

كيفية تحميل نظام روس على جهازك/How to install ROS on your computer:

This is a very basic tutorial on how to install Ubuntu 18.04, or different Linux Distributions, on your Mac OS or any windows version using Virtual Box.

هذا الملف يحوي خطوات مبسطة لطريقة تحميل نظام لينكس مهما كان نوع نظام التشغيل الخاص بجهازك.

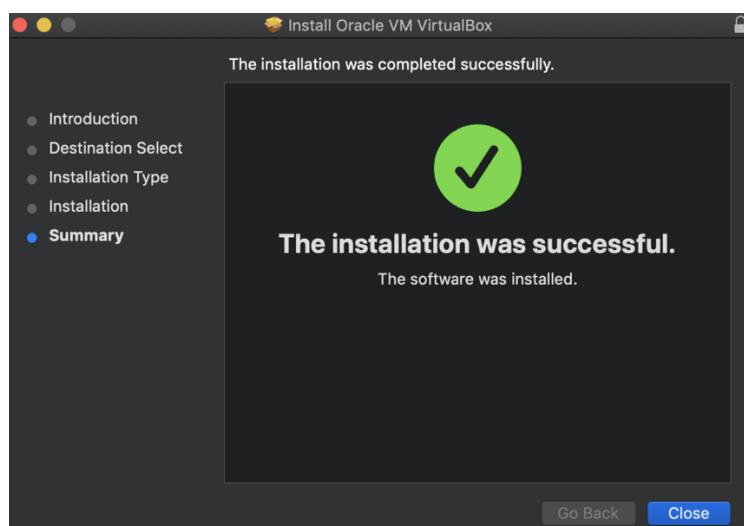
ما نحتاجه/Tools We'll Need:

- 1- VirtualBox — A virtualizer that runs virtual machines/مساحة افتراضية تشغيل أي نظام تشغيل/يثبت عليها من في برنامج الصندوق الافتراضي.
- 2- Ubuntu OS — The Linux OS we'll be running in VirtualBox/نظام لينكس الذي سوف يثبت على برنامج الصندوق الافتراضي.
- First install VirtualBox from <https://www.virtualbox.org> / أولاً حمل احدث نسخة لبرنامج الصندوق الافتراضي.

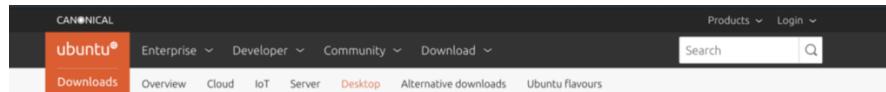


اختر النسخة على حسب نظام التشغيل الخاص بجهازك.
Download VirtualBox for your operating system host/
التشغيل الخاص بجهازك.

- Then double click the *VirtualBox.pkg* file and finish the installation/قم بالنقر مرتين على الملف الذي حملته ثبته على جهازك.



- The second phase Download Ubuntu locally to our computer to use with VirtualBox.
Your first step is to go to <https://ubuntu.com/download> and download the latest version./ثانياً قم بتحميل أحدث نسخة نظام اللينوكس على جازك من الموقع



Download Ubuntu Desktop

Ubuntu 18.04.2 LTS

Download the latest [LTS](#) version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years, until April 2023, of free security and maintenance updates, guaranteed.

[Ubuntu 18.04 LTS release notes](#)

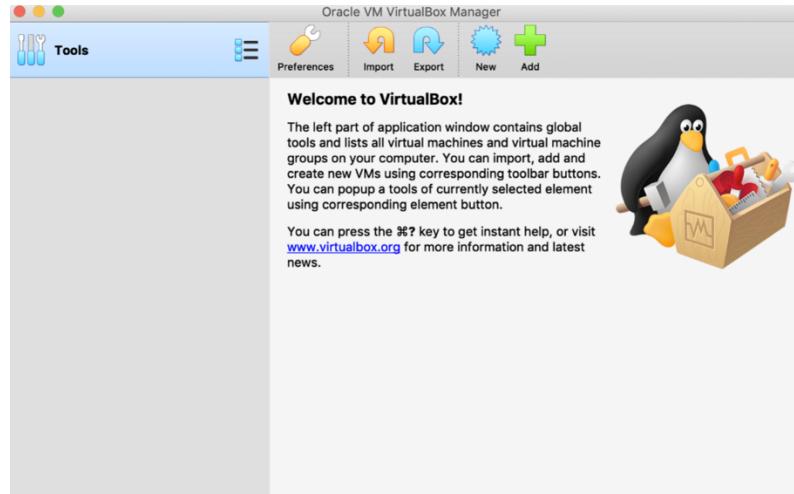
Recommended system requirements:

- 2 GHz dual core processor or better
- 4 GB system memory
- 25 GB of free hard drive space
- Either a DVD drive or a USB port for the installer media
- Internet access is helpful

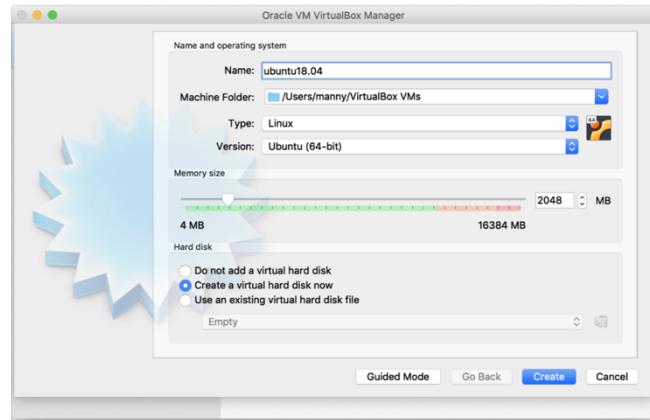
[Download](#)

For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors, and past releases see our [alternative downloads](#).

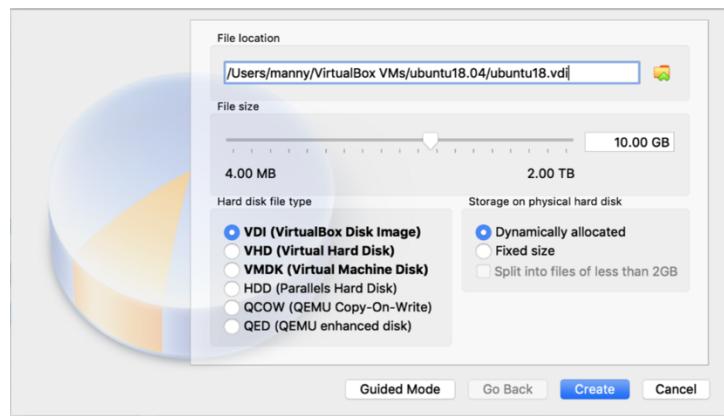
- بعد تحميلها افتح البرنامج الافتراضي /VirtualBox و اختر جديد.



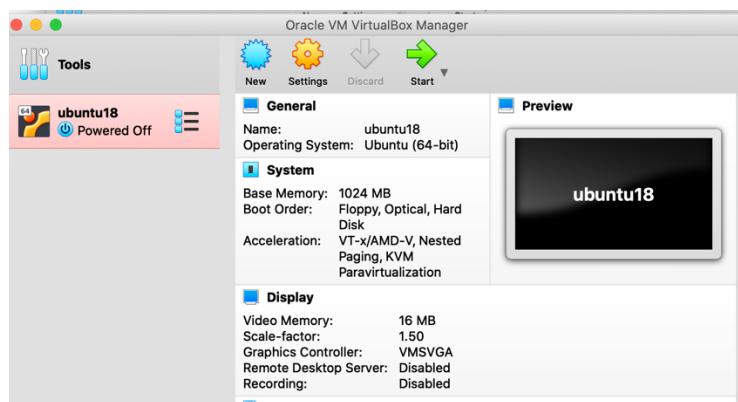
- Once the prompt opens, give it a *Name* (if you start typing ubuntu, it will automatically convert the version to *Ubuntu 64-bit*), and set the *Memory* to *2048 MB (2GB)*. Make sure you set the *Hard Disk* option to *Create a virtual hard disk now*. Leave the rest of the options as is and click *Create*button.
بعد ذلك قم بتنمية الجهاز الجديد ولكن يجب ان يدبي باسم /
المحرك ثم قم بتعيين الذاكرة بي ٢٠٤٨ ميجا وبباقي الخيارات لا تغيرها.



