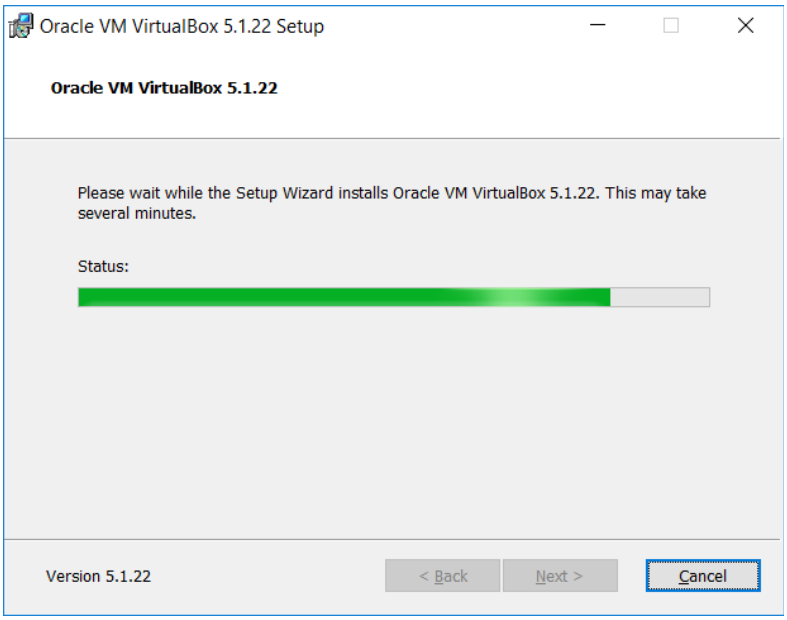
Intro

Install Ubuntu on Virtualbox

Incase you are using Windows or MAC platform, this guide show you how to install Ubuntu inside virtual machine.

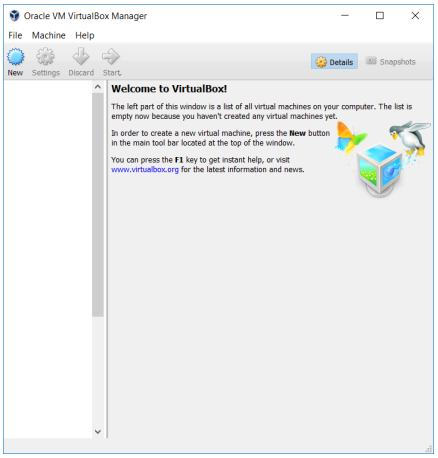
Install Virtualbox

Go to link https://www.virtualbox.org/wiki/Downloads and download the last version of virtual box. Then install virtual box in your local machine.

