

Lab0: Be familiar with Ubuntu

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The objective of the tutorial is to have your working environments: Ubuntu 18.04 system.
The content is aimed for beginners who have little knowledge about basic commands in Ubuntu and Vim.

Any sentence behind "\$" means those are commands that typed in the terminal

\$ 代表terminal 的指令

- *laptop: do the command after \$ on the laptop/PC side*
- *laptop: 代表在筆電上打指令*

Hardware and Software Setup

The tutorial requires Ubuntu 18.04 system installed in the following:

- First option, use the provided Virtualbox ([image](#), 4.6 GB).
Username/Password of this ubuntu image: **arg / bocelli2015**
- Second option, use the provided USB Virtualbox image from our Teaching Assistant
- For advanced users who wish to have native system, take a look at our Dockerfiles

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Overview

Estimated Time to Finish: 0.5 hours

After completing this tutorial you should

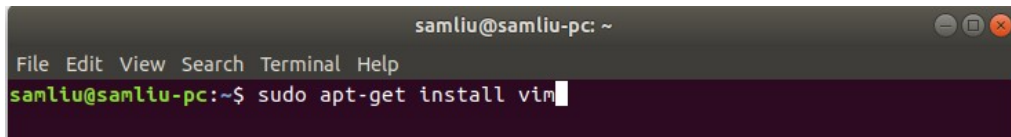
- understand how to install ubuntu system on your laptop
- be able to use `vim` to modify the text file
- develop the common sense of ubuntu system

Topics and Activities

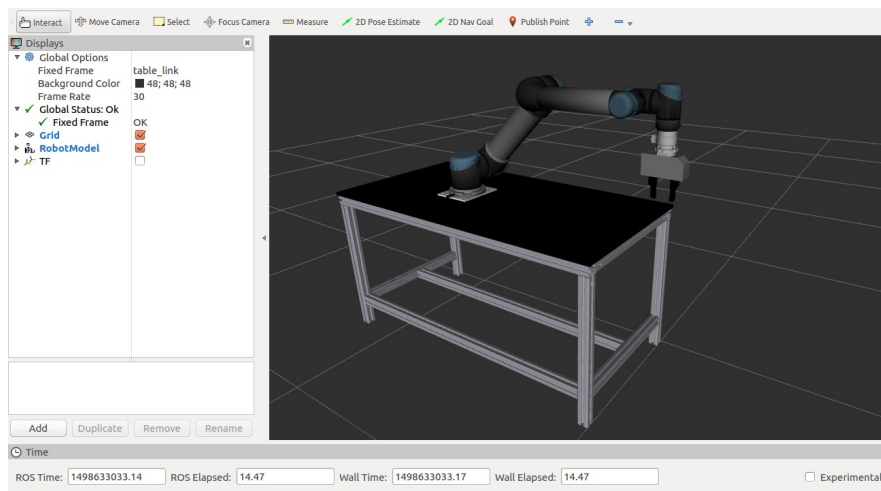
Topic/Activity 1 Ubuntu introduction

Why to use Ubuntu Linux for this course?

- It's convenient to install the software, just type the cammands like
"sudo apt-get install [PACKAGE1] [PACKAGE2]"



- Supporting all functionaries of ROS (Robotic operating system) and RVIZ (a visualization tool for ROS) that allow we to develop most of applications for the robot.

