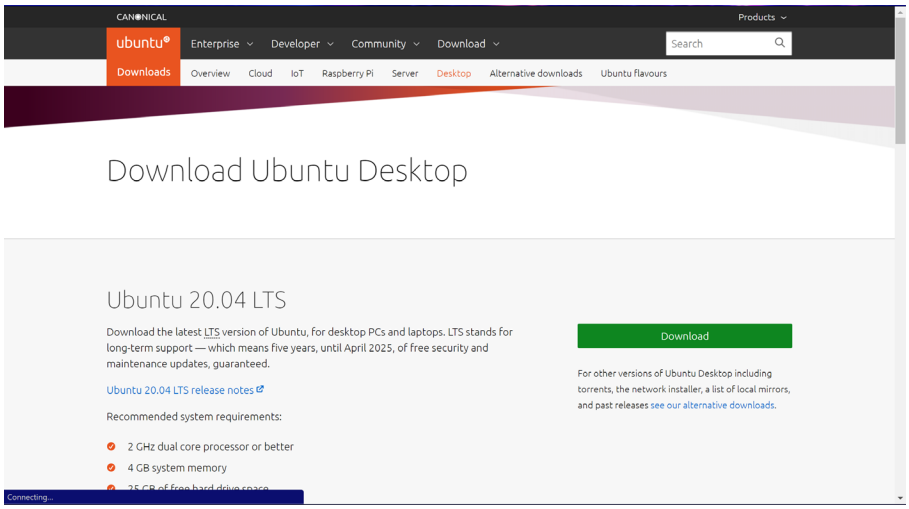
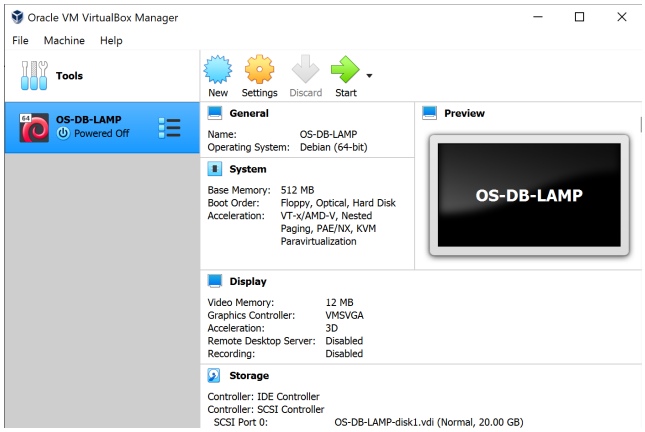
1- Install the virtual box through the VirtualBox downloads page.

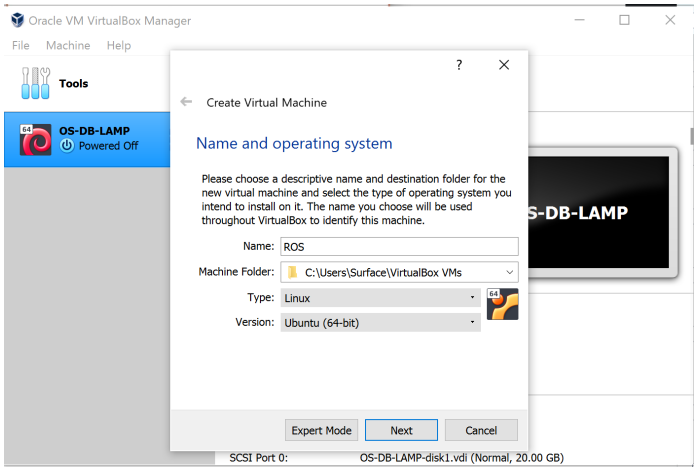
2- Install Ubuntu. A file with iso extension will be downloaded.



