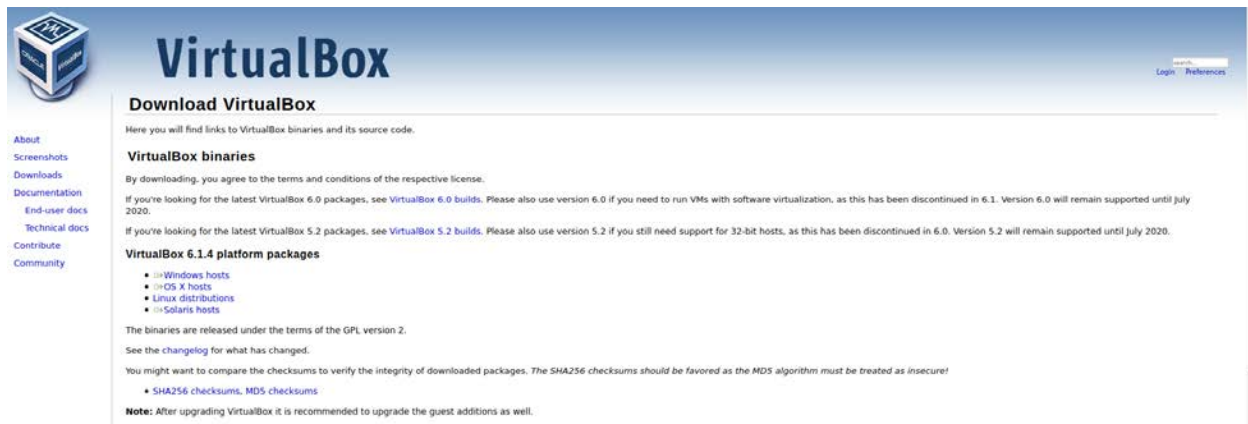


EE4204 / EE4204E/TEE4204 Computer Networks I (Part 1)
Socket Programming Assignment
Lab Course Material: Installation of Ubuntu on Oracle VirtualBox
Lecturer : Assoc. Prof. Mohan Gurusamy, elegm@nus.edu.sg
Graduate Assistant: Amogh amogh@u.nus.edu

Download oracle virtual box and ubuntu OS

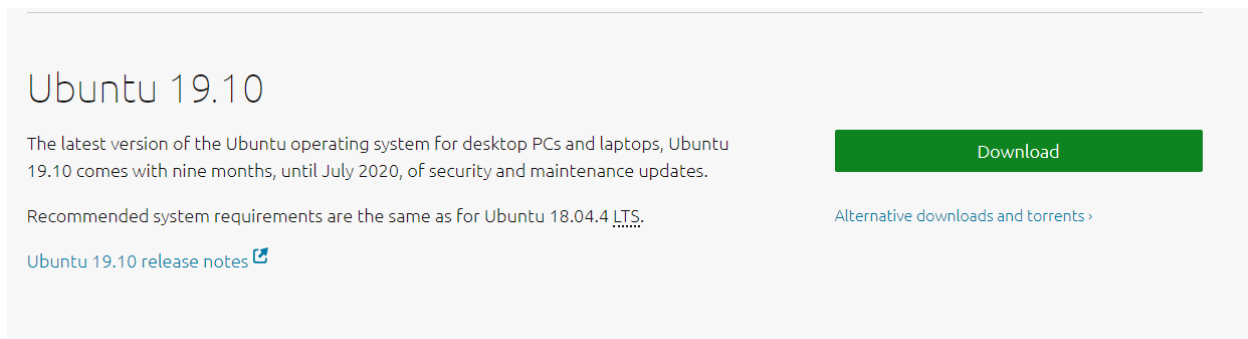
Oracle VirtualBox

- 1) Go to <https://www.virtualbox.org/wiki/Downloads>
- 2) Download [VirtualBox](#) latest version (currently 6.1.4) platform packages for Windows or OS X (MAC users)
- 3) Run the executable file. Continue with the installation of VirtualBox with the defaults. This will open VirtualBox at the end of the installation.