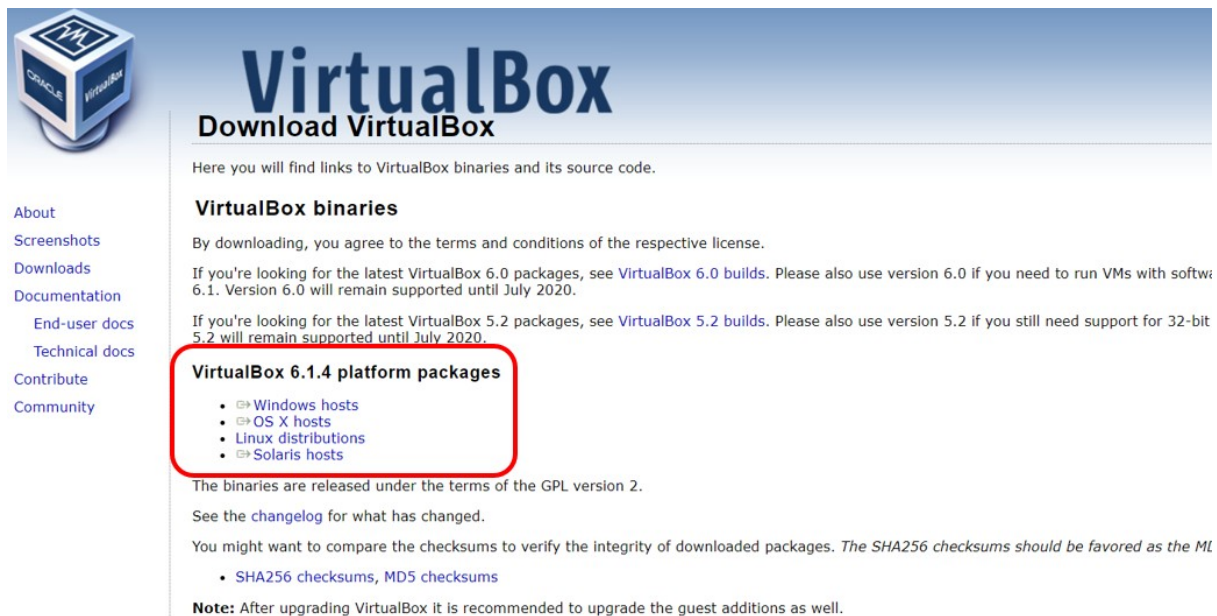


- Most of the deep learning frameworks are support the Ubuntu environment, such as Caffe, Tensorflow and Pytorch.



Topic/Activity 2 Ubuntu Installation

Download and install Virtualbox on your machine



VirtualBox
Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

If you're looking for the latest VirtualBox 6.0 packages, see [VirtualBox 6.0 builds](#). Please also use version 6.0 if you need to run VMs with software that requires version 6.1. Version 6.0 will remain supported until July 2020.

If you're looking for the latest VirtualBox 5.2 packages, see [VirtualBox 5.2 builds](#). Please also use version 5.2 if you still need support for 32-bit VMs. Version 5.2 will remain supported until July 2020.

VirtualBox 6.1.4 platform packages

- [Windows hosts](#)
- [OS X hosts](#)
- [Linux distributions](#)
- [Solaris hosts](#)

The binaries are released under the terms of the GPL version 2.

See the [changelog](#) for what has changed.

You might want to compare the checksums to verify the integrity of downloaded packages. *The SHA256 checksums should be favored as the MD5 checksums.*

- [SHA256 checksums](#), [MD5 checksums](#)

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

[Please choose the latest version of virtualbox and ignore the older one shown in above figure.]