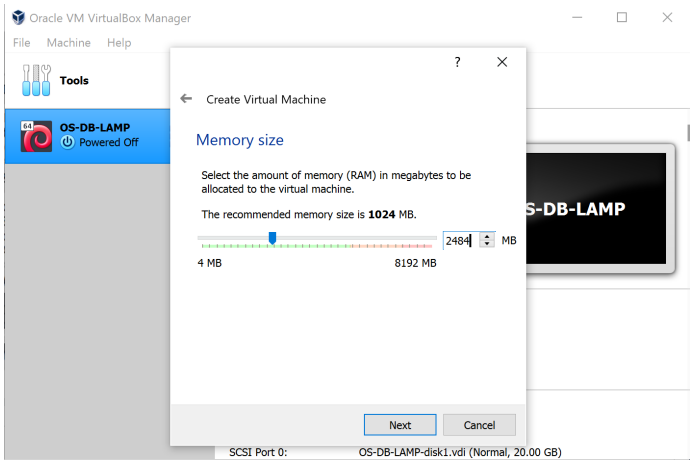
3- In the virtual box, click on New.



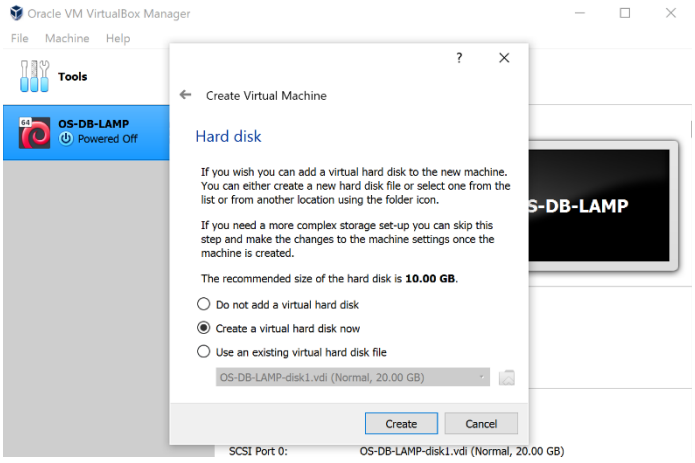
4- Enter the name you want for the virtual OS that you want. Select Linux in the type and Ubuntu (64 bit) in the version. Click on Next.



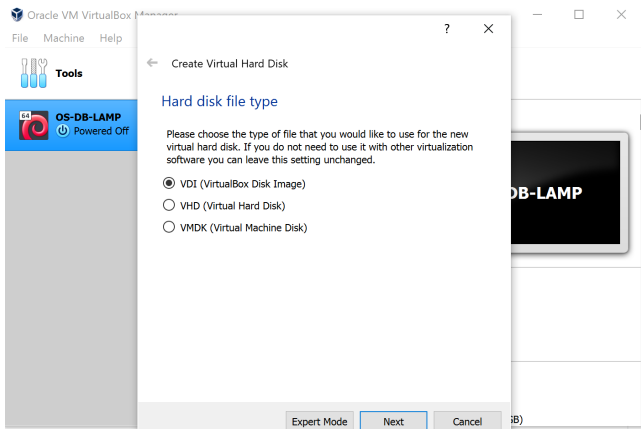
5- Allocate the RAM for Ubunto OS. For example, 2484 MB. Click on next.



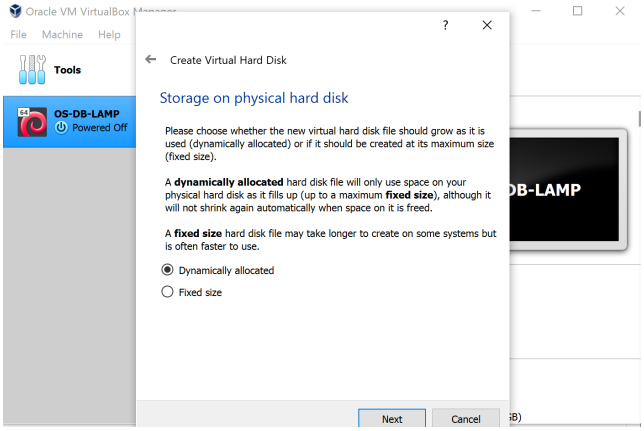
6- Choose to create virtual hard disk now, and click on “create”.



