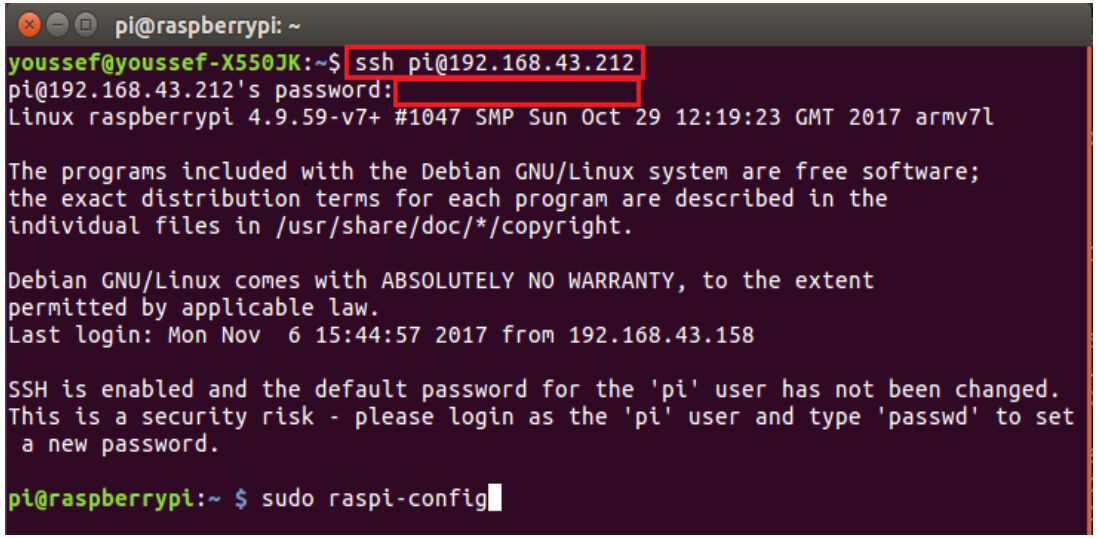
- Add before “exit 0”
  sudo /etc/init.d/ssh start

Recover the IP Address of the Pi



- Fetch the Raspberry Pi IP from your router.