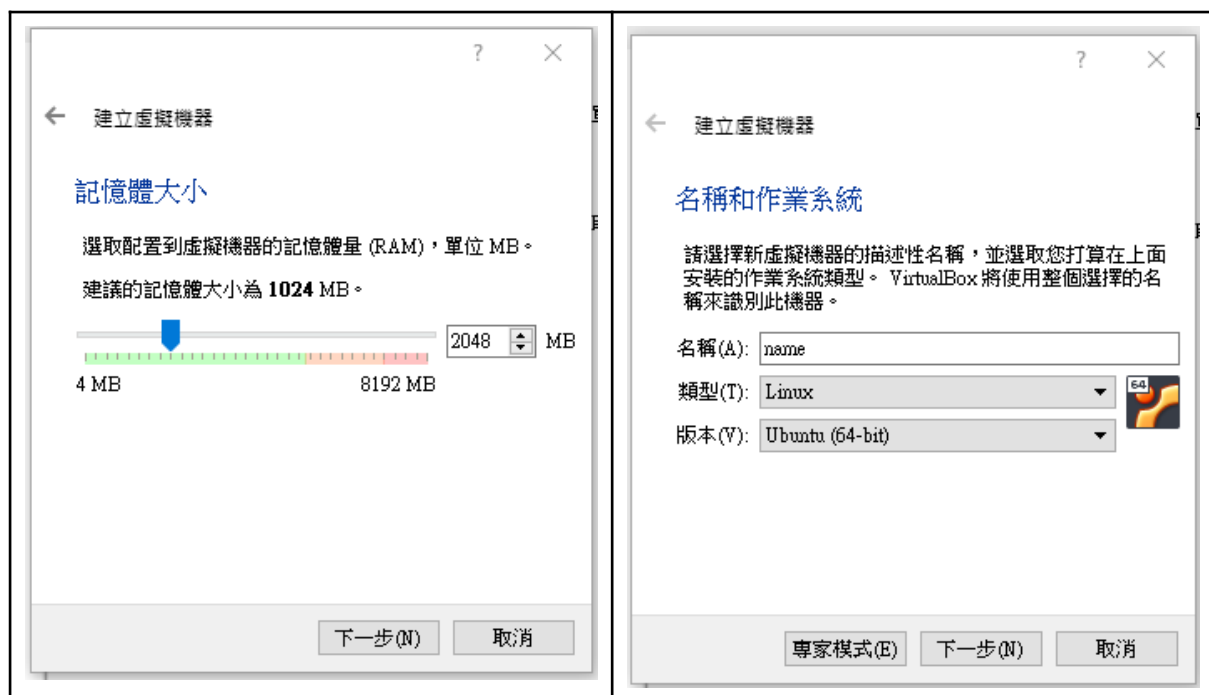
<https://www.virtualbox.org/wiki/Downloads>

Start Virtualbox

New(新增) -> Linux -> 64bit -> Memory 2048M -> select the .vdi file.

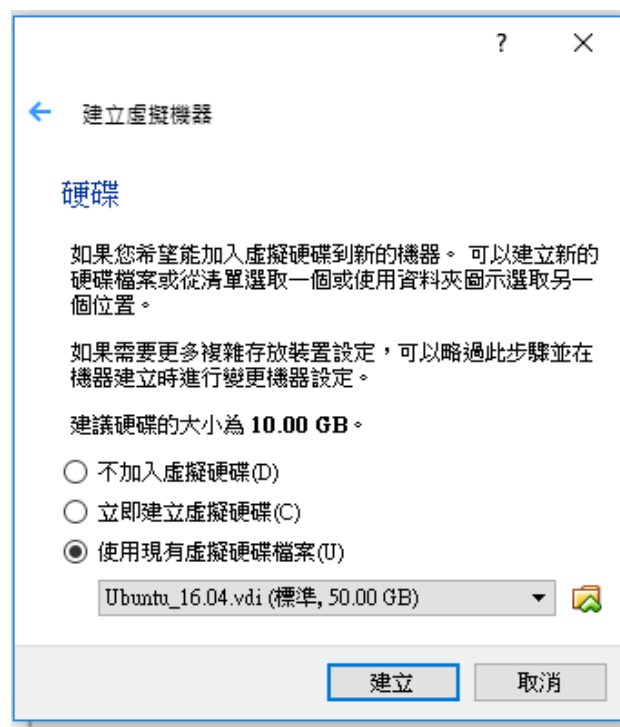


Give a name to this virtual machine as you want.