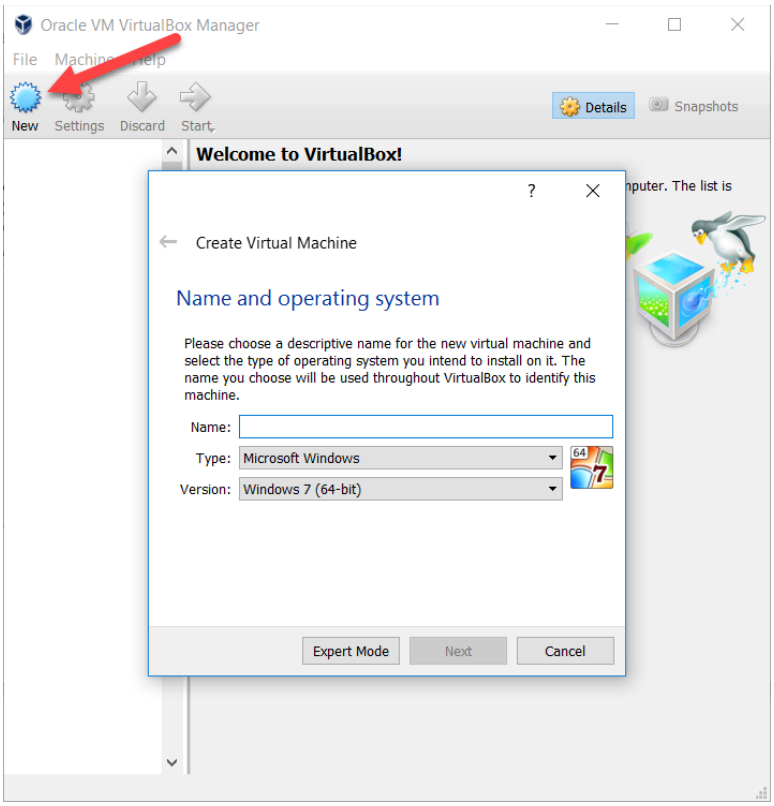


Create a new virtual machine

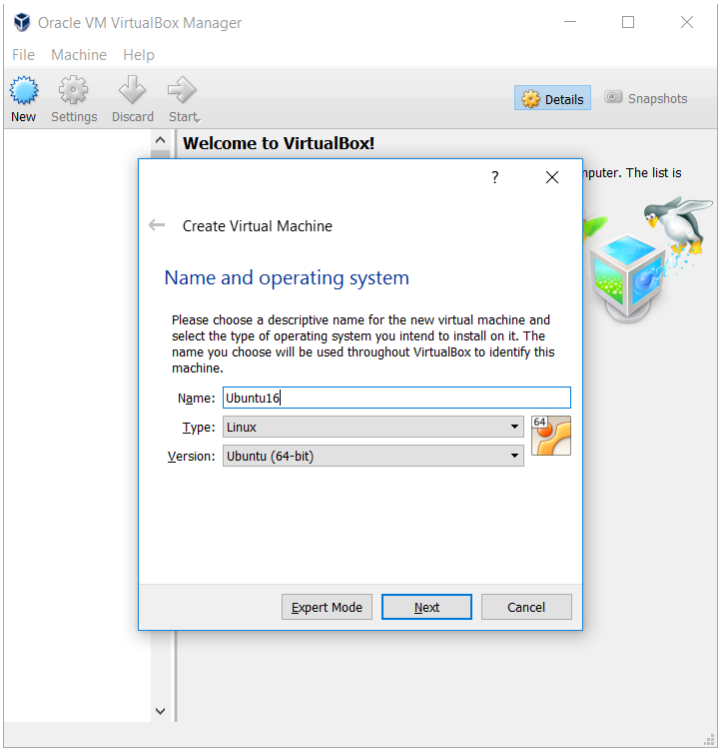
After install, start virtual box



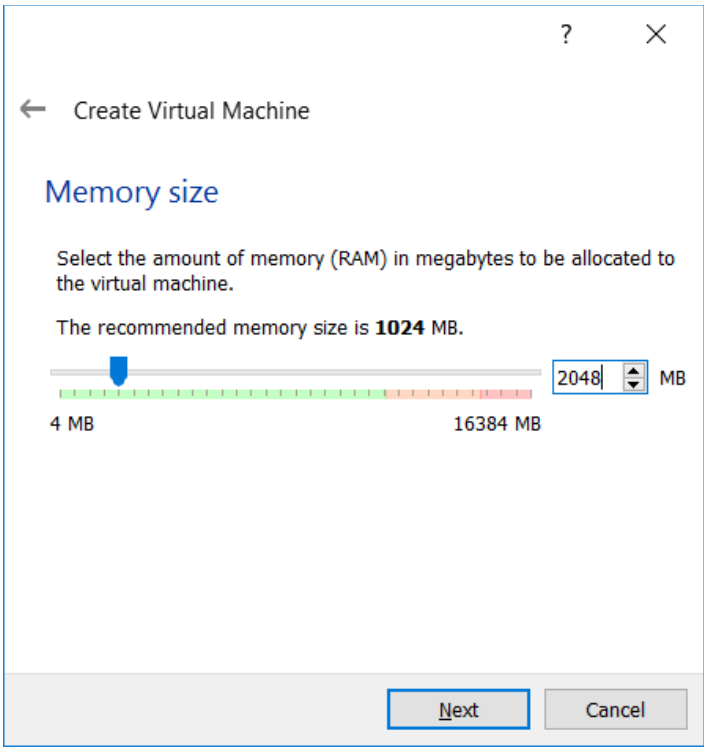
Then click to “New” button



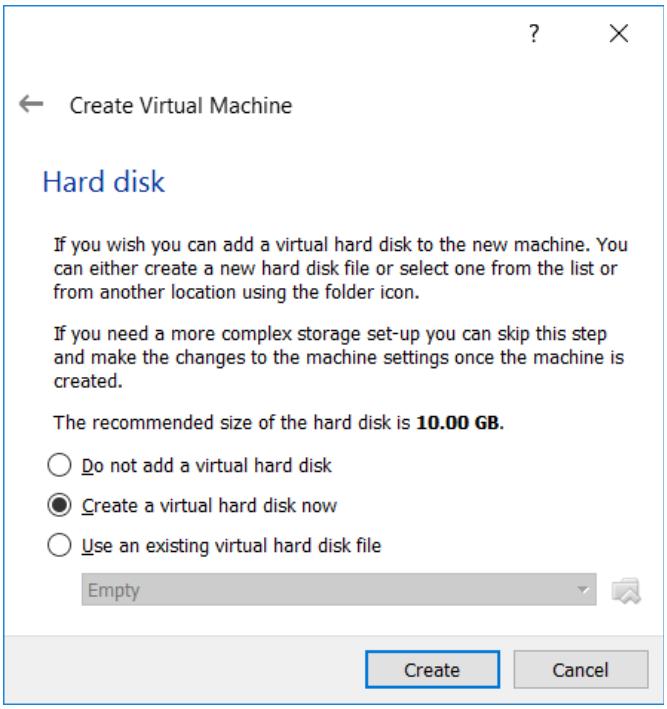
Input “Ubuntu16” to name box, select type and version as below. Then click “Next” button.



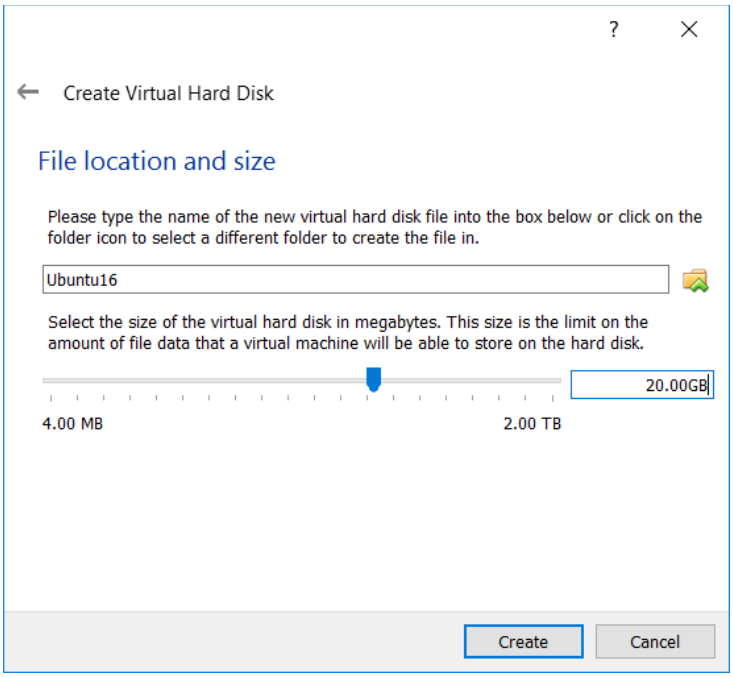
Select the ram memory you want for system, then click Next



