

Raspberry Pi 3B+ Quick installation setup

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1 Installing Ubuntu + ROS kinetic on RBpi3

The steps followed were taken from here

- First Download the image that already contains ubuntu + ros kinetic from here
- Then, install GNOME to write the image into the SD card

```
sudo apt install gnome-disk-utility
```
- Then, connect an SD card to the computer and double click on the image, GNOME will automatically run, and then just select Write image to the SDCard
- Then, insert the SDcard to the RBpi3 and wait for it too boot, a soon as it is completely turned on a network will appear, since the image written to the SDcard has a configuration as an access point called "ubiquityrobotXXXX"
- Connect to ubiquityrobotXXXX from your laptop with the **password:** robotseverywhere
- Then, access the RBpi3 through SSH from terminal with the following ip:

```
ssh ubuntu@10.42.0.1
```


Where once connected the RBpi3's **password is:** ubuntu
- Finally disable start-up scripts for ubiquityRobots (this is the creator of the image that created this environment for their robots, but since you might not have one of their robots its better to disable their scripts):

```
sudo systemctl disable magni-base
```
- You can also delete the source files for their default workspace located in the /home/.bashrc in the last lines of the file

2 Setting up a virtual monitor to get a GUI from RBpi3 into your local ubuntu machine(Using VNC)

All the following steps were taken from here

In the RBpi3 terminal

1. Install the VNC server in the RBpi3:

```
sudo apt-get install tightvncserver
```
2. Start a virtual monitor from the RBpi3

```
vncserver :1 -geometry 1024x600 -depth 16 -pixelformat rgb565
```

You should see the following message **New "X" desktop is raspberrypi:1**

In the local machine terminal:

3. Install a VNC client in the local machine:

```
sudo apt-get install xtightvncviewer
```
4. Connect to the virtual monitor in the RBpi3 from the local machine:

```
vncviewer 10.42.0.1:5901
```

Where 10.42.0.1 is the ip of the RBpi3 and 5901 is the number of virtual monitor. For instance, if you would like to open another monitor open a new virtual monitor as stated in step 2, but changing the number 1 with a 2. Then open the new VNC from any local machine by doing:

```
vncviewer 10.42.0.1:5902
```
5. Finally to close the windows opened in RBpi3 after using them, do:

```
vncserver -kill :1
```

3 How to edit RBpi3 files with VSCode in local machine

Information was taken from here

In local machine terminal:

1. first we need to install extension of VScode in local machine called:

```
remote VSCode
```
2. Go to setting in VScode and at the following into the xml list that pops-up

```
"remote.port": 52698
```

```
"remote.onstartup": true
```

As shown in:

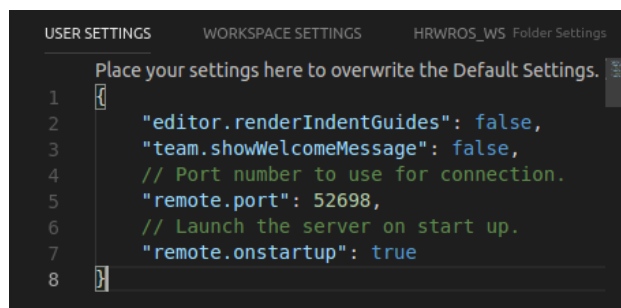


Figure 1: Adding settings for remote VSCode

In RBpi3 terminal:

3. install Rmate through python:

```
pip install rmate
```

In local machine terminal:

4. by default rmate uses port 52698, so to connect to it remotely with VSCode open the terminal on VSCode and type:

```
ssh -R 52698:localhost:52698 ubuntu@10.42.0.1
```

In RBpi3 terminal:

5. Now all files you want to edit in remote VSCode will be opened by typing:

```
rmate <any_archive>.<any_extension>
```

For example:

```
rmate README.md
```

This will automatically open README.md in remote VSCode and ready to edit :)

4 Setting up wiringpi library for C++

1. Check if you don't have already wiringpi library installed:

```
gpio -v
```

2. Obtain wiringpi git

```
git clone git://git.drogon.net/wiringPi
```

3. Build folder to install wiringpi

```
cd ~/wiringPi
```

```
sudo ./build
```

4.1 Useful commands

- to check correct installation

```
gpio -v
```

- to check a diagram for the current raspberry pi

```
gpio readall
```

To understand what the diagram shows, please refer to this site