

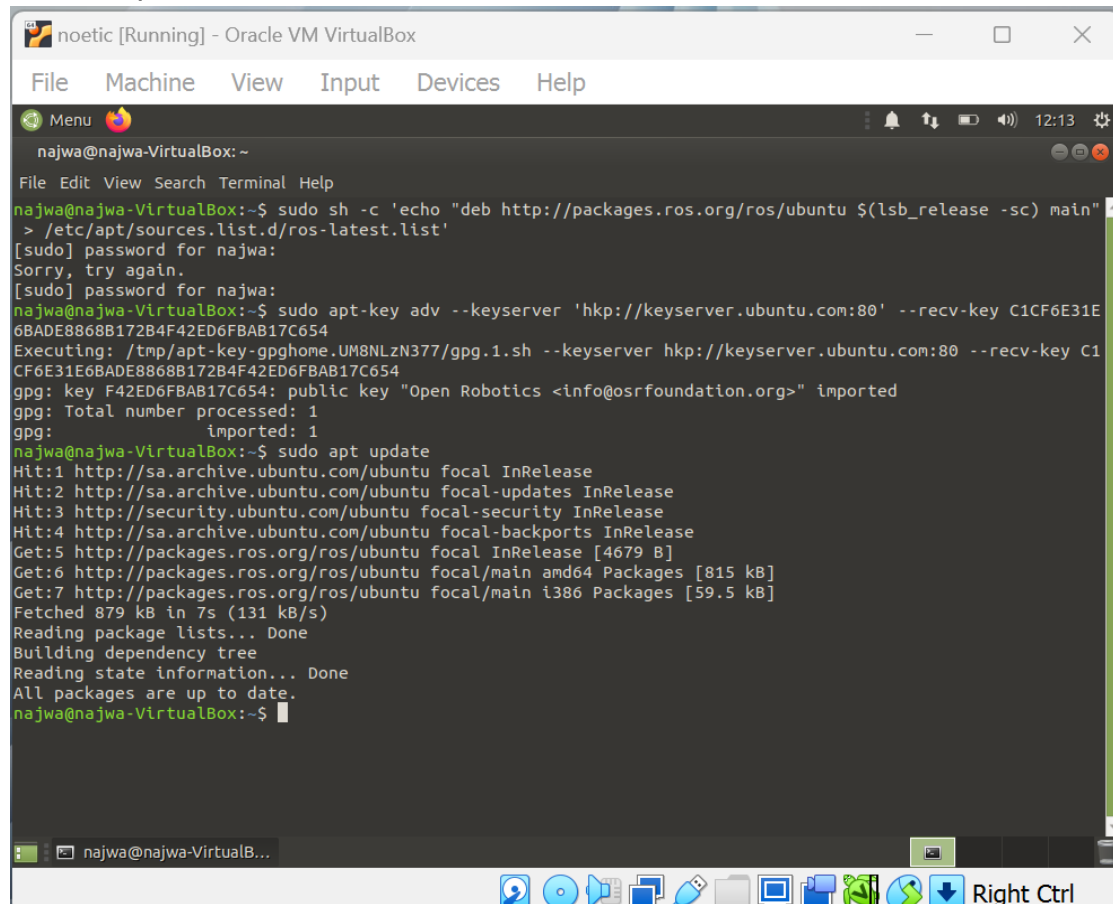
The first task is to download and install the ros robot operating system