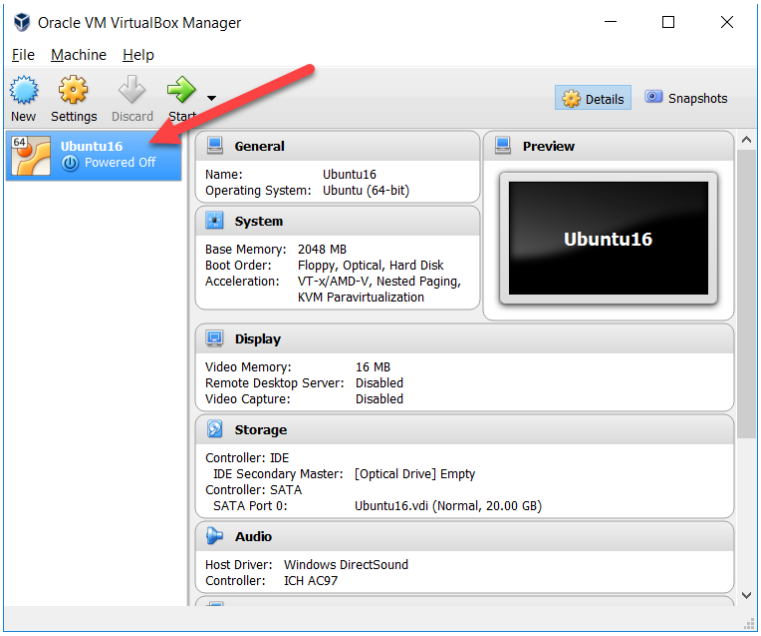
Keep the choice for virtual disk as default then click to “Create”



Then keep all selection as default.
Select the hard disk volume for your system, then select “Create”