Step 4: Enable VNC

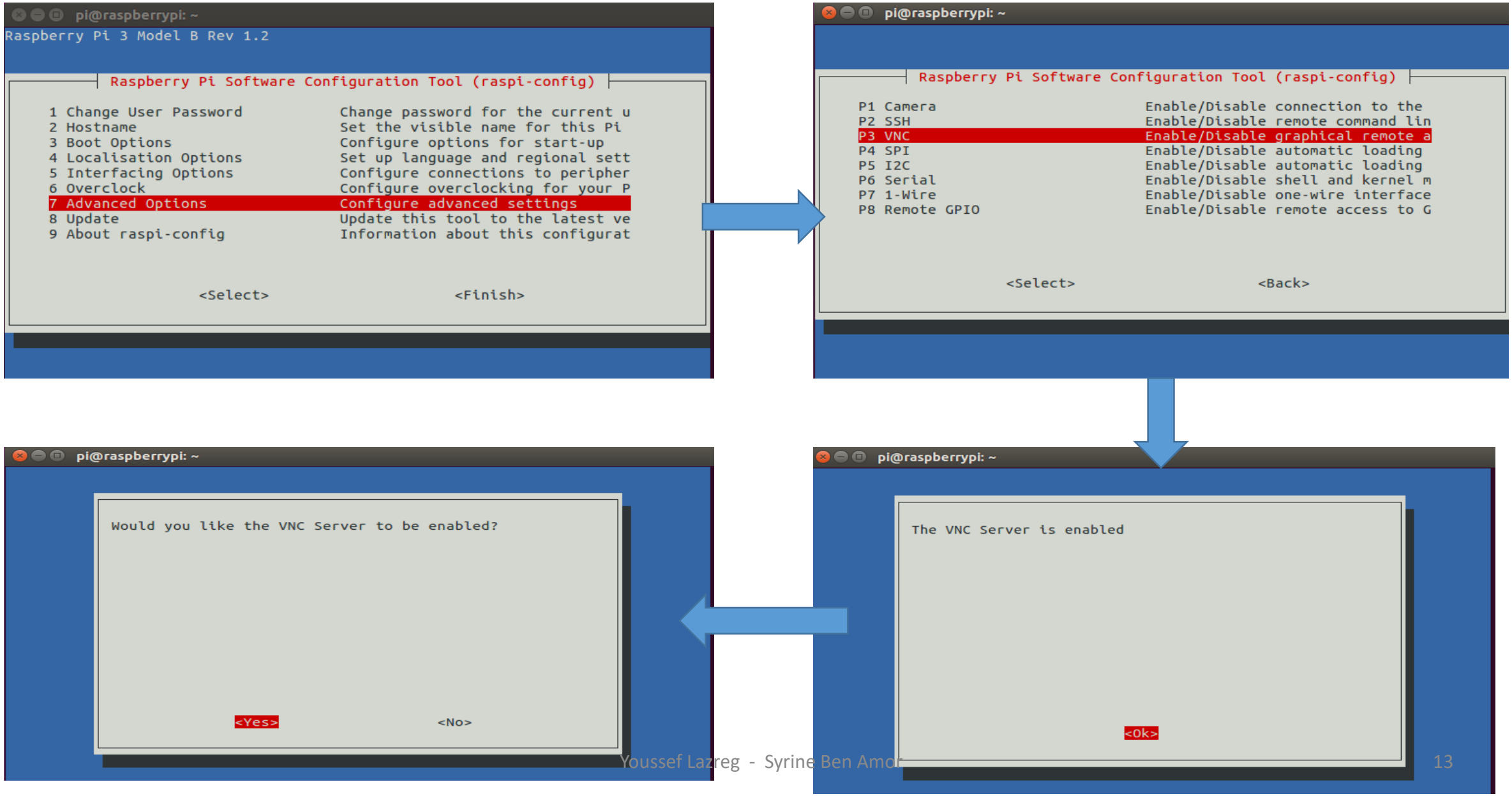


1. Run command

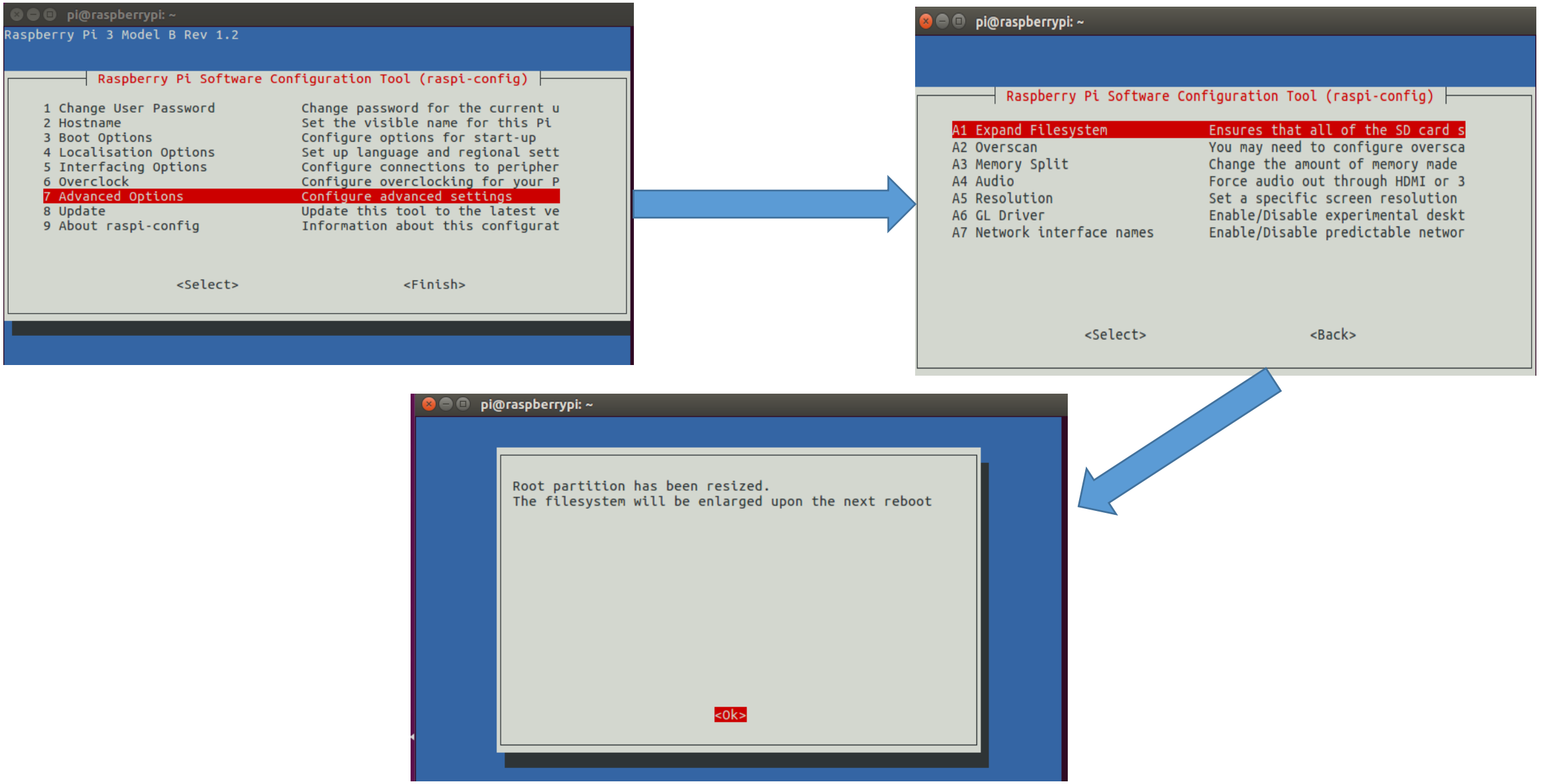
   ssh pi@<Raspberry IP>
2. Type “raspberry” default password for any Pi.
3. Run command