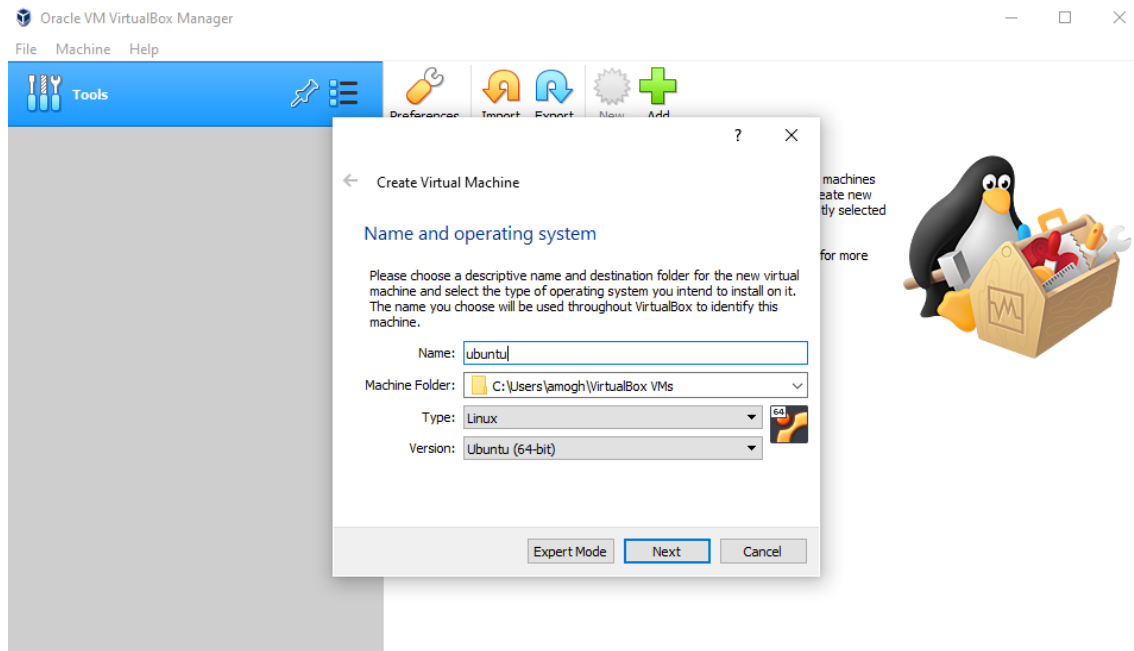
Ubuntu Desktop

Download the latest version of Ubuntu from <https://ubuntu.com/download/desktop>

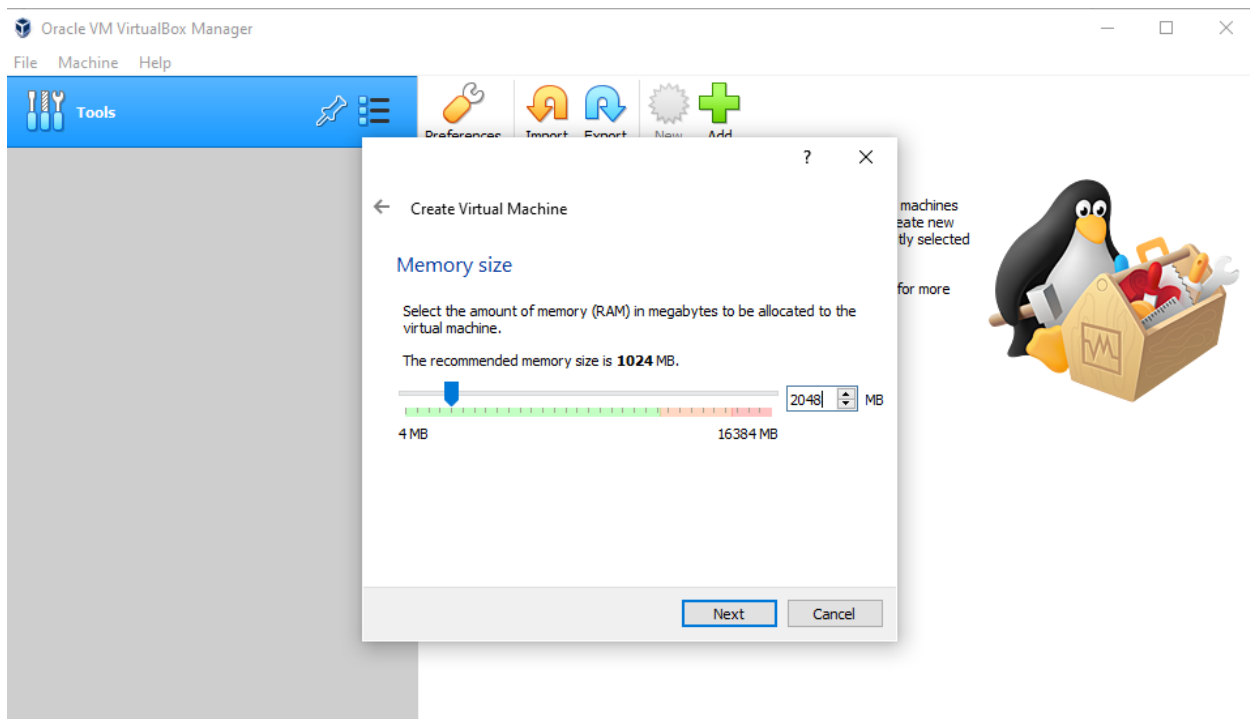