To use the existing VirtualBox image, please assign the correct path to the

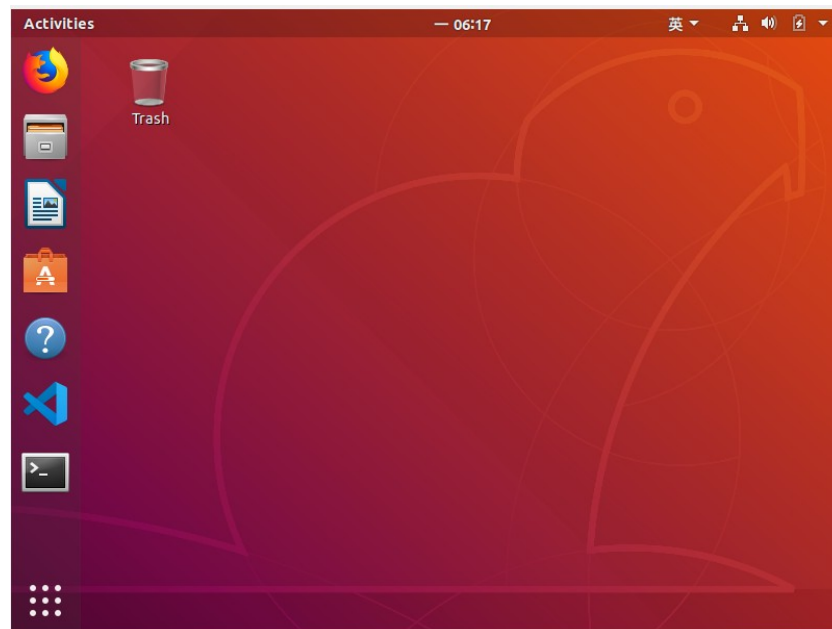
VirtualBox image file (.vdi extension) downloaded from [here](#).



Press the “activate” to activate your virtual machine.



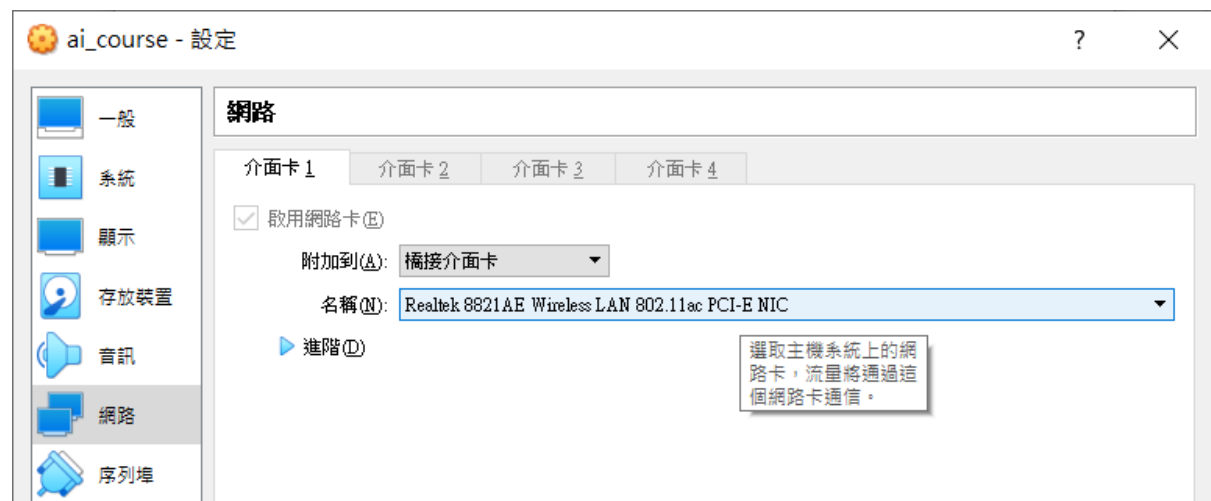
The username/password are **arg / bocelli2015**



