

تثبيت نظام الـ ROS على نظام تشغيل اوبنتو 20.04



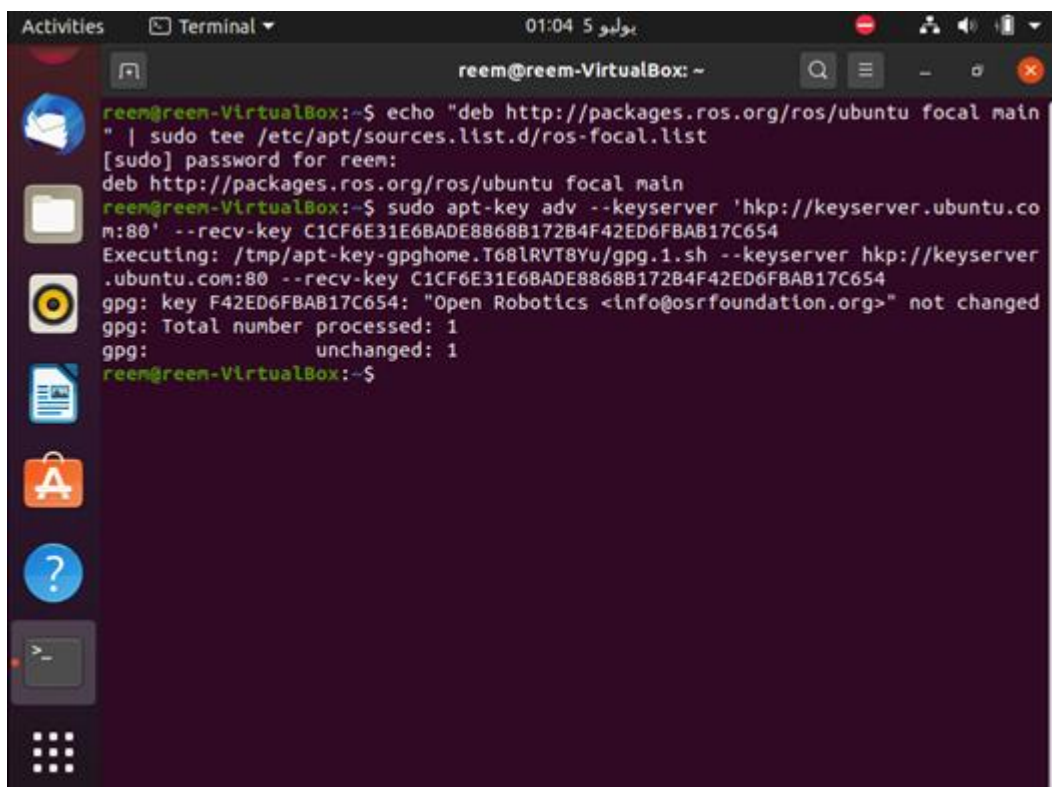
1. نقوم بفتح الترمينال Terminal ننسخ الكود التالي ونلصقه ثم نضغط Enter

```
echo "deb http://packages.ros.org/ros/ubuntu focal main" | sudo tee  
/etc/apt/sources.list.d/ros-focal.list
```

```
reem@reem-VirtualBox: ~  
reem@reem-VirtualBox:~$ echo "deb http://packages.ros.org/ros/ubuntu focal main"  
" | sudo tee /etc/apt/sources.list.d/ros-focal.list  
[sudo] password for reem:  
deb http://packages.ros.org/ros/ubuntu focal main  
reem@reem-VirtualBox:~$
```