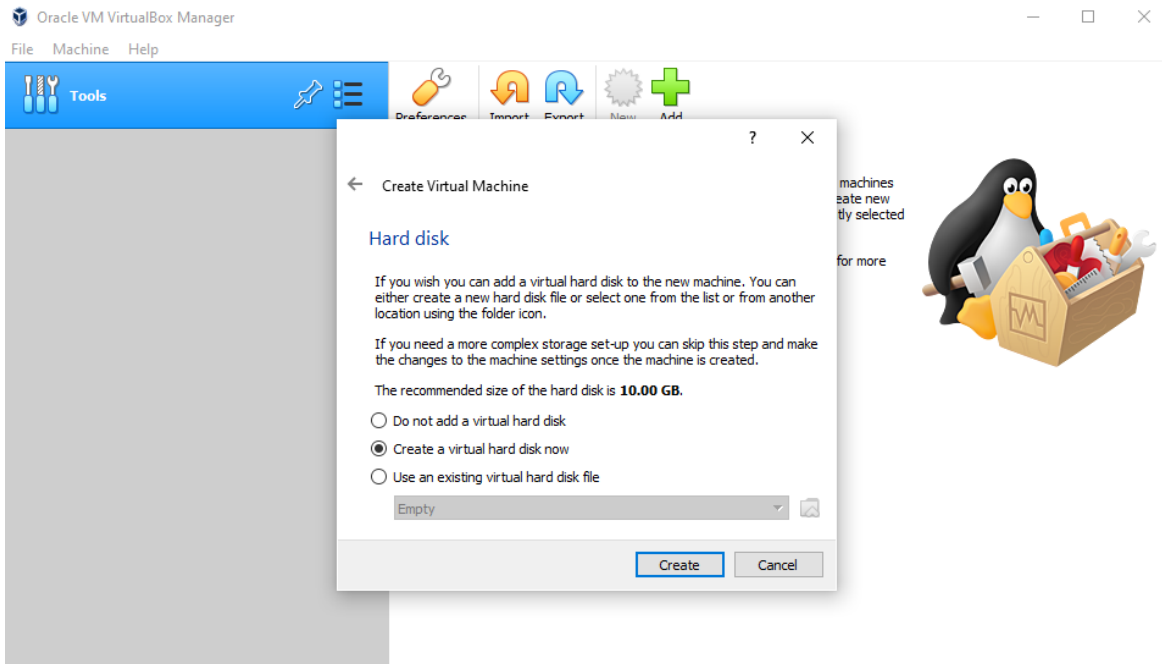
Installation screenshots

Open Oracle VirtualBox

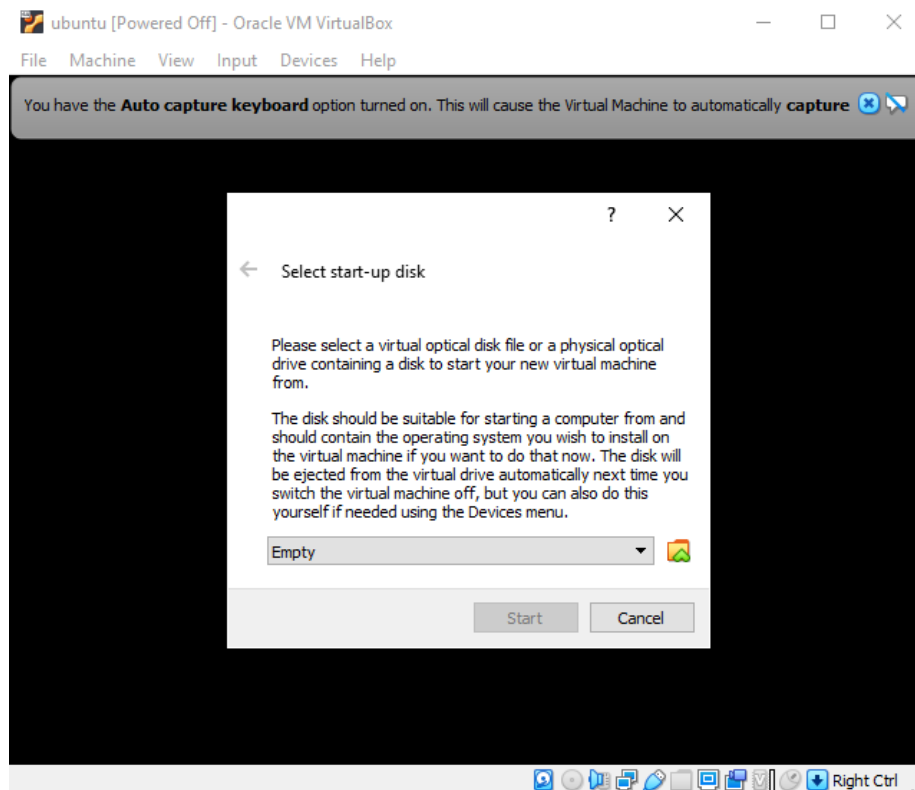


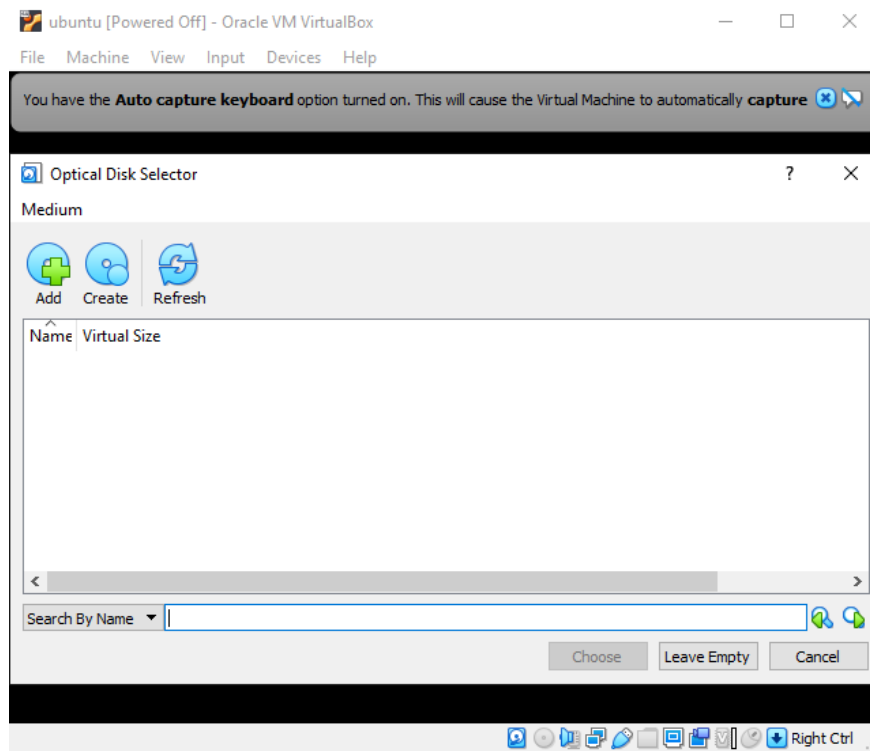
Keep memory around 4GB ~ 4096 (recommended)