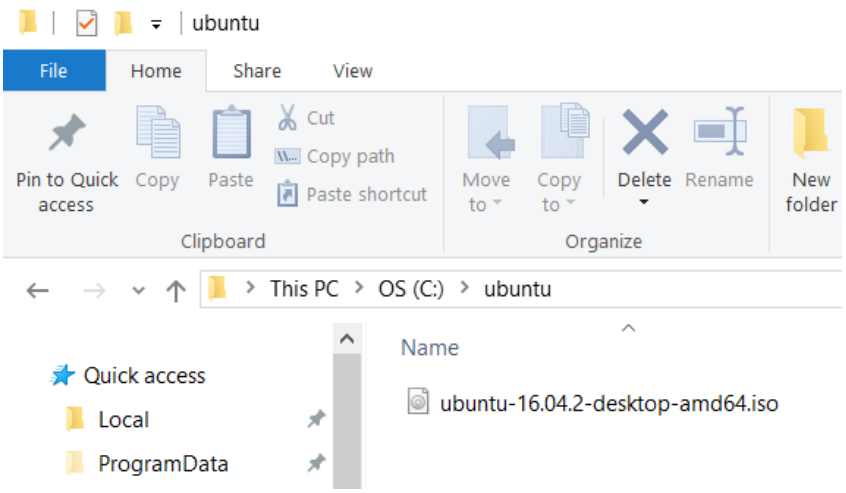


A new virtual machine is added to virtualbox

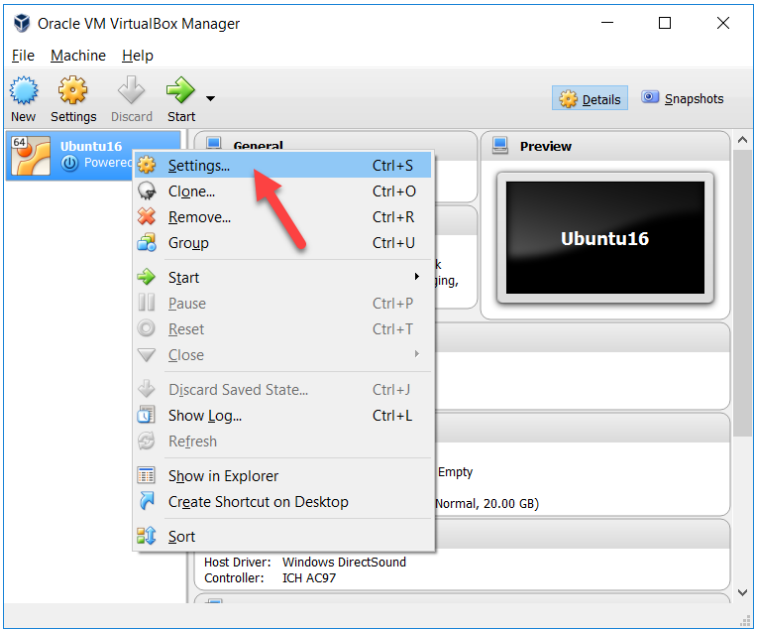


Install Ubuntu in Virtual Machine

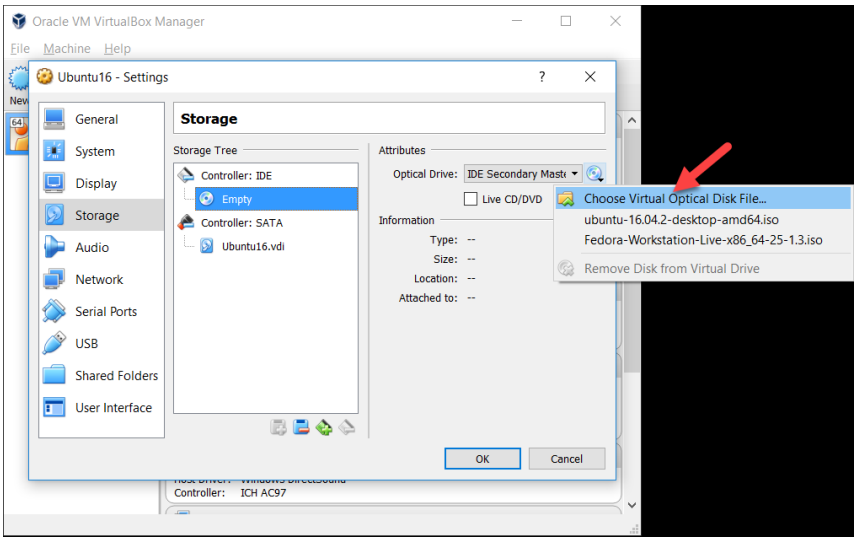
Go to link https://www.ubuntu.com/download/desktop to download desktop version
Then save iso file to a folder



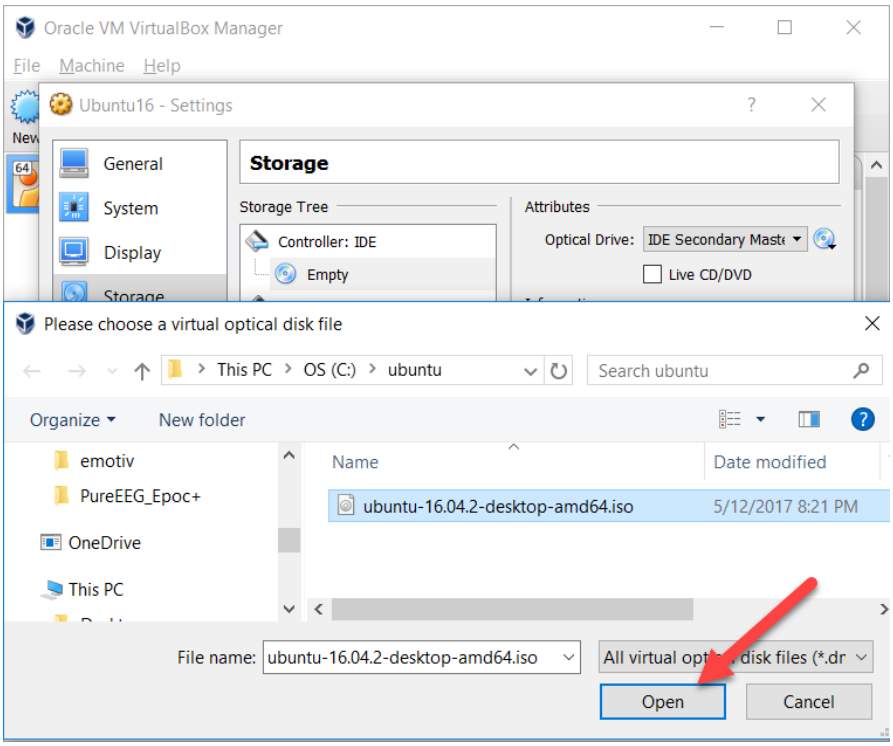
Select “Ubuntu16” virtual machine which already created before, right click and selet “Settings...” menu.



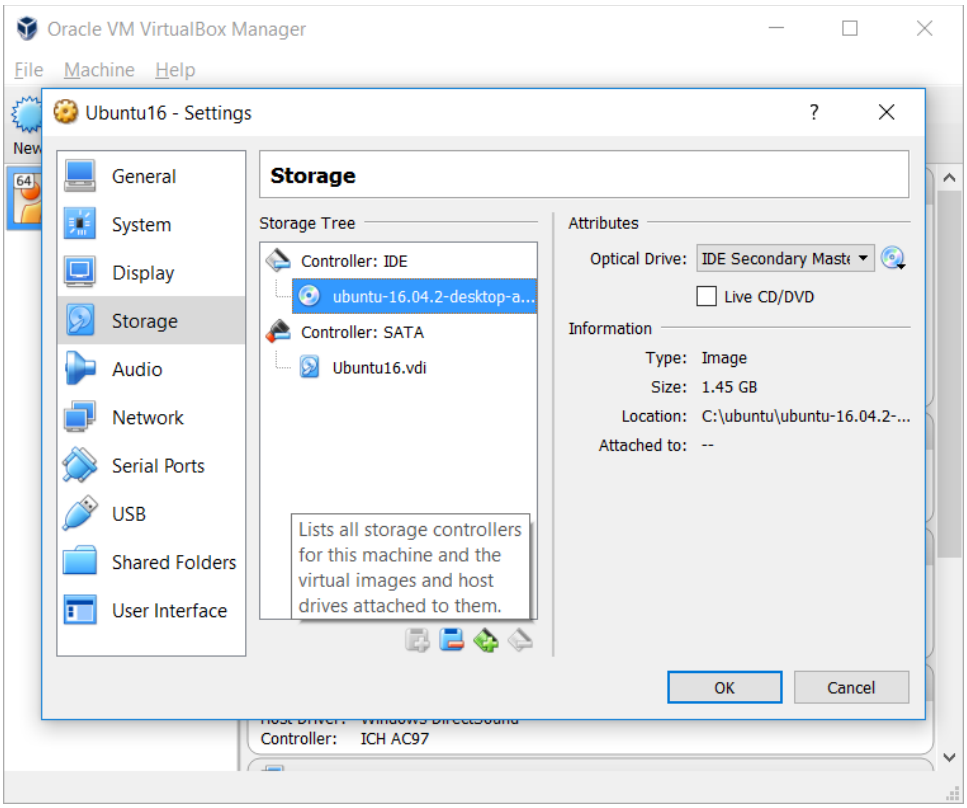
Select “Storage” , then select “Empty” disk, then click to cd icon, then select “Choose Virtual Optical Disk File...”