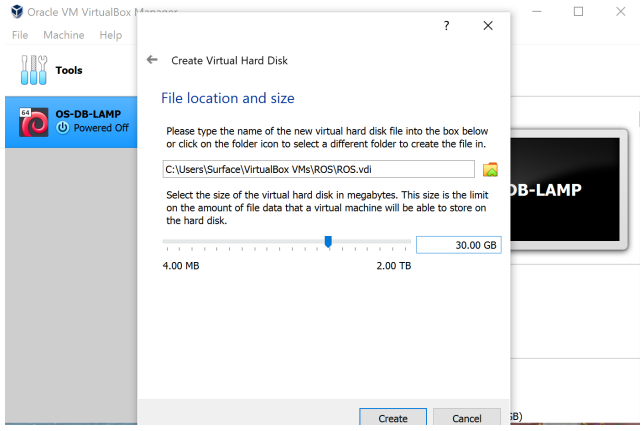
7- We will choose the hard disk file type as the *VDI*. Click on Next.



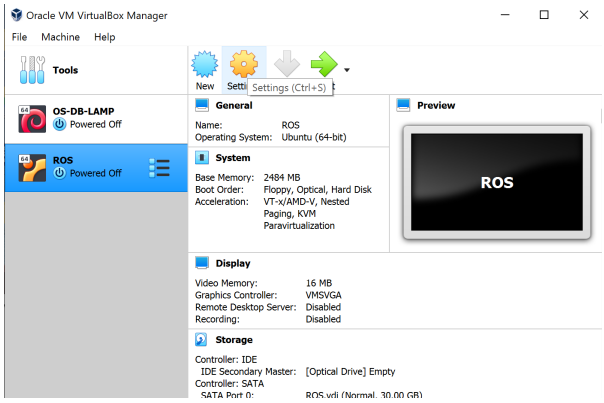
8- Choose *dynamically allocated* option.



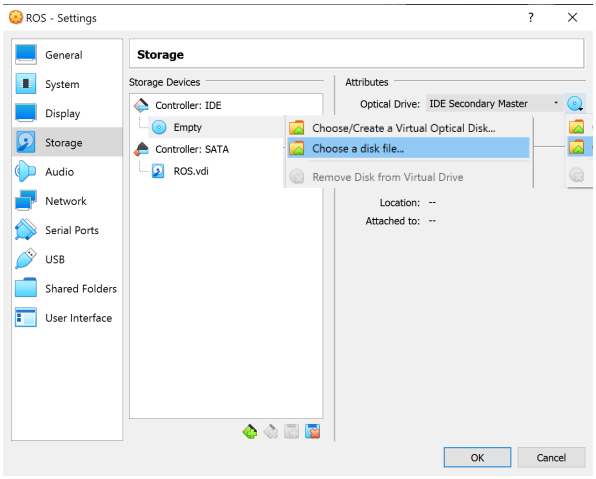
9- Enter the size of the virtual hard disk, for example 30 GB.



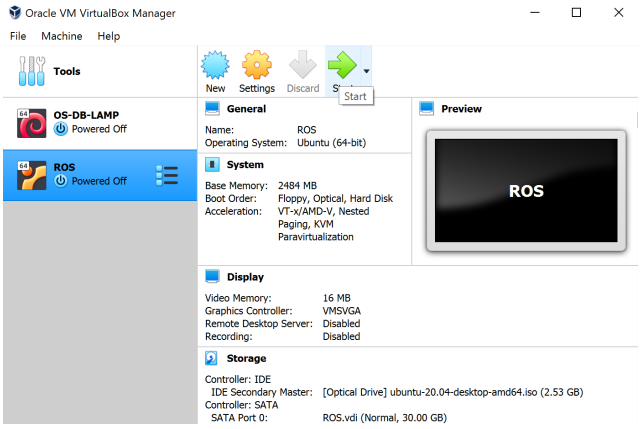
10-Now, we should select the Ubunto iso file that we downloaded, click on the settings icon.