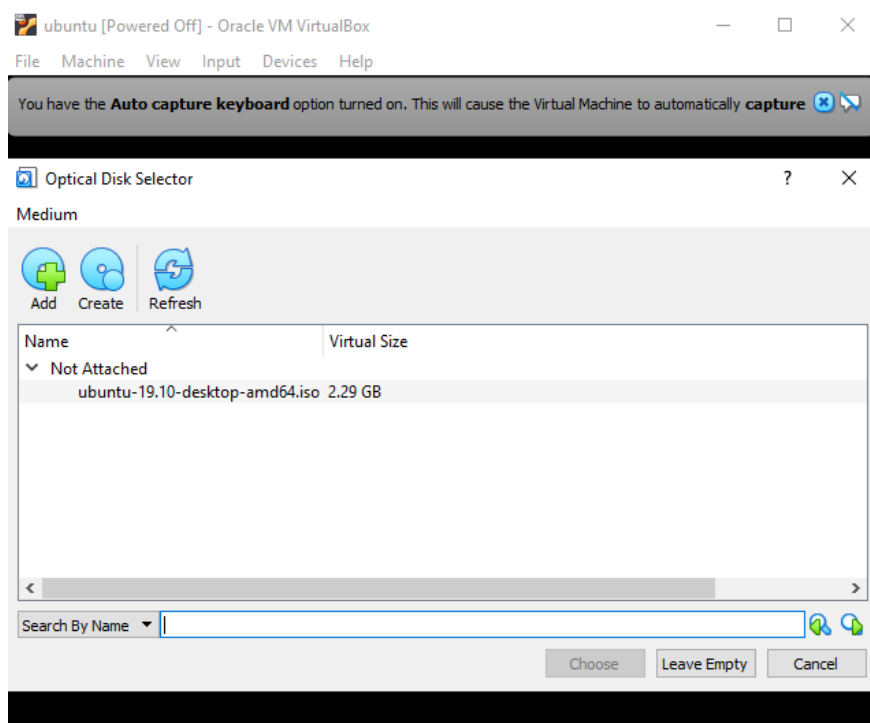


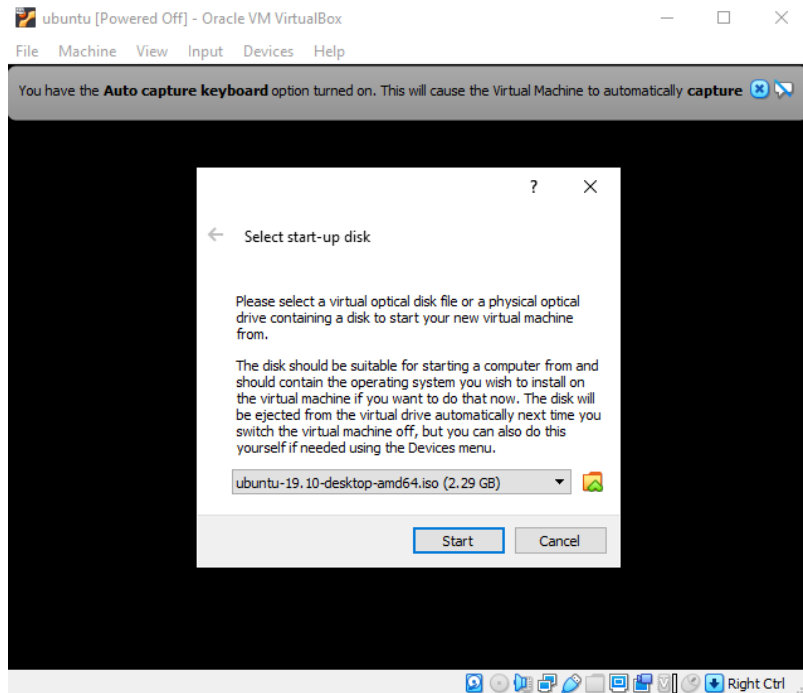
Select the ubuntu image



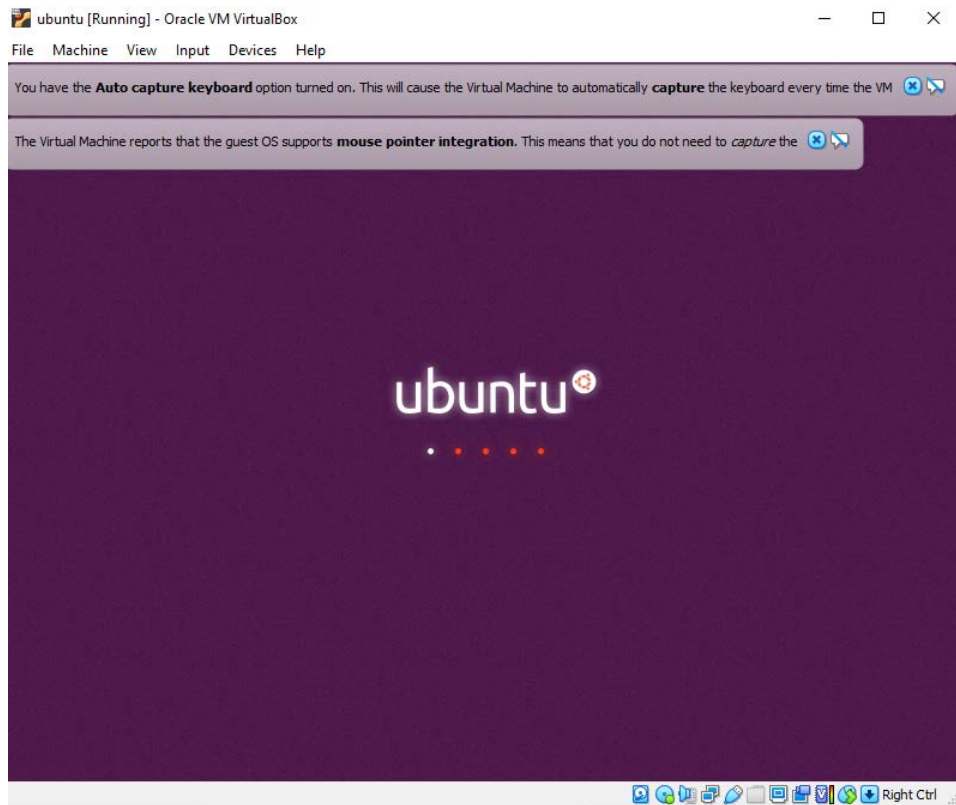


Click add and Choose the ubuntu .iso image downloaded