   sudo raspi-config

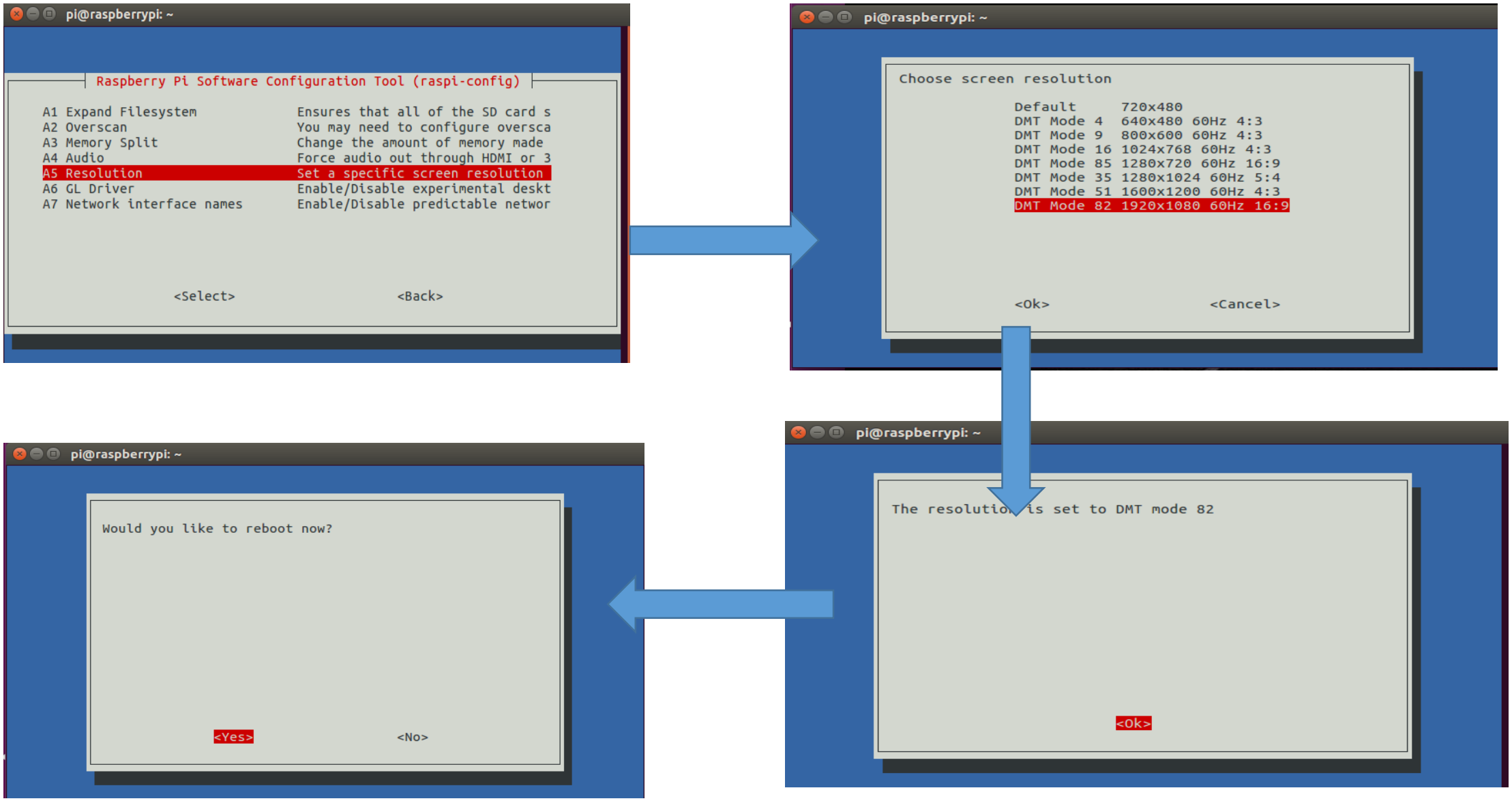
Enable VNC


pi@raspberrypi: ~
Raspberry Pi 3 Model B Rev 1.2
Raspberry Pi Software Configuration Tool (raspi-config)
1 Change User Password Change password for the current u
2 Hostname Set the visible name for this Pi
3 Boot Options Configure options for start-up
4 Localisation Options Set up language and regional sett
5 Interfacing Options Configure connections to peripher
6 Overclock Configure overclocking for your P
7 Advanced Options Configure advanced settings
8 Update Update this tool to the latest ve
9 About raspi-config Information about this configurat
<Select>
<Finish>
pi@raspberrypi: ~
Raspberry Pi Software Configuration Tool (raspi-config)
P1 Camera Enable/Disable connection to the
P2 SSH Enable/Disable remote command lin
P3 VNC Enable/Disable graphical remote a
P4 SPI Enable/Disable automatic loading
P5 I2C Enable/Disable automatic loading
P6 Serial Enable/Disable shell and kernel m
P7 1-Wire Enable/Disable one-wire interface
P8 Remote GPIO Enable/Disable remote access to G
<Select>
<Back>
pi@raspberrypi: ~
Would you like the VNC Server to be enabled?
<Yes>
<No>
pi@raspberrypi: ~
The VNC Server is enabled
<Ok>