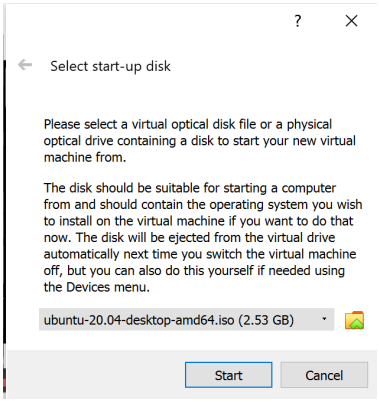
11-Go to the storage tab, make sure to select empty under Controller IDE. In the Optical Device attribute box, click on the disk icon and choose a disk file. A file explorer window will be displayed. Select the iso file of Ubuntu.



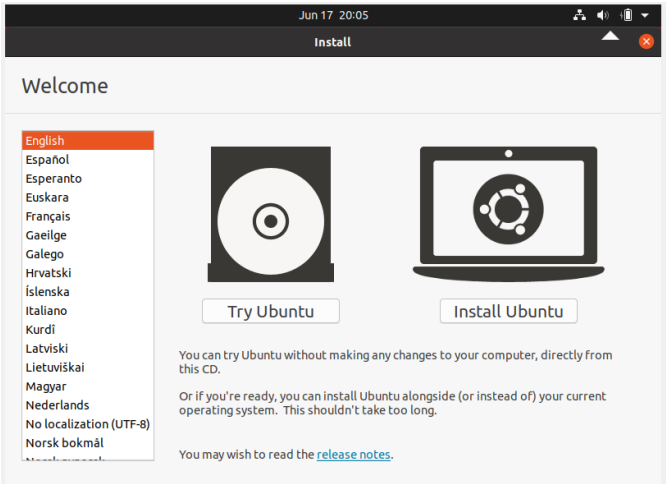
12-Now, we can boot up by clicking the Start icon



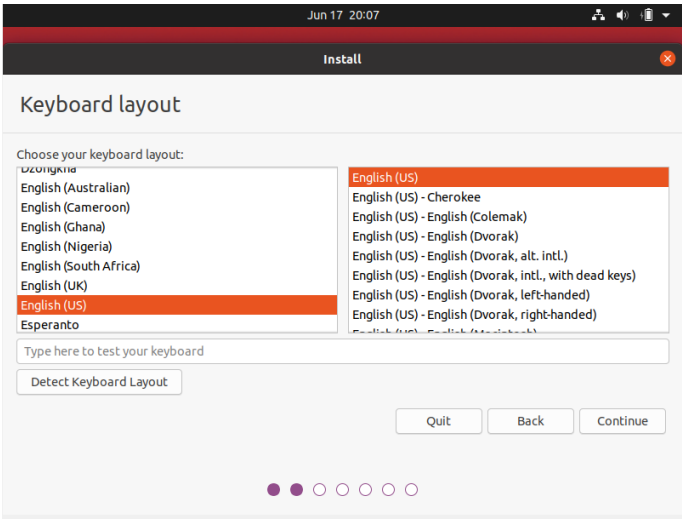
13-Click Start button.



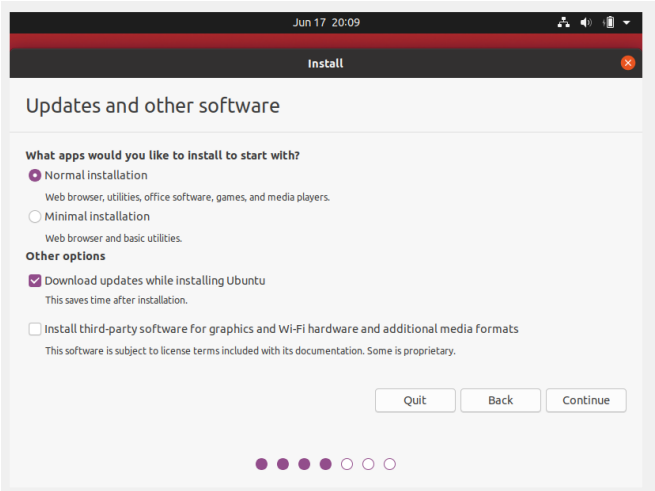
14-Once the boot up ends, click install ubontu.