Network Setup

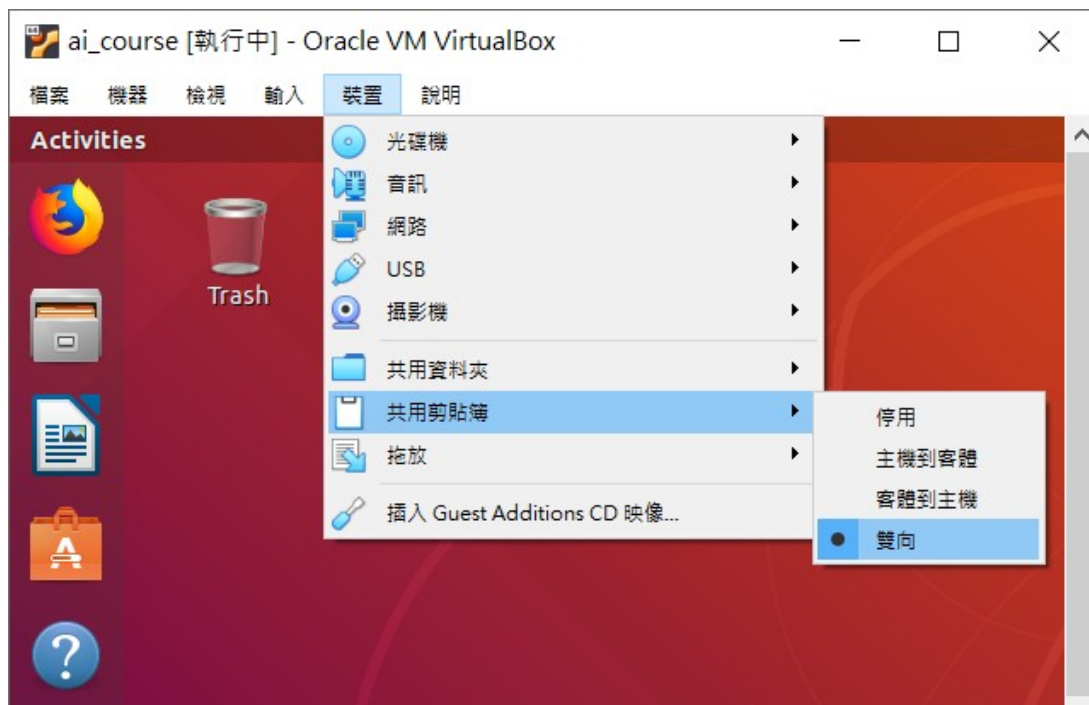
Open the setting terminal from 裝置 -> 網路 -> 網路設定

Change the 'attaching interface' to bridged adapter (橋接介面卡). If you are using Wi-Fi interface on host OS, please choose the Wi-Fi chip module. The keywords often appearing in the drop-down menu are 'Realtek', '88XX' and 'wireless'. If you are using Ethernet, please choose 'PCIe GBE Family Controller'.