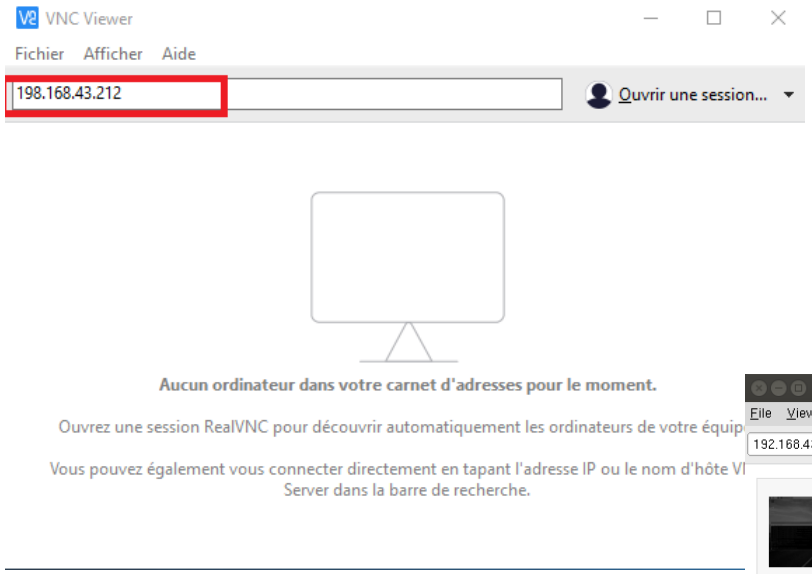
Other Configuration



Adjust Resolution



Step 5: Raspberry remote access

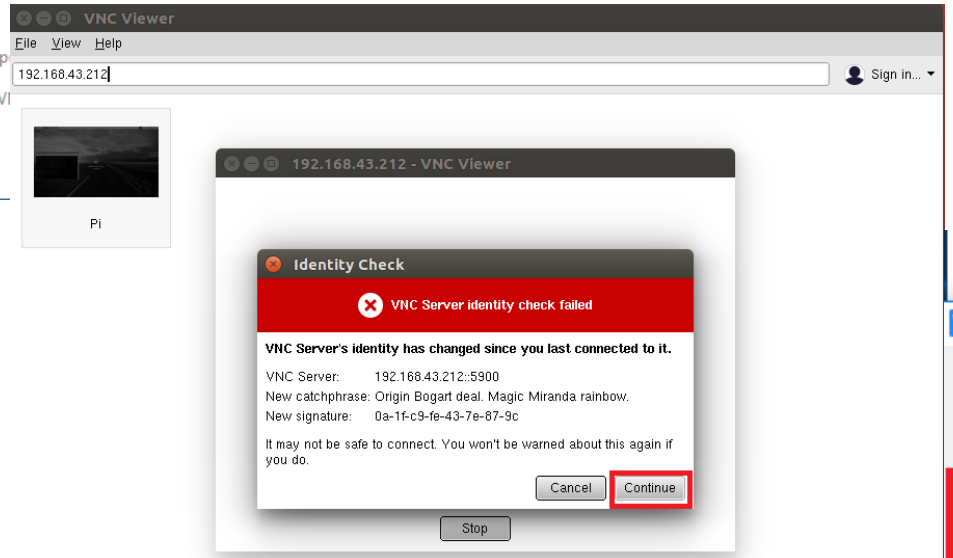


1/

- Start VNC Viewer in Windows