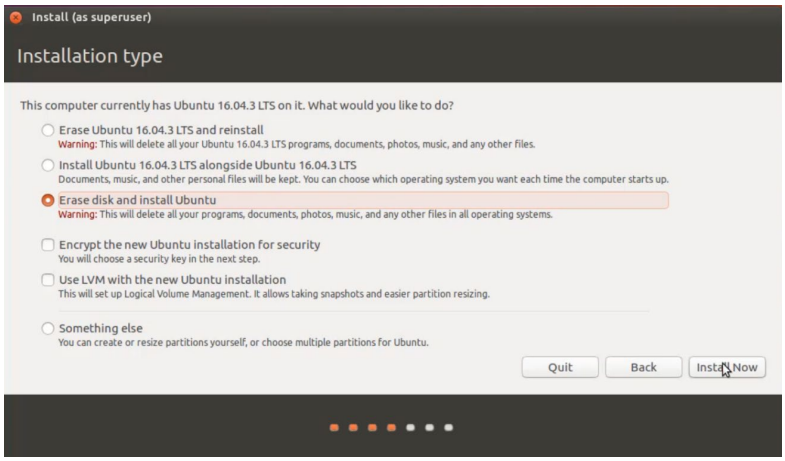
15-Select a language and click Continue.



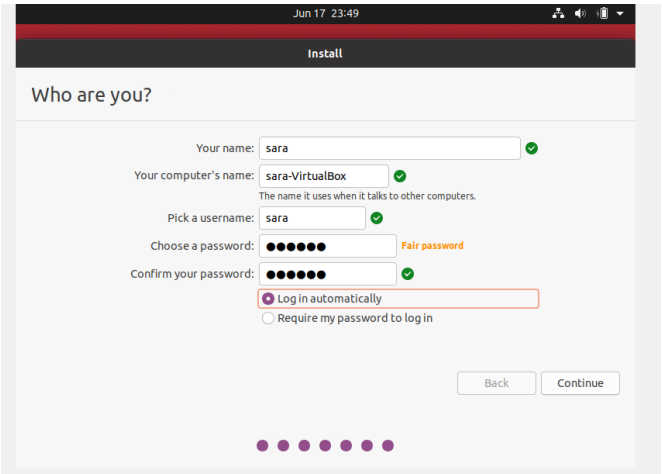
16-Select normal installation and Click continue.



17-Choose *Erase disk and install Ubunto* option. Click on *Install Now*.



18-Fill the boxes and click on *Continue*.