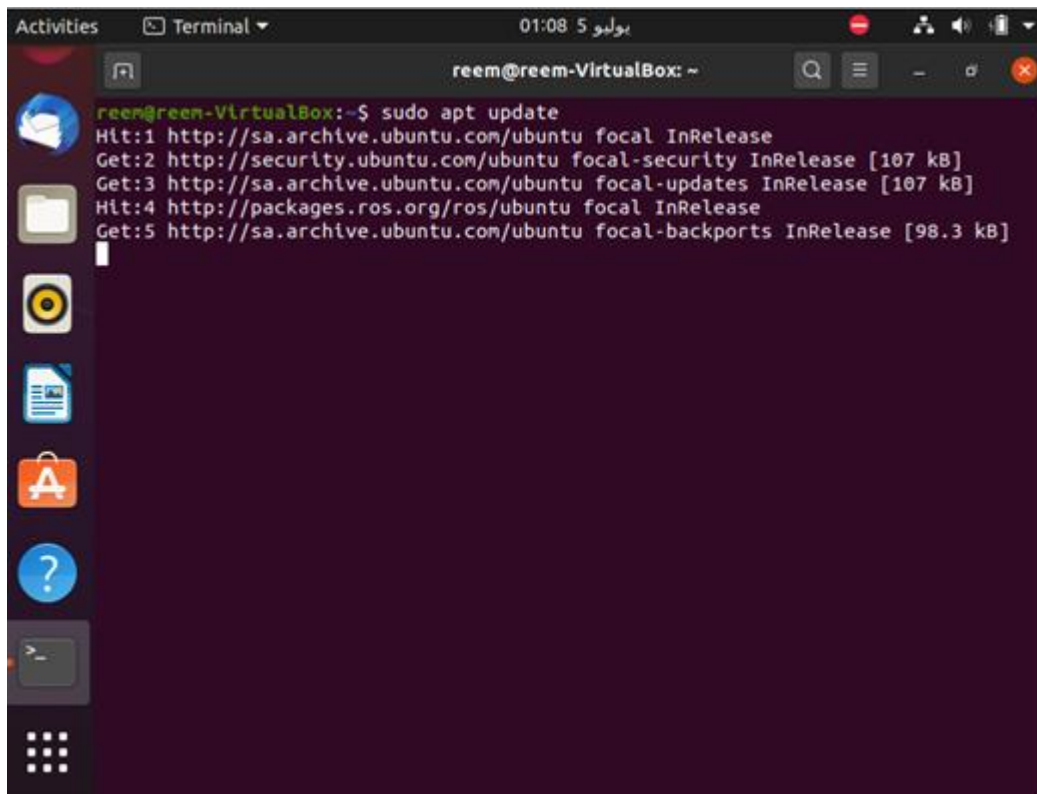
2. إضافة Keys الروس

```
sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key  
C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
```



```
reem@reem-VirtualBox: ~  
reem@reem-VirtualBox:~$ echo "deb http://packages.ros.org/ros/ubuntu focal main"  
" | sudo tee /etc/apt/sources.list.d/ros-focal.list  
[sudo] password for reem:  
deb http://packages.ros.org/ros/ubuntu focal main  
reem@reem-VirtualBox:~$ sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.co  
m:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654  
Executing: /tmp/apt-key-gpghome.T68lRVT8Yu/gpg.1.sh --keyserver hkp://keyserver  
.ubuntu.com:80 --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654  
gpg: key F42ED6FBAB17C654: "Open Robotics <info@osrfoundation.org>" not changed  
gpg: Total number processed: 1  
gpg: unchanged: 1  
reem@reem-VirtualBox:~$
```

3. تحديث البكج للروس بالأمر الموجود بالصورة.