- Write the IP address

2/

- Press continue



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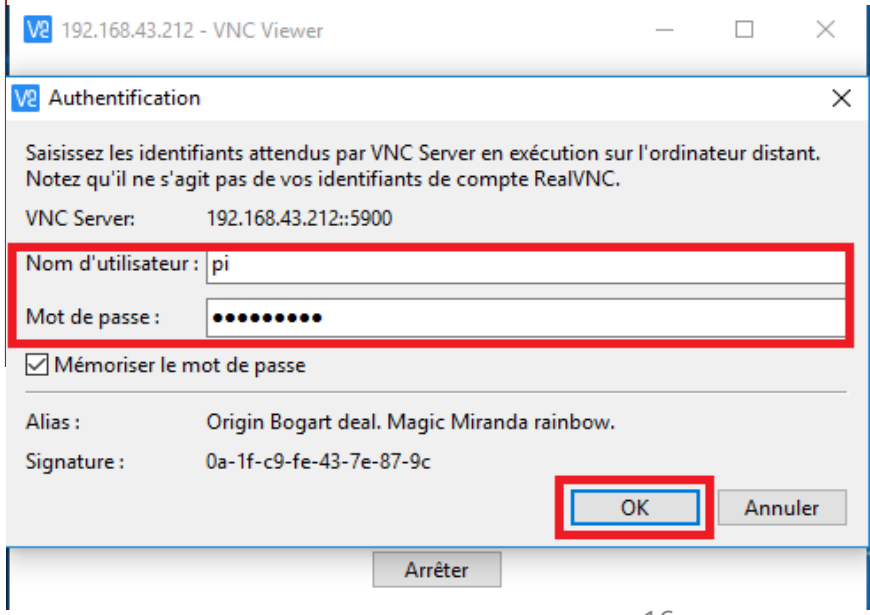
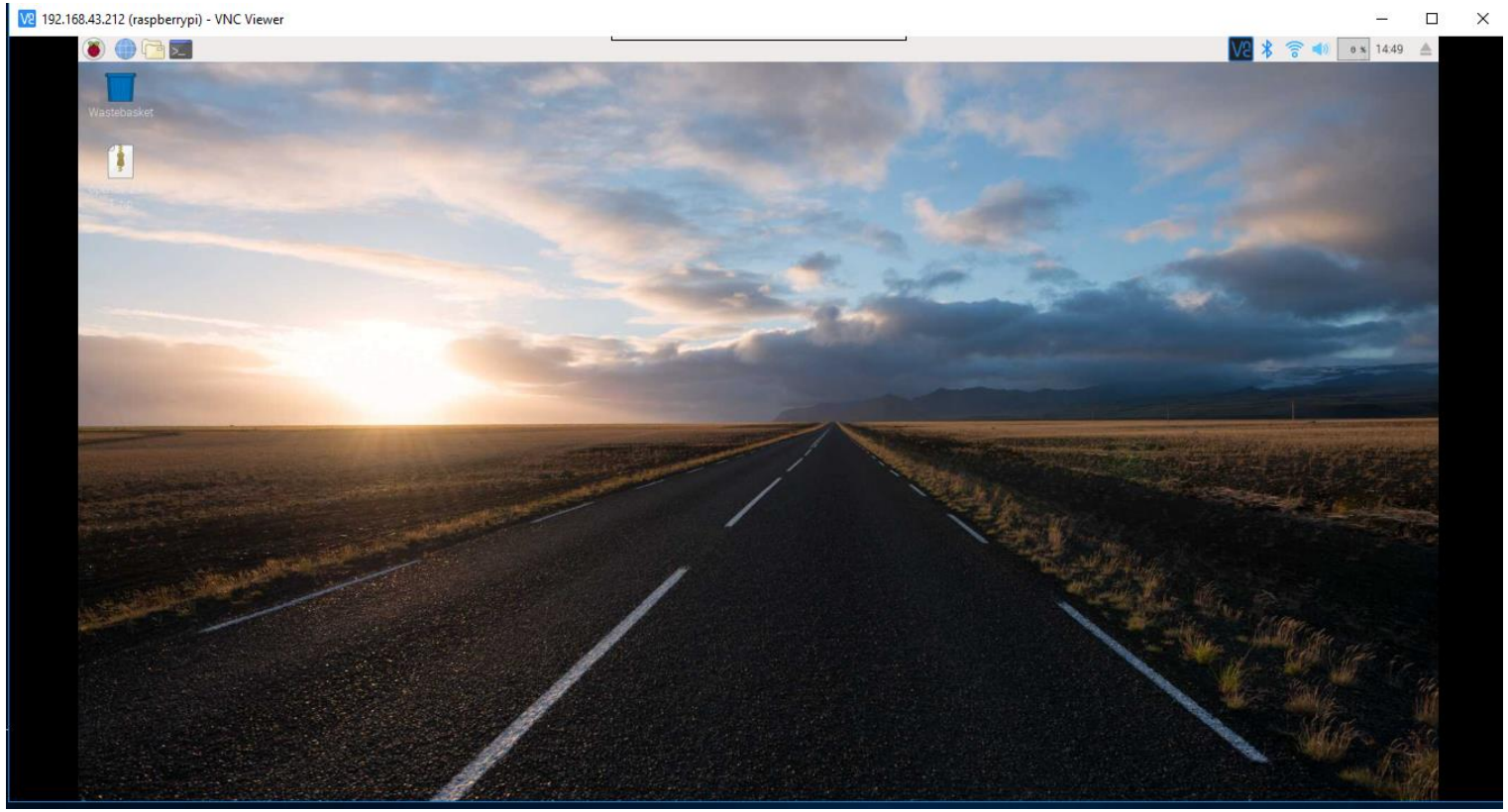
Login : pi