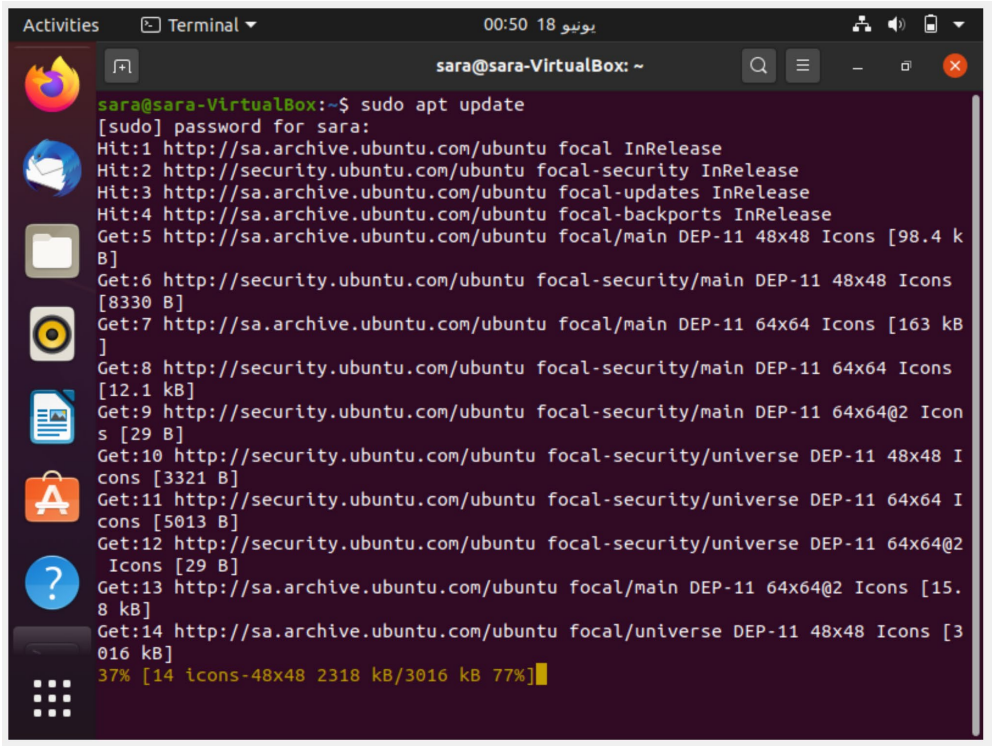


19-The installation will start. Once it finishes, Click on Restart Now.

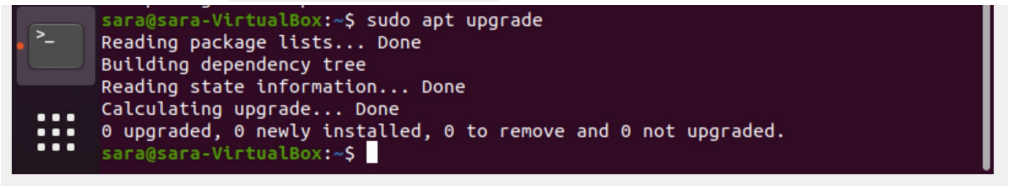
Installing ROS

1- Open the terminal

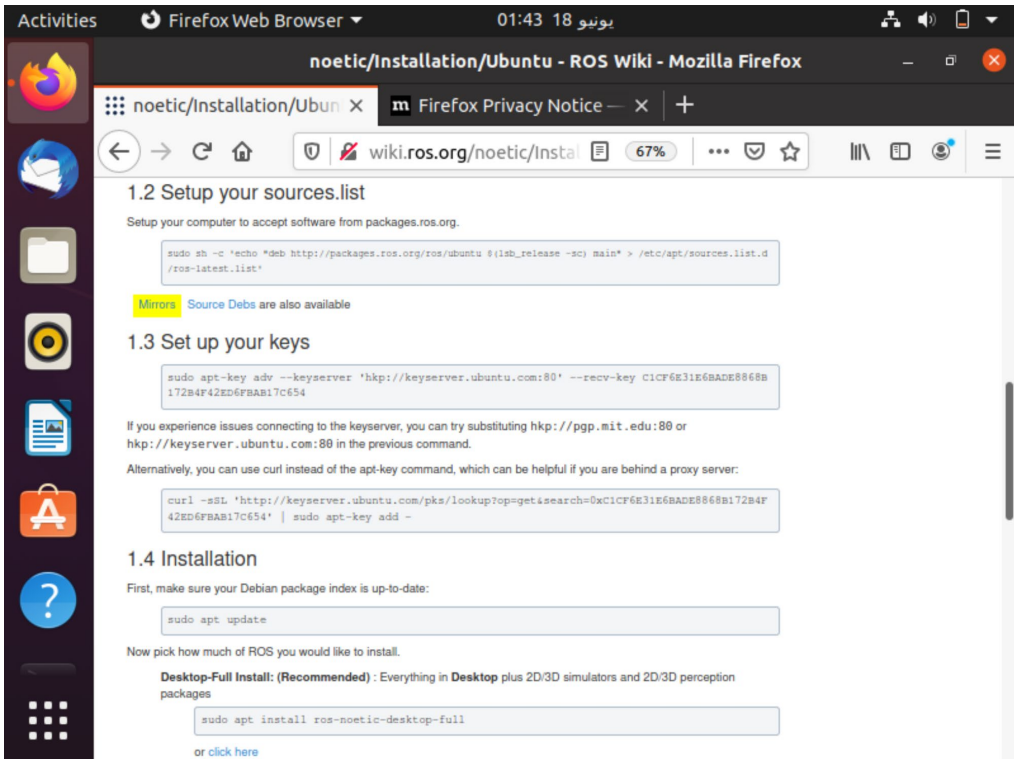
2- Type the statement *sudo apt update*.