1-Setup my sources.list

2-Set up my keys

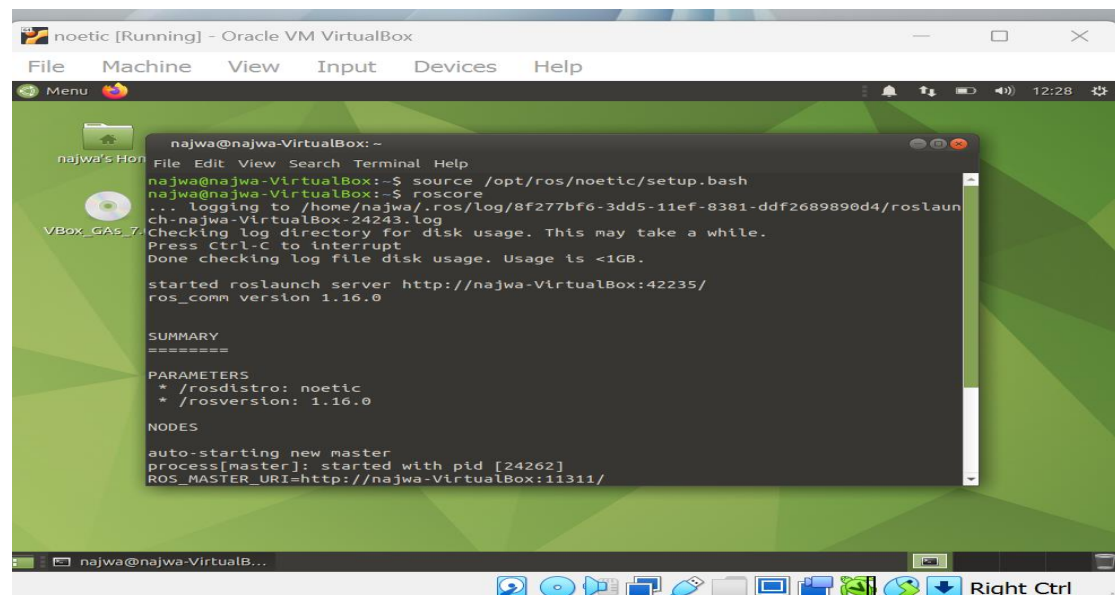
3-installation

4-Desktop-Full Install



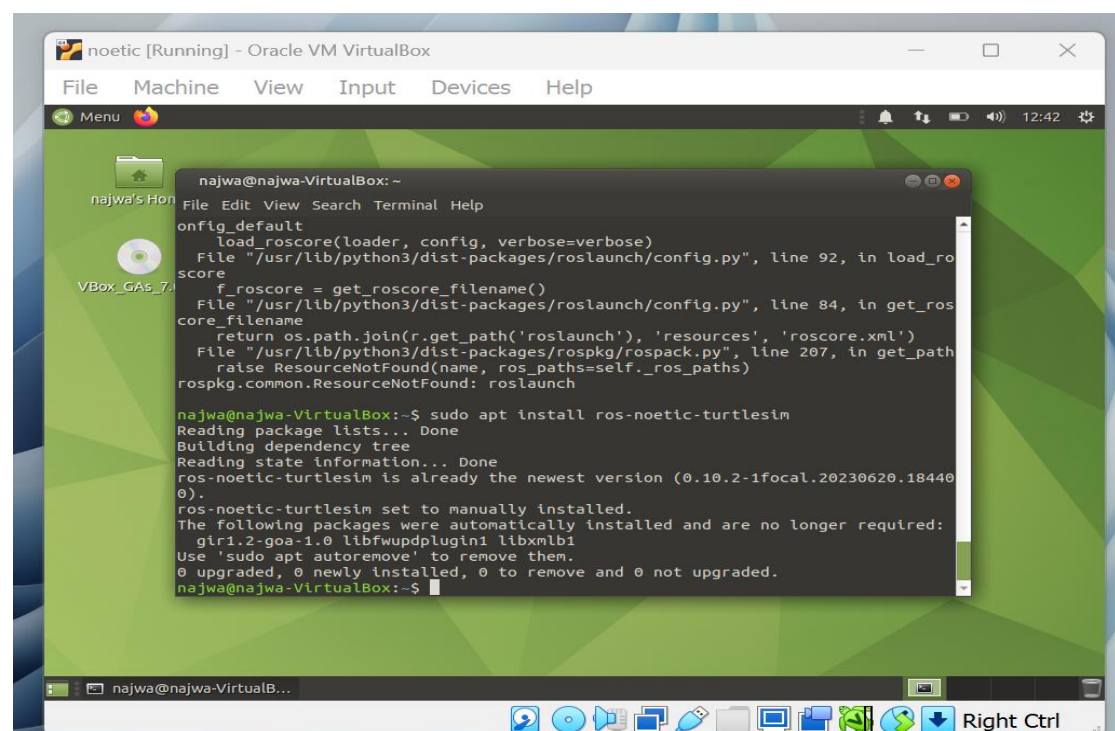
```
noetic [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Menu
nawja@nawja-VirtualBox: ~
File Edit View Search Terminal Help
nawja@nawja-VirtualBox:~$ sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main"
> /etc/apt/sources.list.d/ros-latest.list'
[sudo] password for nawja:
Sorry, try again.
[sudo] password for nawja:
nawja@nawja-VirtualBox:~$ sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E
6BADE8868B172B4F42ED6FBAB17C654
Executing: /tmp/apt-key-gpghome.UM8NLzN377/gpg.1.sh --keyserver hkp://keyserver.ubuntu.com:80 --recv-key C1
CF6E31E6BADE8868B172B4F42ED6FBAB17C654
gpg: key F42ED6FBAB17C654: public key "Open Robotics <info@osrfoundation.org>" imported
gpg: Total number processed: 1
gpg:      imported: 1
nawja@nawja-VirtualBox:~$ sudo apt update
Hit:1 http://sa.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://sa.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:4 http://sa.archive.ubuntu.com/ubuntu focal-backports InRelease
Get:5 http://packages.ros.org/ros/ubuntu focal InRelease [4679 B]
Get:6 http://packages.ros.org/ros/ubuntu focal/main amd64 Packages [815 kB]
Get:7 http://packages.ros.org/ros/ubuntu focal/main i386 Packages [59.5 kB]
Fetched 879 kB in 7s (131 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
nawja@nawja-VirtualBox:~$
```