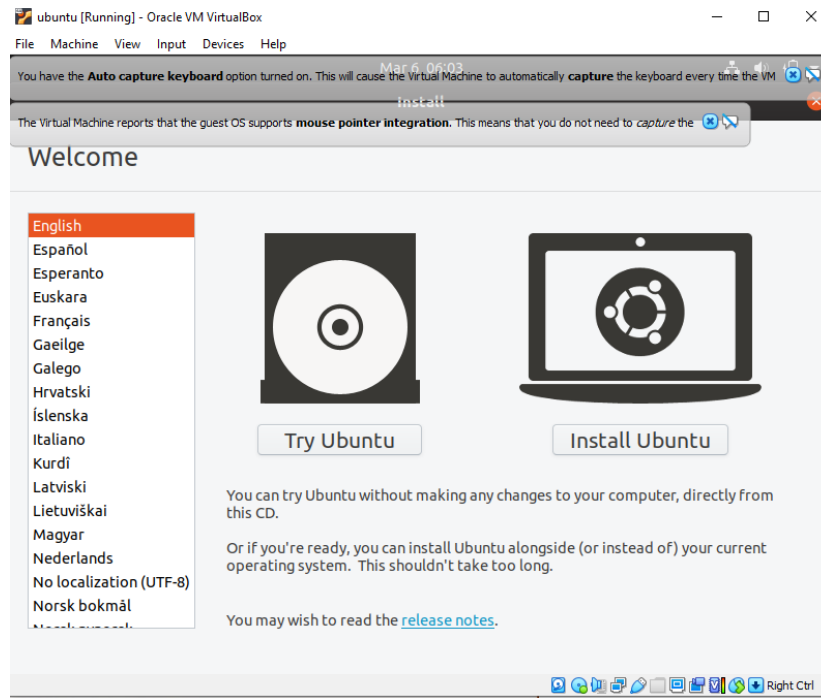




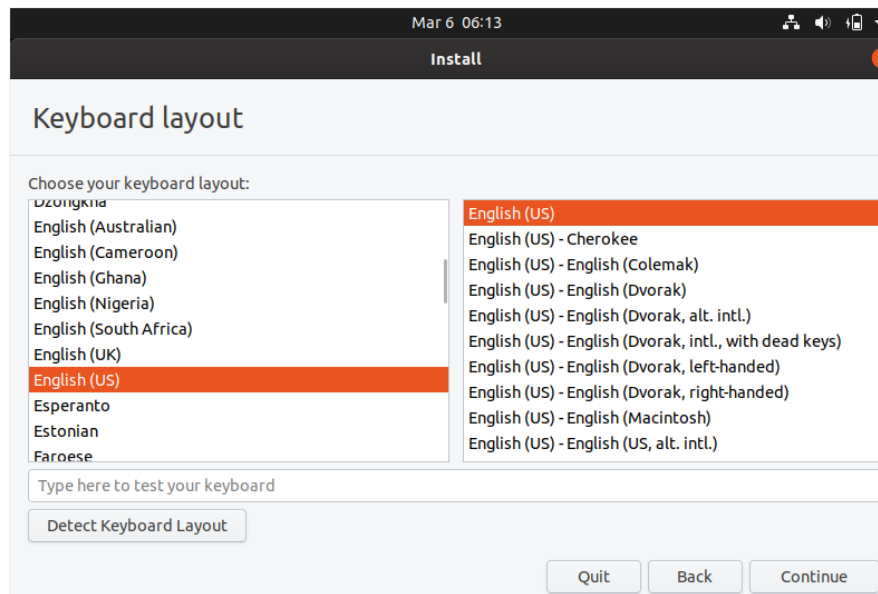
Click start installation of ubuntu starts form there



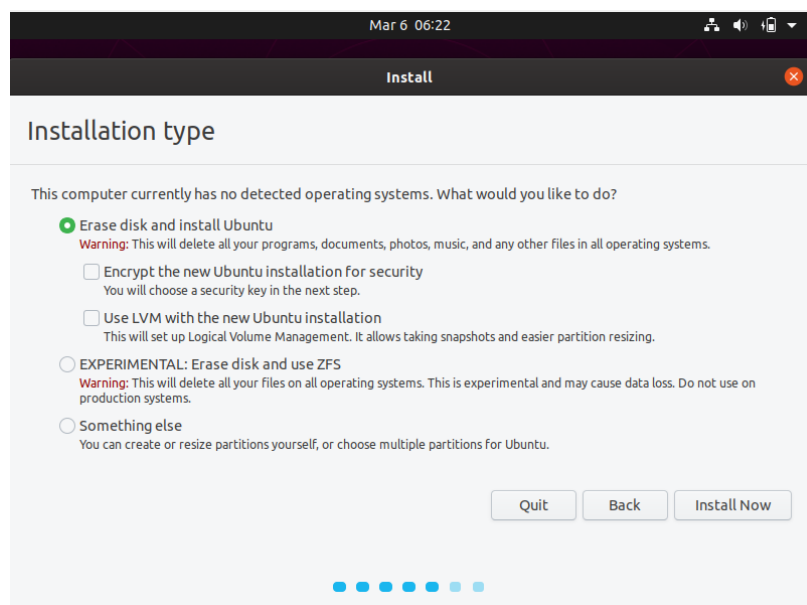
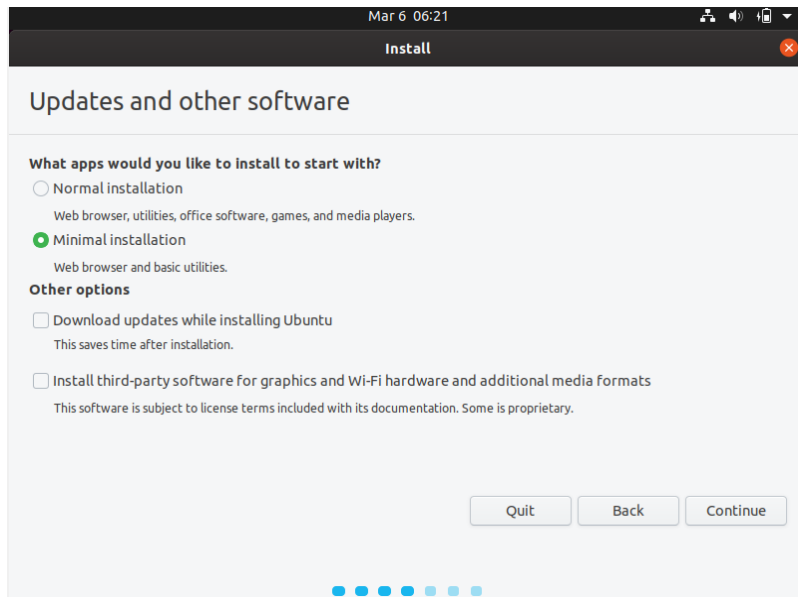
Choose install ubuntu