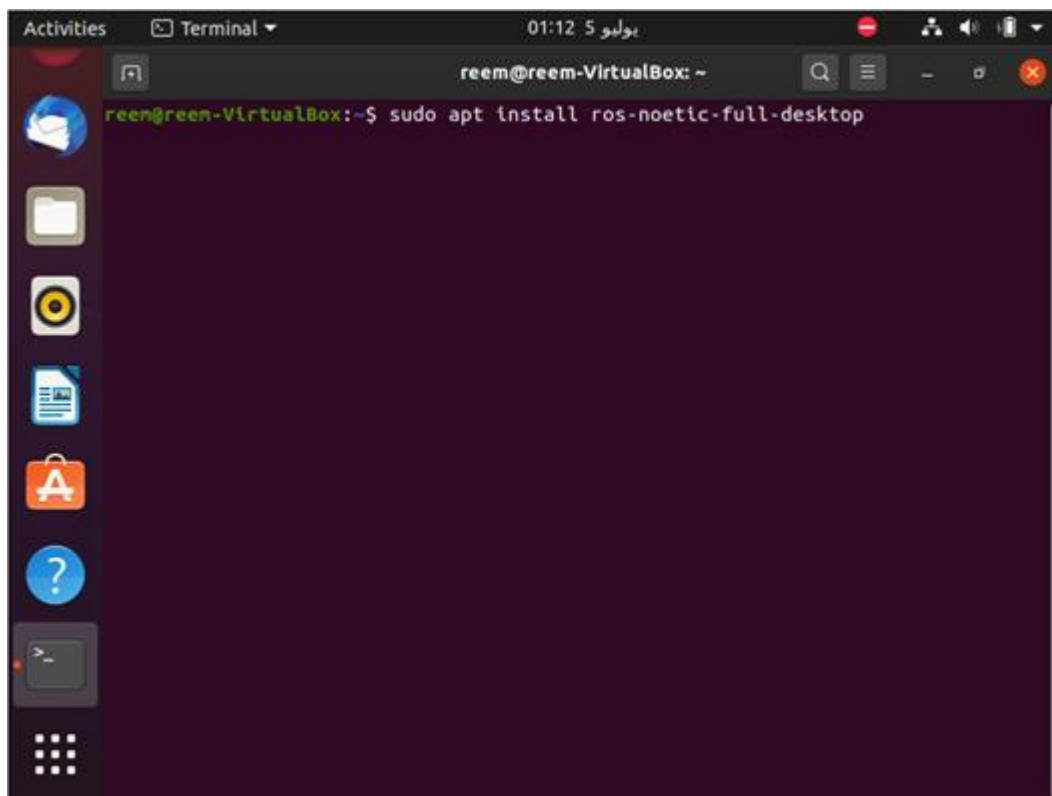


The screenshot shows a terminal window titled "Terminal" with the user "reem" at the host "reem-VirtualBox". The command "sudo apt update" has been executed, resulting in the following output:

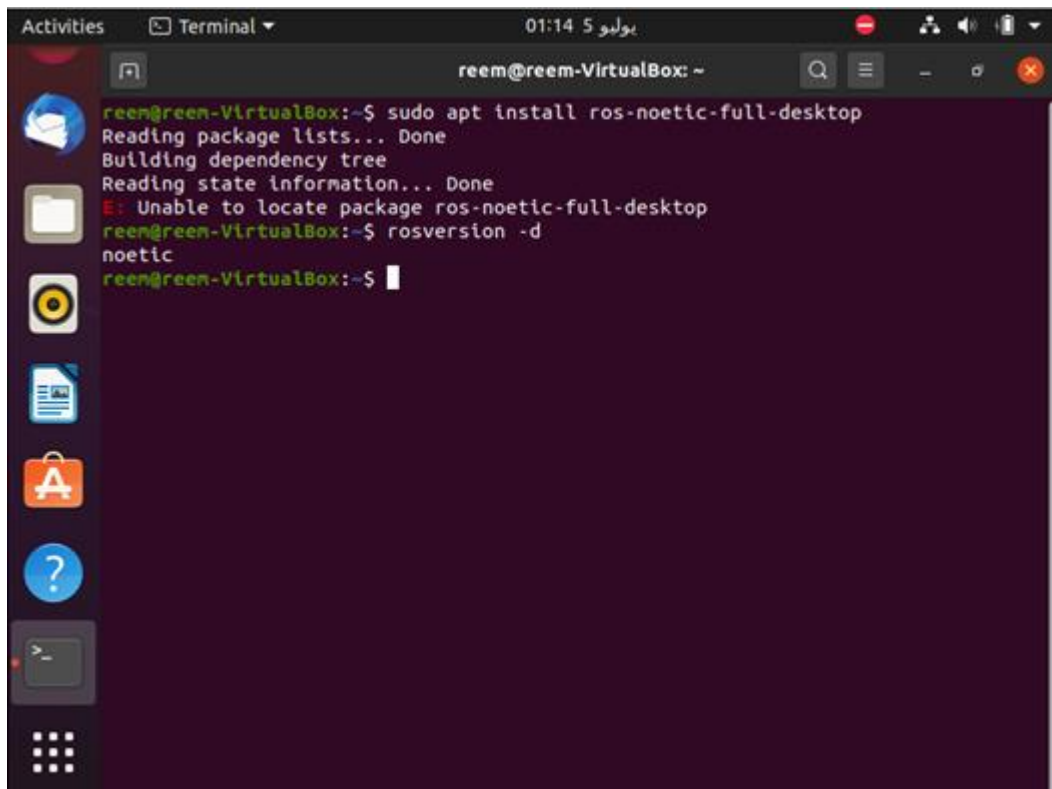
```
reem@reem-VirtualBox:~$ sudo apt update
Hit:1 http://sa.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://sa.archive.ubuntu.com/ubuntu focal-updates InRelease [107 kB]
Hit:4 http://packages.ros.org/ros/ubuntu focal InRelease
Get:5 http://sa.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
```

4. نقوم بتثبيت Ros Noetic Desktop Full

```
sudo apt install ros-noetic-desktop-full
```



5. التأكد من أن التثبيت تم بنجاح `rosversion -d`

A terminal window titled 'reem@reem-VirtualBox: ~' with a search icon, menu icon, and window control buttons. The terminal shows the following commands and output:

```
reem@reem-VirtualBox:~$ sudo apt install ros-noetic-full-desktop
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package ros-noetic-full-desktop
reem@reem-VirtualBox:~$ rosversion -d
noetic
reem@reem-VirtualBox:~$
```

The terminal window is part of a desktop environment with a sidebar on the left containing icons for Activities, Terminal, and various applications like a file manager, web browser, and system settings. The top of the window shows the system clock as 01:14 and the date يوليو 5.