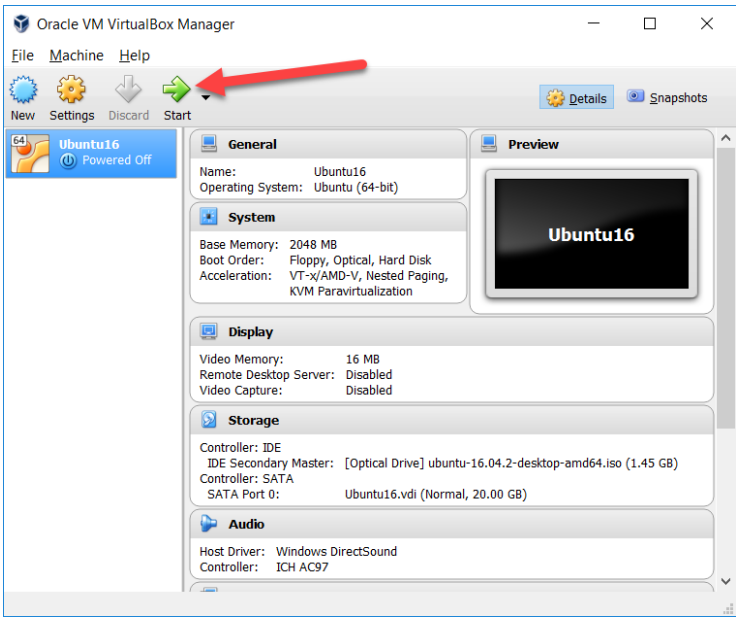
Navigate to folder which contain Ubuntu iso file and select that file, then click “Open”



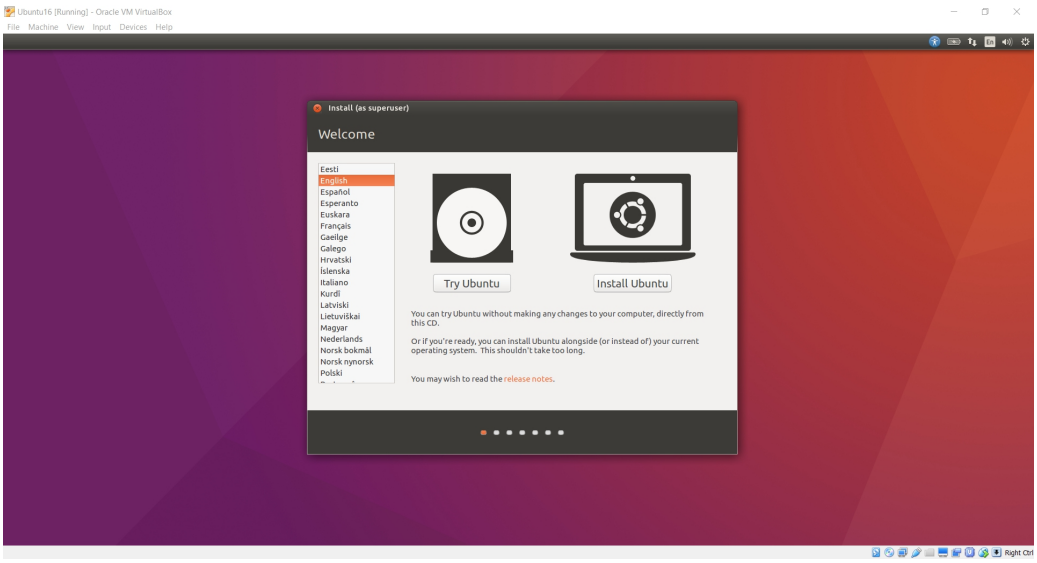
Click to “OK” button



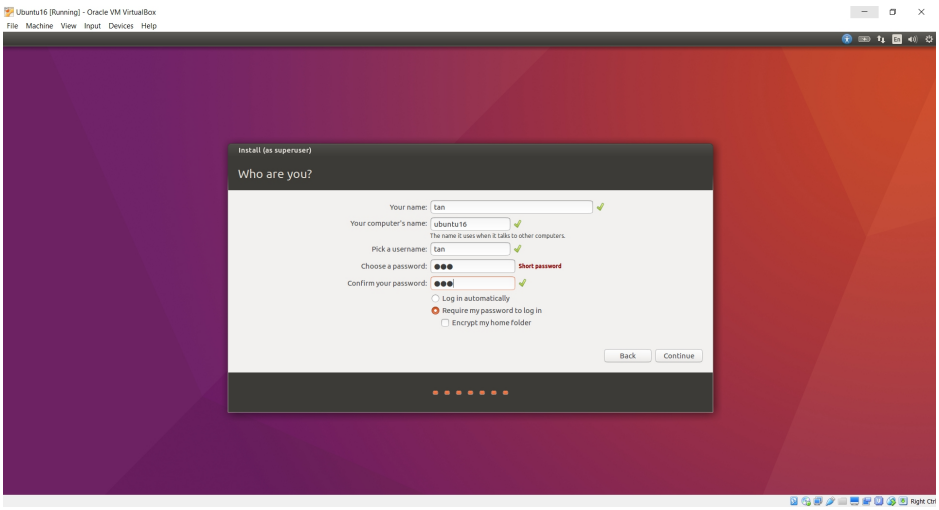
Now select “Ubuntu16” virtual machine, then click to “Start” button