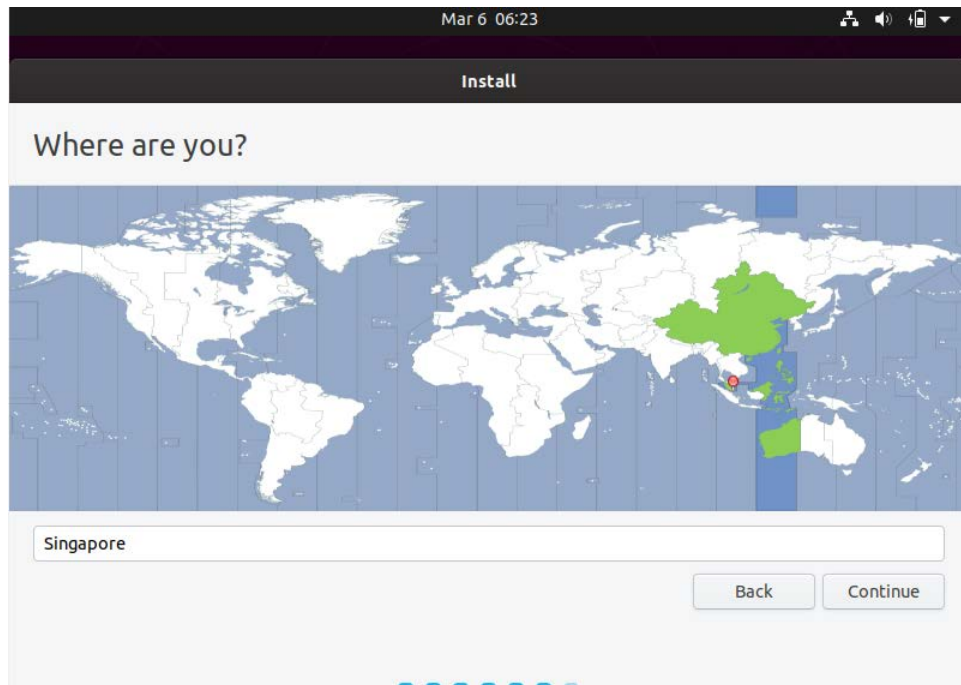


Use default keyboard settings

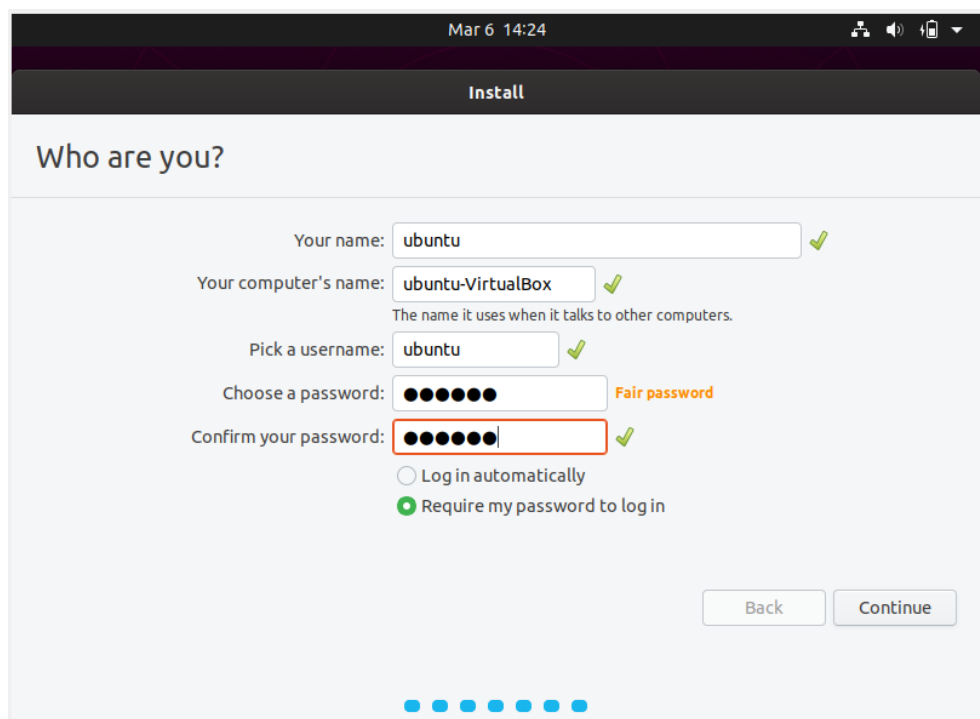


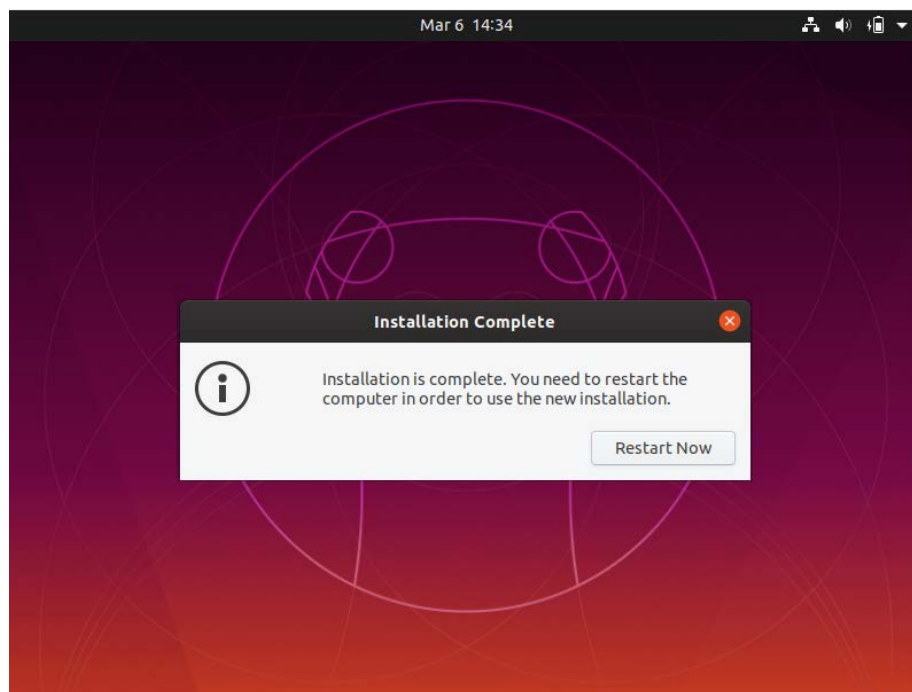
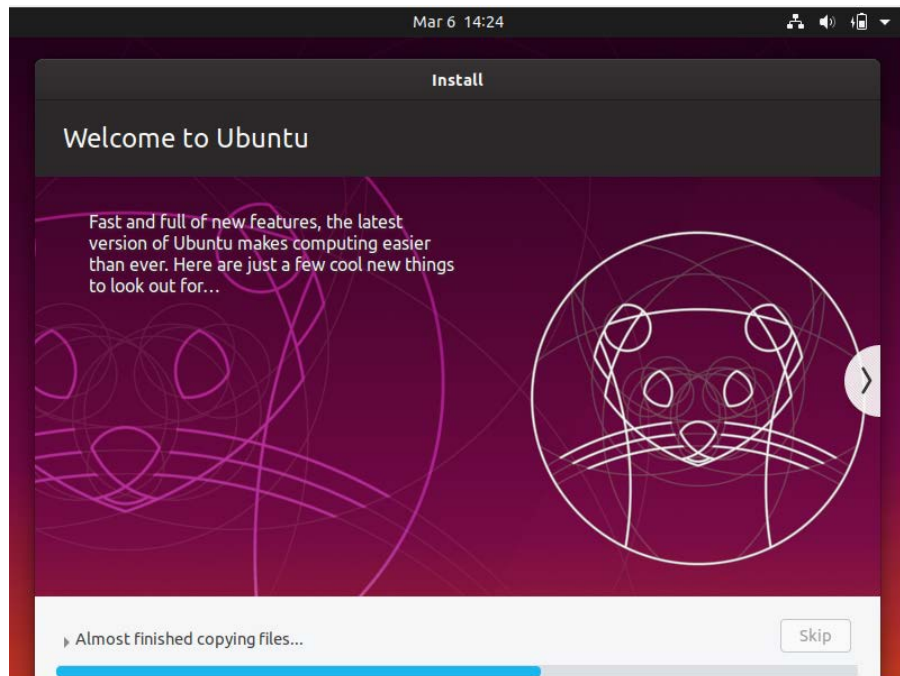
Choose minimal installation, We don't need any other default ubuntu softwares