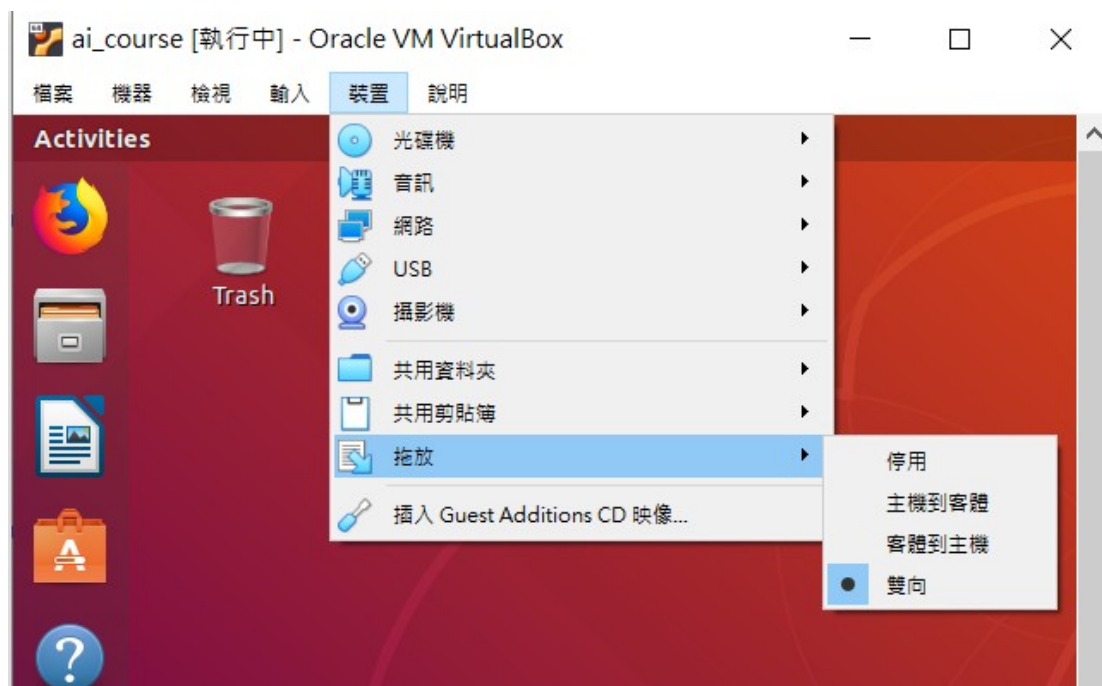
Scrapbook Setup

共用剪貼簿



Drag and Drop

托放



Topic/Activity 3 Use Ubuntu and Vim

Most tasks can be complete in Terminal for Ubuntu OS. We list the **famous shortcut** and **basic terminal commands** you should know in the Ubuntu Linux.

Ctrl + Alt + T	Open a new Terminal window.
Ctrl + Shift + T	Open a new Terminal tab. (if terminal window existing)
Ctrl + Shift + C	Copy text from the current terminal. (if you have selected something in terminal)
Ctrl + Shift + V	Paste something from scrapbook to the current terminal.
Ctrl + L	Clean the current terminal

sudo [COMMAND]	act as root before other commands (最高權限進行指令)
cd [directory]	enter a folder (進入資料夾)
ls	list all files and folders in current directory(列出該目錄所有檔案、資料夾)
mkdir [dir name]	create a folder (建立新資料夾)
cp [file] [new file]	copy files (複製檔案)
rm [file]	delete files (刪除檔案)
apt-get update	update packages (取得遠端更新伺服器的套件檔案清單)
apt-get install [package name]	install packages (安裝套件)
git clone [url of remote repository]	Git command line utility which is used to target an existing repository and create a clone, or copy of the target repository. (透過 Git 系統從遠端 repo 複製一份 repo 到本地端)
[COMMAND1] && [COMMAND2]	(做完 COMMAND1 後 做 COMMAND2)
sudo shutdown now	
sudo reboot	

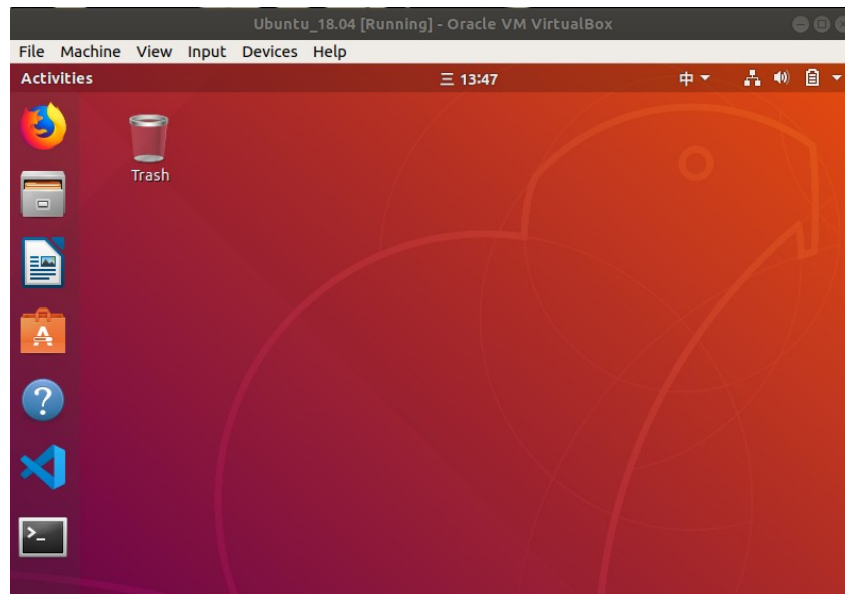
Exercise 1: Change the hostname

HOSTNAME represents a machine name that helps other computers or laptops identify with your machine. Due to our fleet setting, we wish that all laptops have unique hostname. We suggest to use:

- **[Name]** for your laptop, ex: allen

在更改筆電的 **hostname** 時，請不要使用特殊字元 (e.g. %^#@!_,;”)，只用數字以及小寫英文字母

Open a terminal (press this terminal app shown below or type **[ctrl + alt + T]**):



type in the command below:

記得打 sudo, 沒有 sudo 會無法更改此檔案

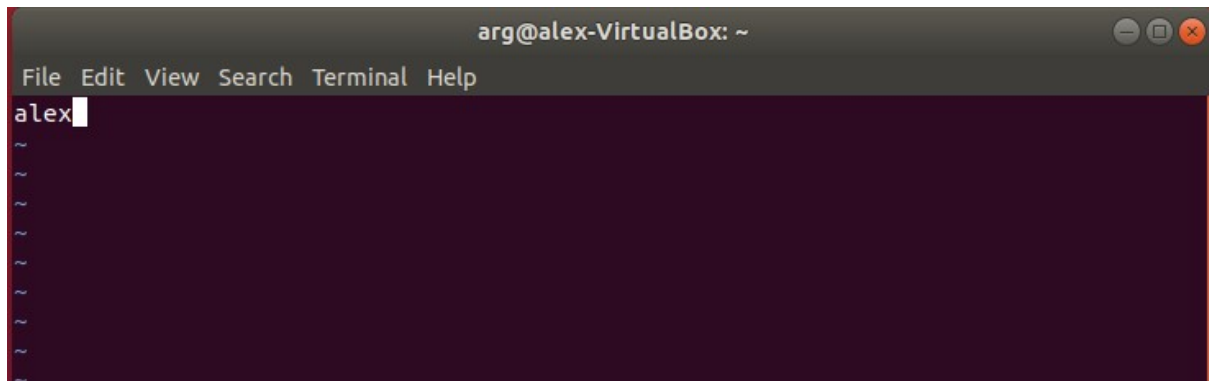
```
laptop$ sudo vim /etc/hostname
```

```
[sudo] password for arg: bocelli2015
```



若不小心忘了打 sudo 卻已經更改檔案，請打” :q!”強制退出後再加上 sudo 進去一次

Change "hostname" to your own hostname. For example: alex



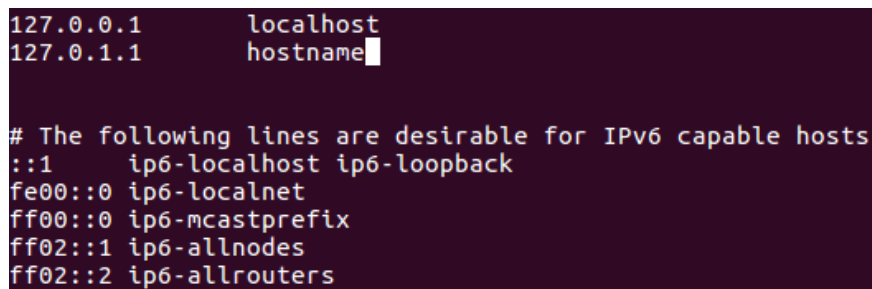
```
arg@alex-VirtualBox: ~  
File Edit View Search Terminal Help  
alex~  
~  
~  
~  
~  
~  
~  
~  
~  
~
```

For information about vim & how to use it,
check http://linux.vbird.org/linux_basic/0310vi.php

After exiting vim editing and go back to terminal, type in the command below:

記得打 sudo, 若沒有 sudo 會沒有權限 (Permission deny)更改此檔案

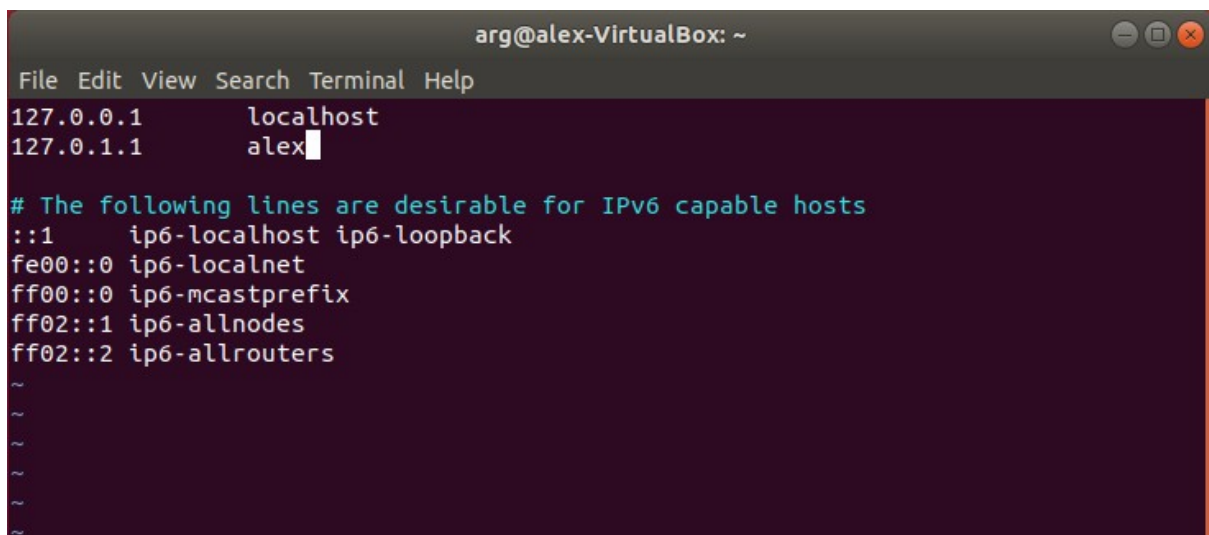
laptop\$ sudo vim /etc/hosts



```
127.0.0.1    localhost  
127.0.1.1    hostname~  
  
# The following lines are desirable for IPv6 capable hosts  
::1        ip6-localhost ip6-loopback  
fe00::0    ip6-localnet  
ff00::0    ip6-mcastprefix  
ff02::1    ip6-allnodes  
ff02::2    ip6-allrouters  
~  
~
```

change "hostname" to the one you typed in the /etc/hostname file, don't forget to save it
(:wq) after modification.

將 hostname 改的跟剛剛在/etc/hostname 一樣的名字，並儲存



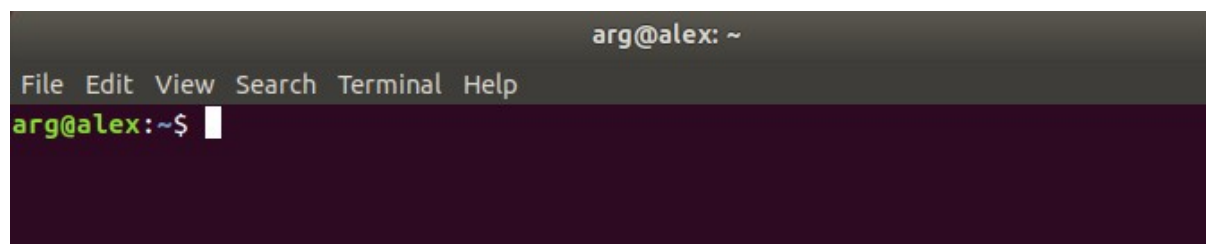
```
arg@alex-VirtualBox: ~  
File Edit View Search Terminal Help  
127.0.0.1    localhost  
127.0.1.1    alex~  
  
# The following lines are desirable for IPv6 capable hosts  
::1        ip6-localhost ip6-loopback  
fe00::0    ip6-localnet  
ff00::0    ip6-mcastprefix  
ff02::1    ip6-allnodes  
ff02::2    ip6-allrouters  
~  
~  
~  
~  
~  
~
```

Then reboot (重開機)

laptop \$ sudo reboot

Double check if hostname is changed.

確認 hostname 改變了



```
arg@alex: ~  
File Edit View Search Terminal Help  
arg@alex:~$
```

A terminal window with a dark gray title bar containing the text 'arg@alex: ~'. Below the title bar is a menu bar with the items 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The main area of the terminal has a dark purple background. The prompt 'arg@alex:~\$' is displayed in a light green font, followed by a white cursor block.