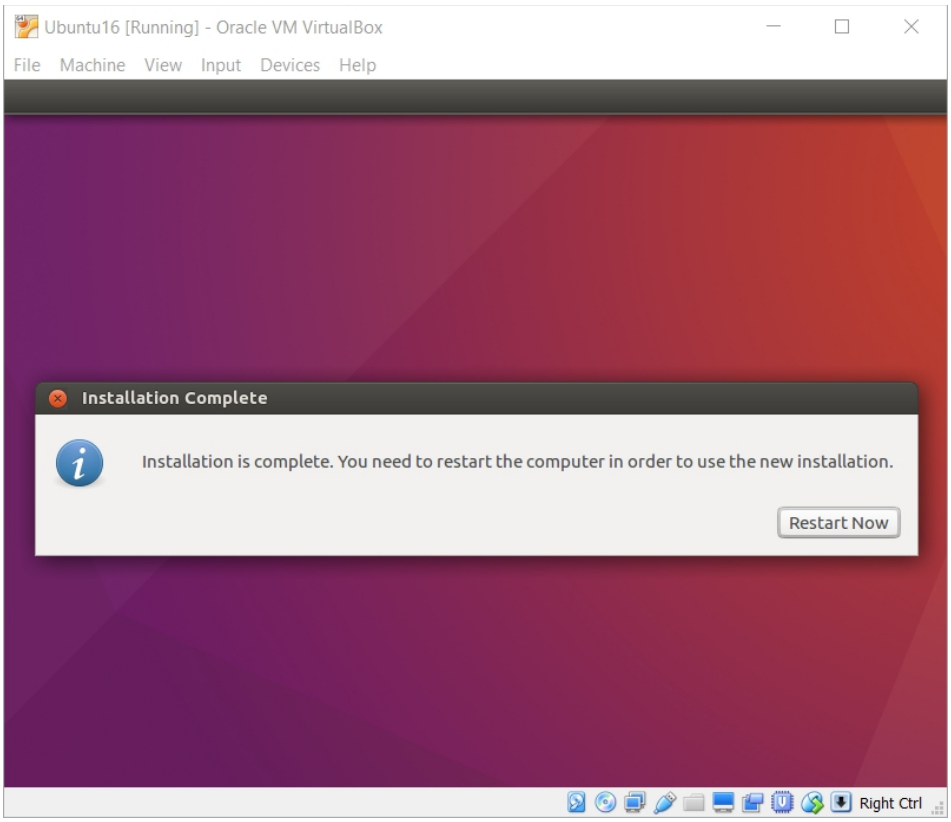
Virtual machine will boot up and start process of install Ubuntu. Select “Install Ubuntu”



Keep the default option and continue of installation, until the screen of install supper user. Input your name and password. Then click “Continue”



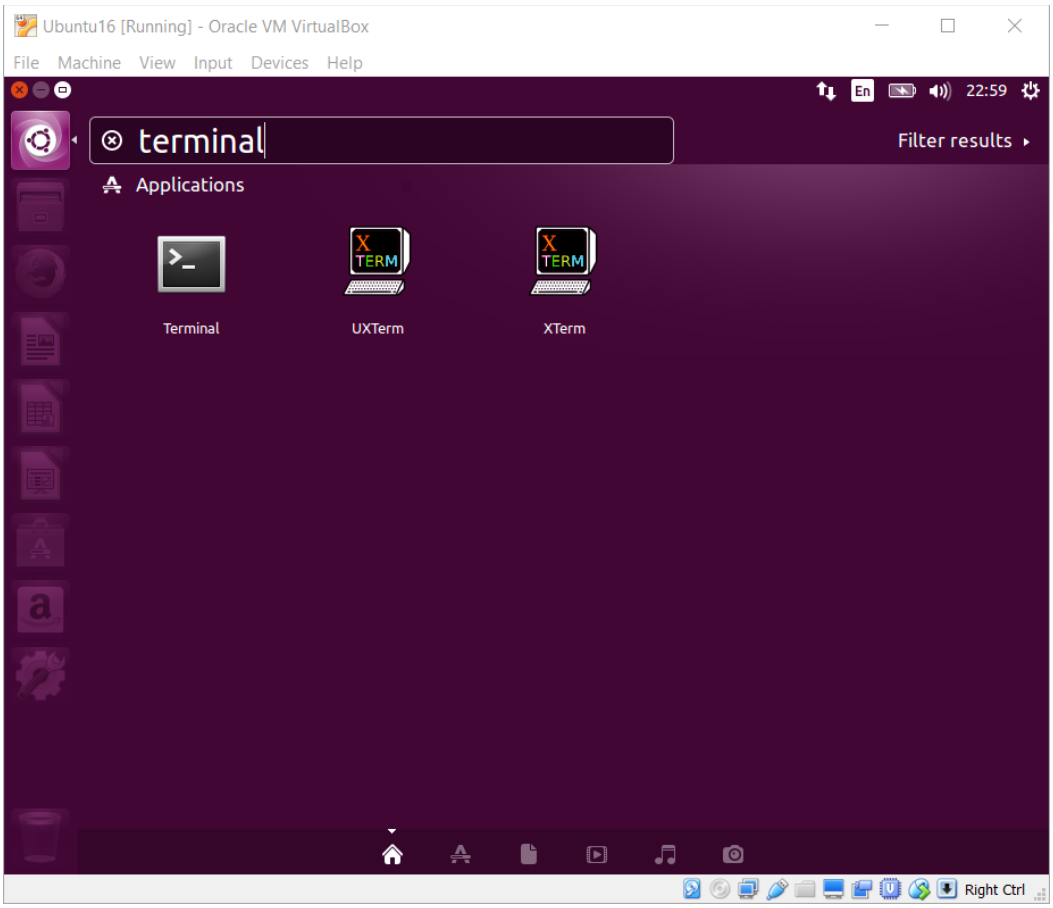
Wait some time until instalation complete. Then restart the virtual machine by click to “Restart Now”



That it. You already complete install Ubuntu inside virtual box.