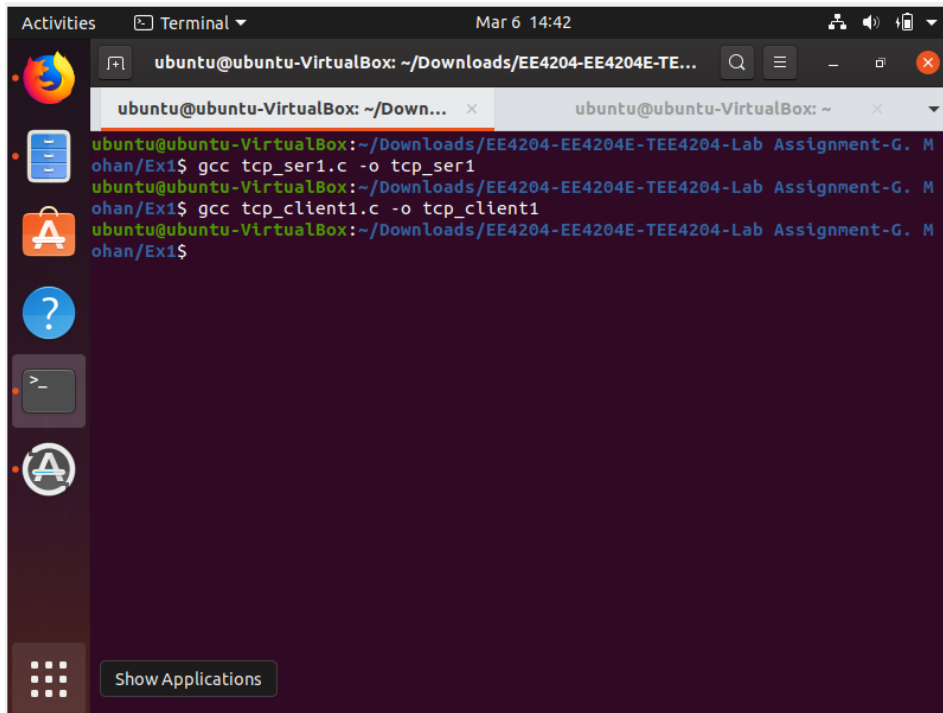
Pick a username and password





Done with the installation of ubuntu in oracle virtual box

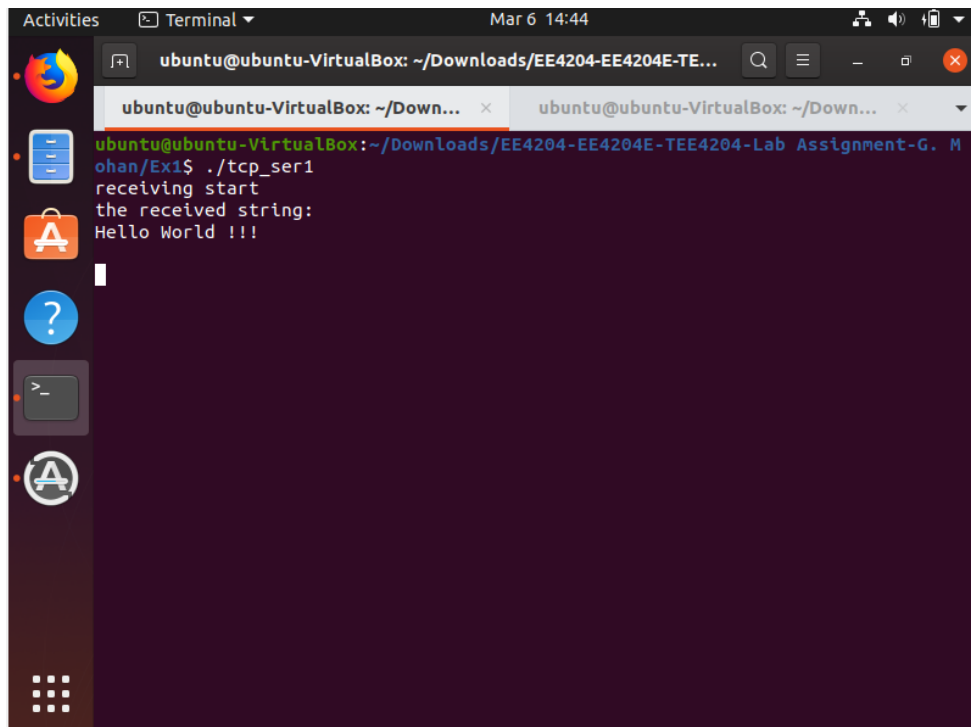
Open the terminal and compile the both client and server programs



A terminal window titled 'Terminal' with a date and time of 'Mar 6 14:42'. The window shows the user 'ubuntu@ubuntu-VirtualBox' in the directory '~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1'. The user has executed two commands: 'gcc tcp_ser1.c -o tcp_ser1' and 'gcc tcp_client1.c -o tcp_client1'. The terminal output shows the compilation process for both files, with the second command being partially visible.

```
ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1$ gcc tcp_ser1.c -o tcp_ser1
ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1$ gcc tcp_client1.c -o tcp_client1
ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1$
```

