

To install the rose system, we need 3 steps

The first step is to download the virtualBox

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

I chose the Mac version

We install with it the Extension Pack

Step Two: Install Ubuntu on VirtualBox

<https://ubuntu.com/desktop>

I downloaded version 20.4

I opened virtualBox, I clicked on the new button, typed the name ubuntu, the type of system Linux, then clicked next, then specified the size of memory, then clicked on next, chose create virtual hard disk now, then clicked create Choose the virtual machine disk, then the storage we choose the dynamically allocated, then the next and then create and then click on the settings button click on storage go to empty we choose choose a disk file click download choose unbent click ok click start Choose Ubuntu click start Choose the English language install Ubuntu Choose the keyboard language English Click continue install now I filled in the data Name Anfal Password a123a123 Click on continue Wait for the installation to complete and then press restart now It will restart the device and enter Ubuntu immediately after typing the password

Step Three: Install ros on Ubuntu

open terminal Write

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu
$(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
```

```
sudo apt install curl # if you haven't already installed curl
```

```
curl -s  
https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc |  
sudo apt-key add -
```

```
sudo apt-get update
```

```
(((((It takes some time))))))
```

```
sudo apt-get install ros-kinetic-desktop-full
```

```
echo "source /opt/ros/kinetic/setup.bash" >> ~/.bashrc  
source ~/.bashrc
```

```
sudo apt install python-rosdep python-rosinstall python-rosinstall-  
generator python-wstool build-essential
```

```
sudo apt install python-rosdep
```

```
sudo rosdep init
```

```
rosdep update
```

```
roscore
```

The screenshot shows a terminal window titled 'Ubuntu 20.04 [Running]' with a user 'anfal' at a host 'anfal-VirtualBox'. The terminal output shows the following steps and results:

- Adding the 'rolling' distro and updating the cache in `/home/anfal/.ros/rosdep/sources.cache`.
- Running `roscore` and logging to `/home/anfal/.ros/log/e6461204-07a8-11ed-827b-793cad3fc005/roslaunch-anfal-VirtualBox-142600.log`.
- Checking log directory for disk usage, noting it may take a while and usage is <1GB.
- Starting the `roslaunch` server at `http://anfal-VirtualBox:37549/` with `ros_comm` version 1.15.14.
- Summary of parameters:
 - `/rostdistro: noetic`
 - `/rosversion: 1.15.14`
- Nodes being started:
 - `auto-starting new master`
 - `process[master]: started with pid [142608]`
 - `ROS_MASTER_URI=http://anfal-VirtualBox:11311/`
 - `setting /run_id to e6461204-07a8-11ed-827b-793cad3fc005`
 - `process[rosout-1]: started with pid [142618]`
 - `started core service [/rosout]`