Terminal intro

To open the ternimal, click to home button and typing in “Terminal”, then select Terminal



Command	Meaning
date	show up current date time
cal	show up calendar
man	show up command document
clear	clearn up the terminal
history	show up command history

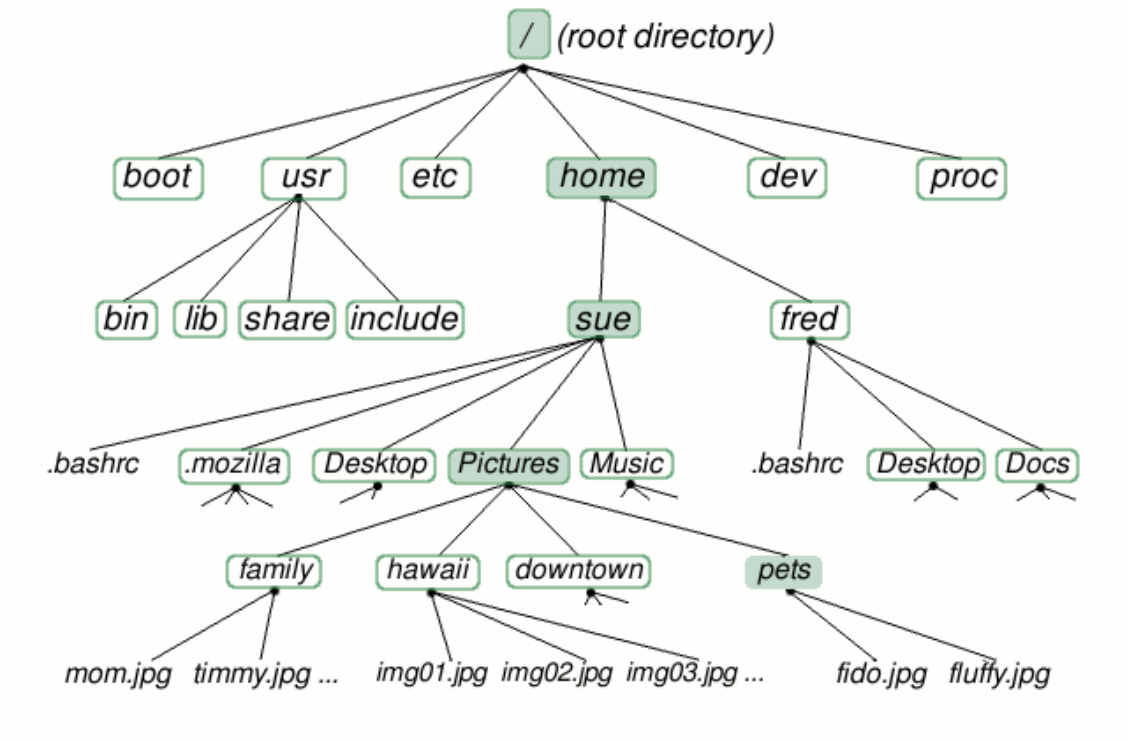
Navigation & Exploration

File system structure

Following image demonstrate file system structure like a tree. File structure start with root directory (/) then branch to difference folder for difference purpose.

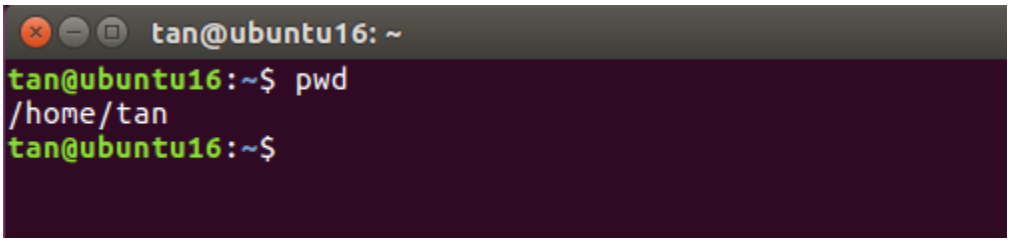
- boot : contain file need for boot up process
- home : contain user data

- etc : contain configuration filesu
- In each folder contain 2 hiden folders (. link to current directory and .. link to it's parent)



Print current directory with "pwd"

In order to know currently where you are, pwd is a useful command, it print out full part of current directory.



Changing current working directory with "cd"

Command	Explain
pwd	Print current working directory
cd /	Go to root directory
cd ~ or **cd**	Got to home directory
cd ..	Go to parent directory or go up one level

Notes:

- When you are on bash, you are always some where inside file system, and it call “current working directory”

- Absolute path

An absolute path is defined as the specifying the location of a file or directory from the root directory(/). In other words we can say absolute path is a complete path from start of actual filesystem from / directory.