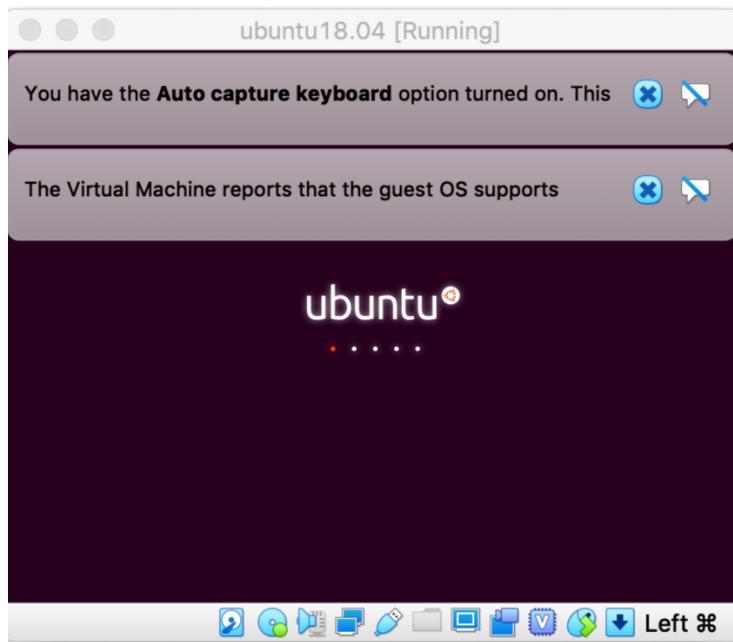
- Set the *File size* will be set to *10.00GB* “its highly recommended to give it more than 10 GB” to give the Ubuntu file enough space to work with, the *Hard disk file type* to *VDI* to make an image formatted for VirtualBox, and allow the *Storage on physical hard disk* to be *Dynamically allocated*. Once done, click the *Create* button./ ١٠
قم بتعيين حجم الملف ولكن في موقع كثيـر يفضل ان يكون أكثر من هـذا حتى لا تواجهـوا مشاكل في المستقبـل. اخـتر نوع القرص الصلـب في دي اي وانـهي الخيارات كما هيـا ثم اضغطـ على انشـاء.



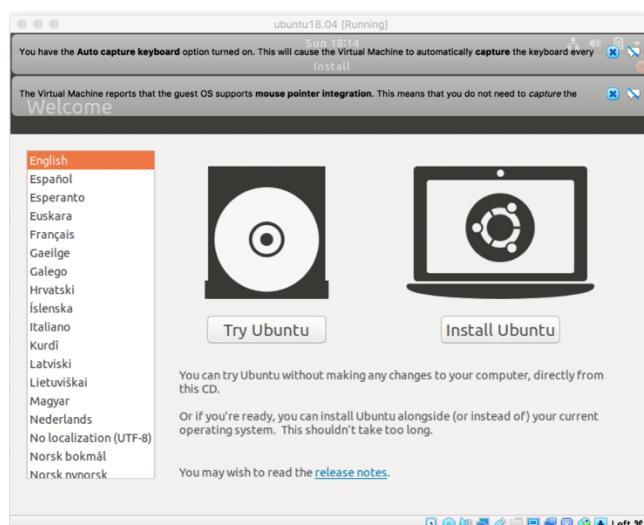
- انقر مرتين على زر التشغيل/Double click on the powered off button



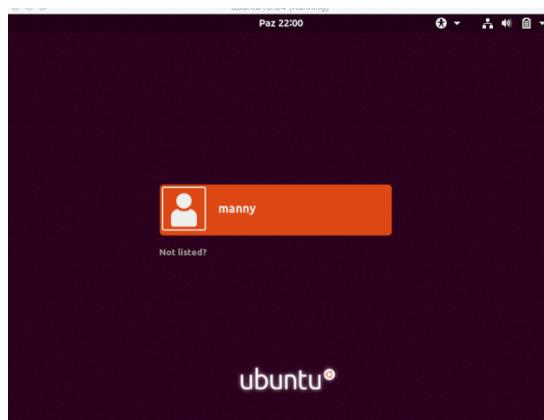
- سيدء نظام التشغيل لينيكس بالعمل و Ubuntu will start but we might get this tiny screen at start/ ستري نافذه صغيرة في شاشتك.