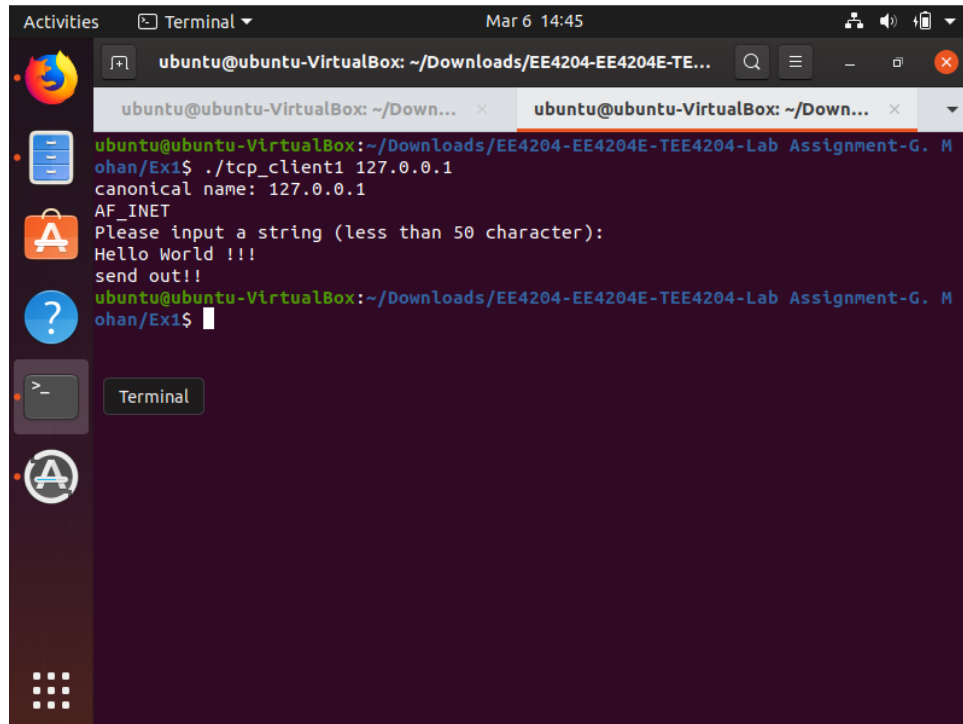
Run the server in Terminal 1



A terminal window titled 'Terminal' with a date and time of 'Mar 6 14:44'. The window shows the user 'ubuntu@ubuntu-VirtualBox' in the directory '~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1'. The user has executed the command './tcp_ser1', which has resulted in the output: 'receiving start', 'the received string:', and 'Hello World !!!'. The terminal cursor is positioned at the end of the last line of output.

```
ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M ohan/Ex1$ ./tcp_ser1
receiving start
the received string:
Hello World !!!
```

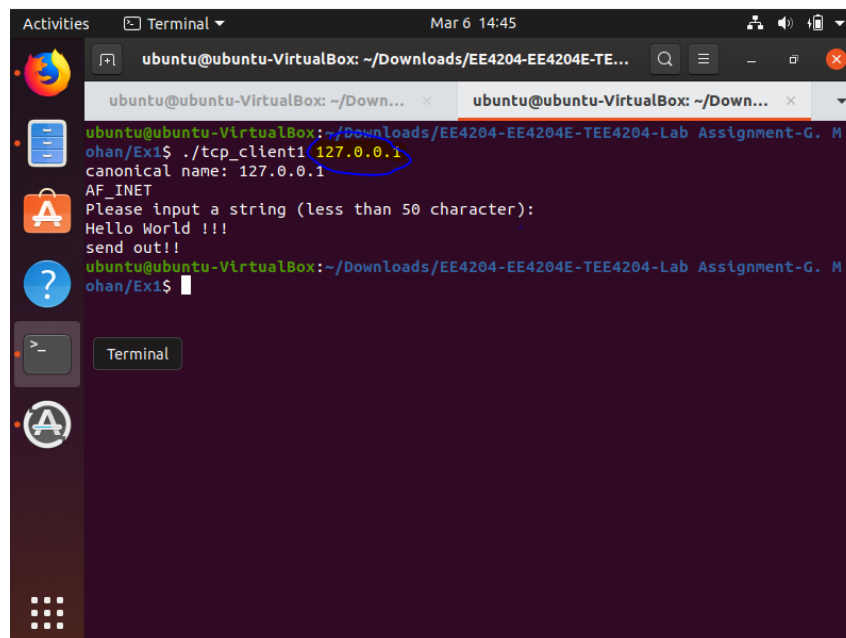
Run the client in another terminal with an argument as server ip (127.0.0.1) in Terminal 2



A terminal window titled 'Terminal' with a date and time of 'Mar 6 14:45'. The prompt is 'ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M'. The user has entered the command './tcp_client1 127.0.0.1'. The output shows 'canonical name: 127.0.0.1', 'AF_INET', and a prompt 'Please input a string (less than 50 character):'. The user has entered 'Hello World !!!', and the program has responded with 'send out!!'. The prompt is now 'ohans/Ex1\$'.

Please note as we are running both client and server in the same machine.

The IP address **127.0.0.1** a special-purpose IPv4 address called **localhost** or **loopback** address is used as servers IP



A terminal window titled 'Terminal' with a date and time of 'Mar 6 14:45'. The prompt is 'ubuntu@ubuntu-VirtualBox: ~/Downloads/EE4204-EE4204E-TEE4204-Lab Assignment-G. M'. The user has entered the command './tcp_client1 127.0.0.1'. The output shows 'canonical name: 127.0.0.1', 'AF_INET', and a prompt 'Please input a string (less than 50 character):'. The user has entered 'Hello World !!!', and the program has responded with 'send out!!'. The prompt is now 'ohans/Ex1\$'. The IP address '127.0.0.1' in the command line is circled in blue.

References

1. <https://itsfoss.com/install-linux-in-virtualbox/>
2. <https://www.youtube.com/watch?v=vBSSGmZU7Bc> [video]
3. <https://www.virtualbox.org/>
4. <https://ubuntu.com/download/desktop>