- Relative path

Relative path is defined as path related to the present working directory(pwd). Suppose I am located in /var/log and I want to change directory to /var/log/kernel. I can use relative path concept to change directory to kernel with command : cd kernel

List directory content with “ls”

Command	Meaning
ls -a	Show all including hiden file and folder (a mean all)
ls -l	Show items with long list format (l mean long). Sorted items by name
ls -t	Show items with sorted by last modified (t mean time)
ls -S	Show items with sort by size (S mean size)
ls -R	List file recusively
ls -r	Show items in reverted order (r mean revert)
ls -h	Show items witch readable by human (h mean human)

Note:

- Every folder contain 2 hiden folders (. current directory) and (.. parent)
- File start with “-”, folder start with “d”

Auto completion

- Using “tab” to auto complete file or folder name
- Using “tab” key twice will open up suggesion
- Using “up key” or “down key” to call command which already run in history

Practice

- Let's start by getting familiar with moving around. Use the commands cd and ls to explore what directories are on your system and what's in them. Make sure you use a variety of relative and absolute paths. Some interesting places to look at are:

    - /etc - Stores config files for the system.
    - /var/log - Stores log files for various system programs.
    - /bin - The location of several commonly used programs
    - /usr/bin - Another location for programs on the system.

- Now go to your home directory using different methods.

File Administration

Create directories with “mkdir”

Command	Meaning
mkdir newdir	Create a new directory with name newdir
mkdir newdir1 newdir2 newdir3	Create multiple directory at once
mkdir newdir{1..5}	Create 5 directory at a time
mkdir -p newdir4/newdir5/newdir6	Auto create parent directory newdir1 and newdir2 if it is not yet exist (p mean parent)

Copy files and directories with “cp”

Command	Meaning
cp image.jpg newimage.jpg	Copy a file and give a new name for it
cp image.jpg folder/	Copy a file to a folder
cp image.jpg folder/newimage.jpg	Copy a file to a folder with new name
cp *.txt folder/	Copy all txt file to a folder
cp -R folder newfolder	Copy whole folder to a new folder
cp -u	Copy at update mode, only do copy action if souce file is newer or destination file do not exist
cp -v	Show up in the terminal what happen

Move and rename files and directories with “mv”

Command	Meaning
mv file1 file2	Rename file1 become file2
mv file folder	Move file to a folder
mv folder1 folder2	Move folder 1 in to folder 2

Remove files and directories with “rm”

Command	Meaning
rm file	Remove file
rm *.txt	Remove all file with extention is txt
rm -r folder	Remove folder

Find with “find”

Command	Meaning
find directory **-name** file_name	Search file by name inside directory
find directory **-name** file_name **-delete**	Search file by name inside directory and then delete if found
find directory **-name** directory_name **-type d**	Search directory by name inside directory
find directory **-mtime** +1	Search all file inside directory which is modified > 1 day.

Find with “locate

Command	Meaning
locate test.txt	Locate path which contain “test.txt” in entire file system.
locate -c test.txt	Show up counting of result, not the absolute path.
locate -l 1 test.txt	Limit the output, only show one result
sudo updatedb	Update db to include all current change in file system.

Wildcards

Wild cards is a fast and powerful way to select multiple file at onece. Here is the basic set of wildcards:

- * - represents zero or more characters
- ? - represents a single character
- [] - represents a range of characters

Follow are some common wildcard partern used.

Command	Meaning
*	All files
g*	All file beginning with g
b*.txt	Any file begining with “b” and ending with “.txt”

Practice

1. Create a directory testdir in your home directory.
2. Change to the /etc directory, stay here and create a directory newdir in your home directory.
3. Create in one command the directories ~/dir1/dir2/dir3 (dir3 is a subdirectory from dir2, and dir2 is a subdirectory from dir1).
4. Remove the directory testdir.

File Content

View file content with “cat, head, tail”

Command	Meaning
cat filename	View full content of one file
cat filename1 filename2	View full content of two file
head filename	Show first 10 lines of file
head -n 5 filename	Show first 5 lines of file
tail filename	Show last 10 lines of file
tail -n 5 filename	Show last 5 lines of file

View file content with “less”

Using less command allow us to navigate and search inside document.

Command	Meaning
Down key	Go down 1 line a time
Up key	Go up 1 line a time
Space	Go down 1 page a time
b	Go up page by page
g	Go to top of file
G (Capital G)	Go to end of file
/text	Search for text inside document and from top to bottom
?text	Search for text inside document and from bottom to top
q	Quit the less command

Create empty file with “touch”

Command	Meaning
touch file1 file2 file3	Create 3 empty files if these files not yet exist. If file1, file2, file3 already exist, touch command will update the file timestamp.
touch name_{1..1000}	Create 1000 files at a time.

Edit file with “nano”

Command	Meaning
nano filename	Create and start edit a file
Ctrl + x	Exit nano
Ctrl + o	Save file
Ctrl + w	Search for text
Ctrl + k	Cut currently line
Ctrl + u	Paste a line

Search file content with “grep”

Command	Meaning

grep “this” demo_file	Search “this” string in demo_file
grep “this” demo*	Search “this” in all file which start with “demo”
grep -i “the” demo_file	Ignore case sensitive, match both “the” and “The”
grep -w “is” demo_file	Search for full word only
grep “lines*”	Match regular expression, return all line which contain string “lines”

Demo file content

```
THIS LINE IS THE 1ST UPPER CASE LINE IN THIS FILE.
this line is the 1st lower case line in this file.
This Line Has All Its First Character Of The Word With Upper Case.

Two lines above this line is empty.
And this is the last line.
```

Process

Command	Meaning
top	View the process in real time. What kind of process consume most of resource (CPU, RAM)
ps -ef | grep “firefox”	View all process running, combine with grep to search for process pid. This example search for firefox pid
kill pid	Kill process based on pid

Network

Command	Meaning
ifconfig	Check network information, get ip address
ping google.com	Check if google a live
wget link_to_file	Download a file from internet