## 5. Environment setup



The screenshot shows a VirtualBox window titled "noetic [Running] - Oracle VM VirtualBox". The guest OS is Ubuntu, and the terminal window is open. The user has executed the following commands:

```
najwa@najwa-VirtualBox: ~  
File Edit View Search Terminal Help  
najwa@najwa-VirtualBox:~$ source /opt/ros/noetic/setup.bash  
najwa@najwa-VirtualBox:~$ roscore  
.. logging to /home/najwa/.ros/log/8f277bf6-3dd5-11ef-8381-ddf2689890d4/roslaunch-najwa-VirtualBox-24243.log  
Checking log directory for disk usage. This may take a while.  
Press Ctrl-C to interrupt  
Done checking log file disk usage. Usage is <1GB.  
  
started roslaunch server http://najwa-VirtualBox:42235/  
ros_comm version 1.16.0  
  
SUMMARY  
=====  
PARAMETERS  
* /rostdistro: noetic  
* /rosverston: 1.16.0  
  
NODES  
  
auto-starting new master  
process[master]: started with pid [24262]  
ROS_MASTER_URI=http://najwa-VirtualBox:11311/
```



The screenshot shows the same VirtualBox window, but the terminal window now displays the output of the following commands:

```
najwa@najwa-VirtualBox: ~  
File Edit View Search Terminal Help  
onfig_default  
load_roscore(loader, config, verbose=verbose)  
File "/usr/lib/python3/dist-packages/roslaunch/config.py", line 92, in load_roscore  
score  
f_roscore = get_roscore_filename()  
File "/usr/lib/python3/dist-packages/roslaunch/config.py", line 84, in get_roscore_filename  
return os.path.join(r.get_path('roslaunch'), 'resources', 'roscore.xml')  
File "/usr/lib/python3/dist-packages/rospkg/rospack.py", line 207, in get_path  
raise ResourceNotFound(name, ros_paths=self._ros_paths)  
rospkg.common.ResourceNotFound: roslaunch  
  
najwa@najwa-VirtualBox:~$ sudo apt install ros-noetic-turtlesim  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
ros-noetic-turtlesim is already the newest version (0.10.2-1focal.20230620.184400).  
ros-noetic-turtlesim set to manually installed.  
The following packages were automatically installed and are no longer required:  
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1  
Use 'sudo apt autoremove' to remove them.  
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.  
najwa@najwa-VirtualBox:~$
```