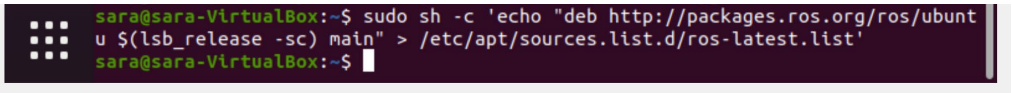


3- Type the statement *sudo apt upgrade*.



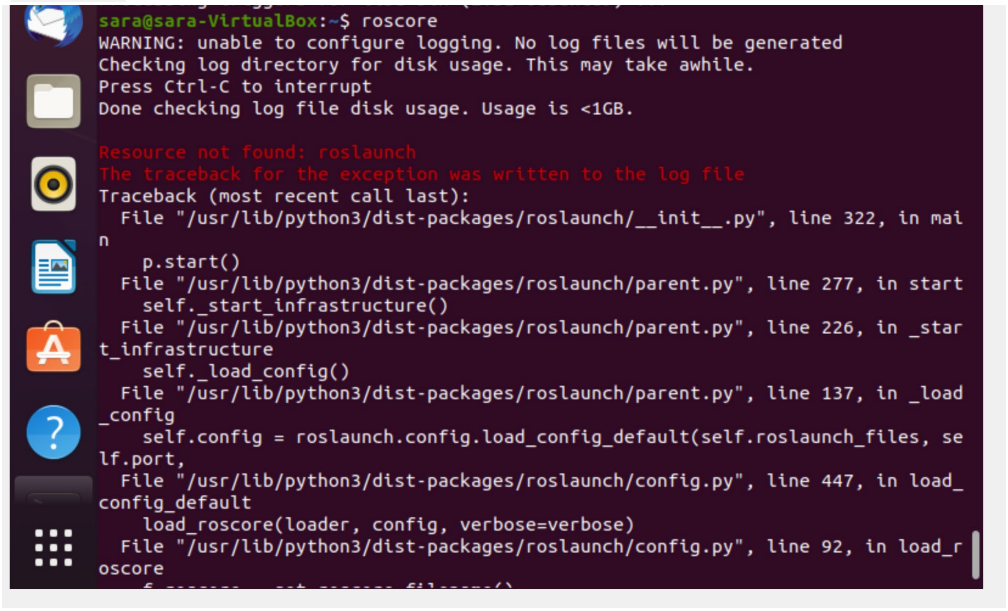
4- Go to any browser, search for ROS installation. You should make sure to choose the right version which is compatible with the Ubuntu that you downloaded. In our case, we go to noetic installation. Copy the line under *Setup your sources.list*. Paste it in the terminal.





5- Do the same with the statement in the next line in the installation page.

6- Type *roscore* to start ROS.

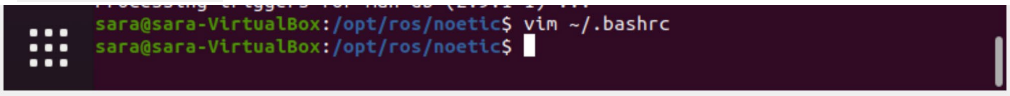


7- Type the following statements to navigate to noetic and setup ROS.

```
cd /opt/ros/
ls
cd noetic/
ls
source setup.bash
roscore
```

8- Press in the keyboard ctrl + C.

9- Type *vim ~/.bashrc*.



10- Add the line *source /opt/ros/noetic/setup.bash* at the end of the file. Now, you are able to enter roscore anytime without problems.

11-Finally, update.