Pwd : raspberry

- Press “ok”

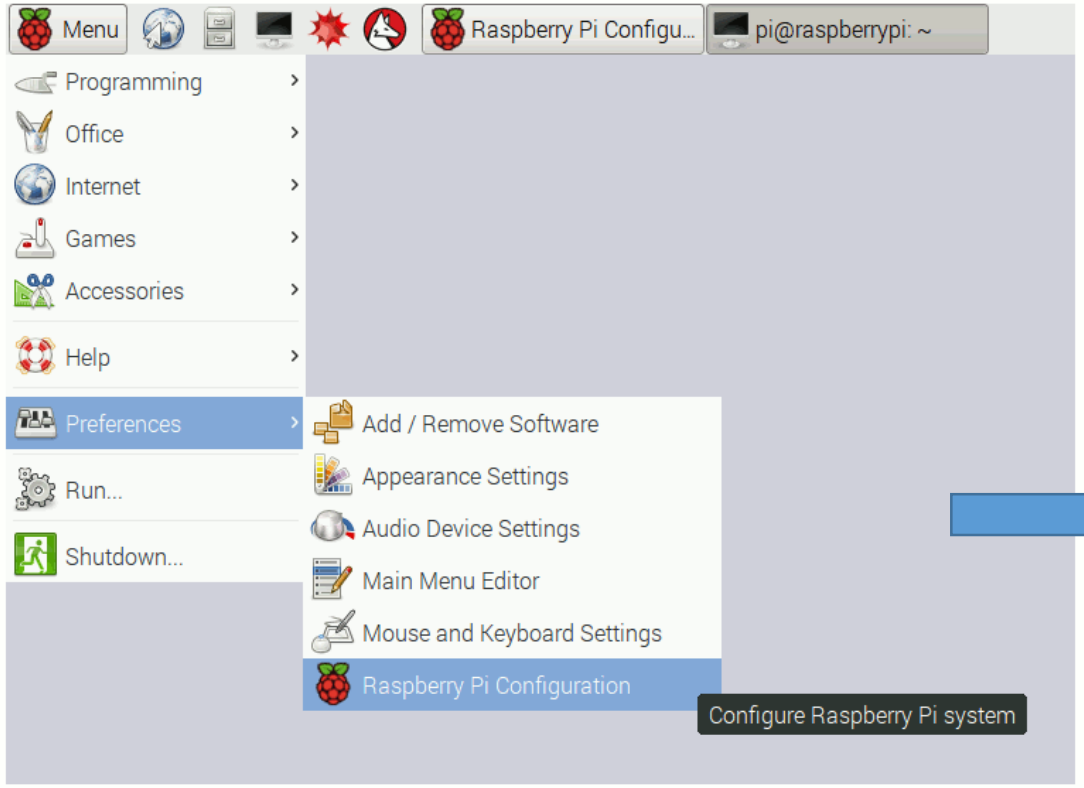


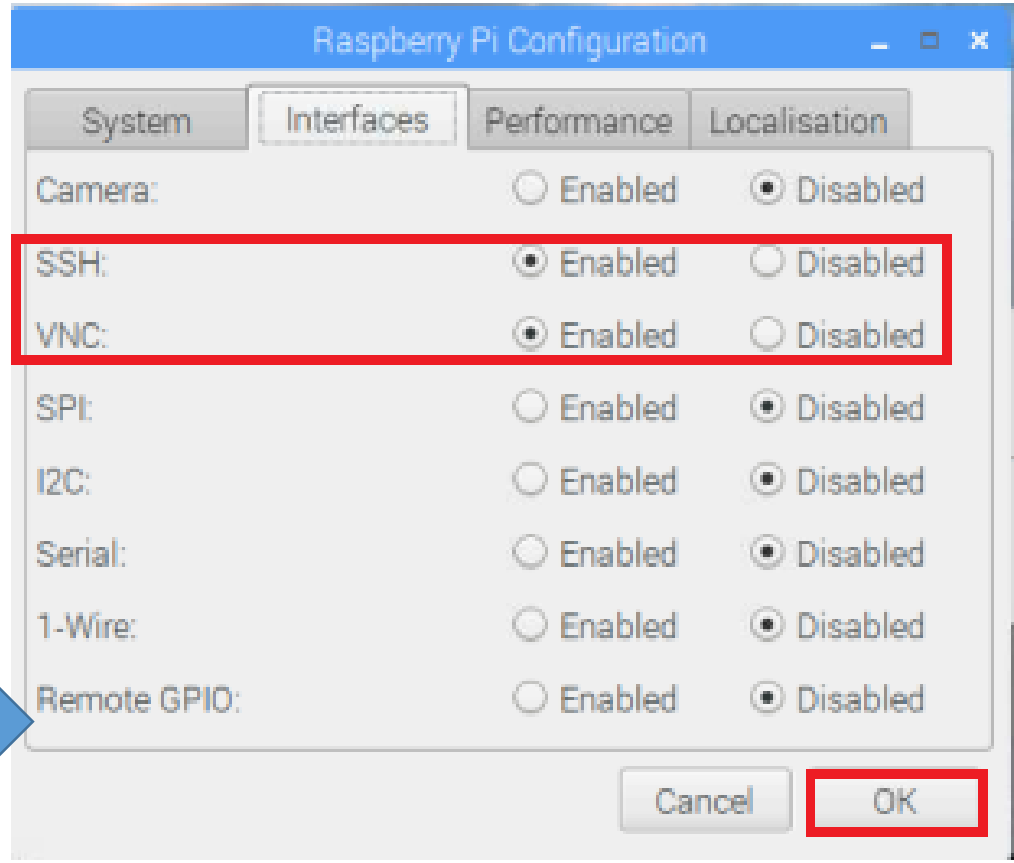
Welcome to Raspberry Pi



Check the new configuration

Go to Menu=> Peferences=>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