- We should see something slightly bigger, where you can now click *Install Ubuntu/*. اختر تحميل يوبونتو و اختر اللغة أيضا.

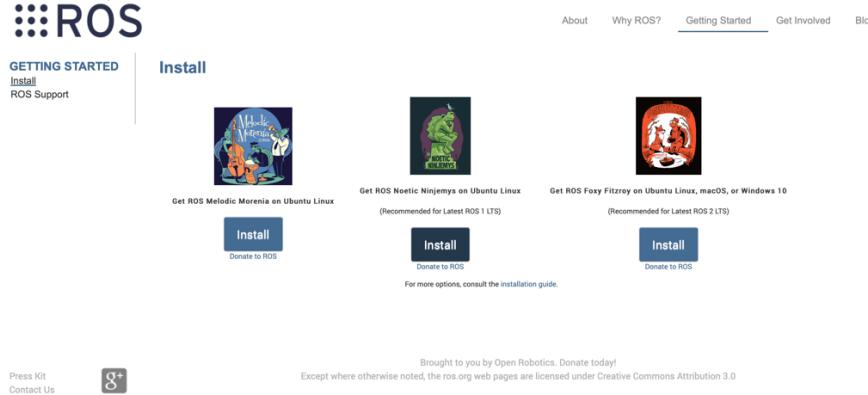


- Finish all the steps and the installation will wrap up and you'll just need to restart/ اكمل الخطوات التالية و لا تغير في الإعدادات الا اذا كنت ترغب شيء معين و عند انتهاء التثبيت سيقوم البرنامج بإعادة التشغيل.



- Now we are ready to install ROS/روز لتحميله.

To download ROS open <https://www.ros.org/install/> and choose the version you want it we will download the one in the middle. افتح الرابط المرفق و اختر النسخة المراد تحميلها هنا سوف / . نقوم بتحميل التي في المنتصف.



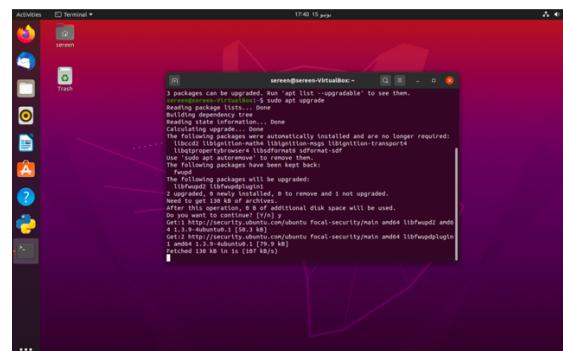
و يمكنك اتباع خطوات التحميل باللغة الإنجليزية من/
الموقع ذاته.

طريقة تحميل ROS

قم بفتح Terminal وكتابة الأوامر التالية لتجهيز النظام للتحميل:



sudo apt update



sudo apt upgrade

والآن نحن جاهزون للتحميل قم بكتابة الأوامر التالية:

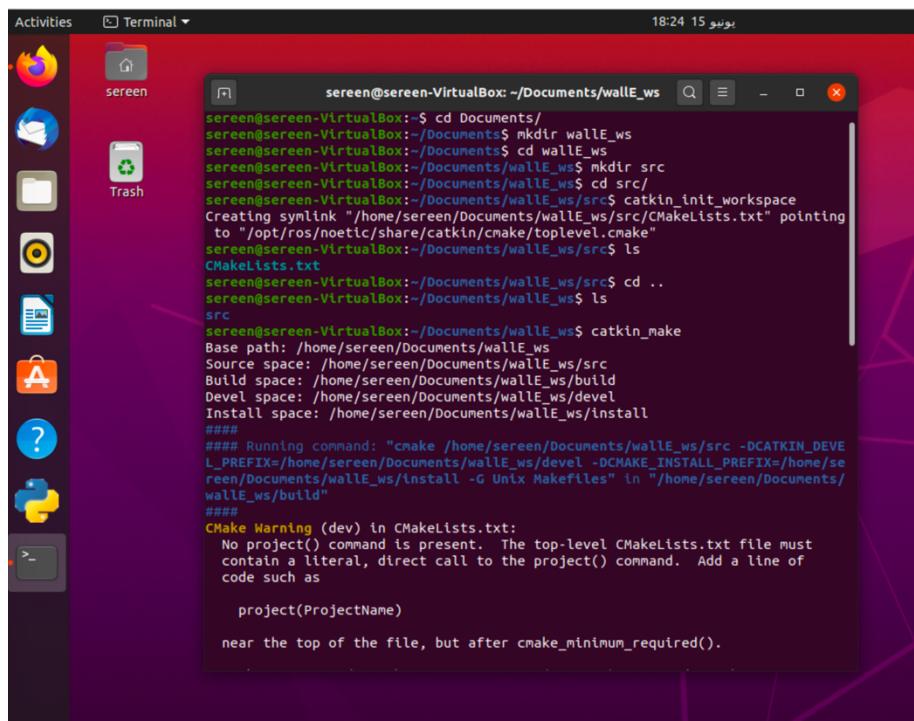
- sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu \$(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
- sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
- sudo apt install ros-noetic-desktop-full

بعد عملية التحميل ادخل الامرين الآتيين:

- echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc
- echo "source /opt/ros/noetic/setup.zsh" >> ~/.zshrc

وهكذا تكون انتهت من التثبيت.

حتى تتمكن من انشاء ملفات على ROS_packages: قم بكتابة الأوامر التالية:



```
sreen@sreen-VirtualBox: ~/Documents/wallE_ws
sreen@sreen-VirtualBox: ~/Documents$ mkdir wallE_ws
sreen@sreen-VirtualBox: ~/Documents$ cd wallE_ws
sreen@sreen-VirtualBox: ~/Documents/wallE_ws$ mkdir src
sreen@sreen-VirtualBox: ~/Documents/wallE_ws$ cd src/
sreen@sreen-VirtualBox: ~/Documents/wallE_ws/src$ catkin_init_workspace
Creating symlink "/home/sreen/Documents/wallE_ws/src/CMakeLists.txt" pointing
to "/opt/ros/noetic/share/catkin/cmake/topLevel.cmake"
sreen@sreen-VirtualBox: ~/Documents/wallE_ws/src$ ls
CMakeLists.txt
sreen@sreen-VirtualBox: ~/Documents/wallE_ws/src$ cd ..
sreen@sreen-VirtualBox: ~/Documents/wallE_ws$ ls
src
sreen@sreen-VirtualBox: ~/Documents/wallE_ws$ catkin_make
Base path: /home/sreen/Documents/wallE_ws
Source space: /home/sreen/Documents/wallE_ws/src
Build space: /home/sreen/Documents/wallE_ws/build
Devel space: /home/sreen/Documents/wallE_ws/devel
Install space: /home/sreen/Documents/wallE_ws/install
#####
### Running command: "cmake /home/sreen/Documents/wallE_ws/src -DCATKIN_DEVE
L_PREFIX=/home/sreen/Documents/wallE_ws/devel -DCMAKE_INSTALL_PREFIX=/home/se
reen/Documents/wallE_ws/install -G Unix Makefiles" in "/home/sreen/Documents/
wallE_ws/build"
#####
CMake Warning (dev) in CMakeLists.txt:
  No project() command is present. The top-level CMakeLists.txt file must
  contain a literal, direct call to the project() command. Add a line of
  code such as
    project(ProjectName)
  near the top of the file, but after cmake_minimum_required().
```

في البداية قم بتحديد امتداد الملفات عن طريق كتابة

cd Documents/

ثم قم بإنشاء ملف جديد وحدد كل امتداد للملفات وأكمل ادخال الأوامر حتى تتمكن من انشاء مساحة جديدة للعمل.

```
sreen@sreen-VirtualBox: ~/Documents/wallE_ws/src
-- Found gtest sources under '/usr/src/googletest': gtests will be built
-- Found gmock sources under '/usr/src/googletest': gmock will be built
-- Found PythonInterp: /usr/bin/python3 (found version "3.8.2")
-- Found Threads: TRUE
-- Using Python nosetests: /usr/bin/nosetests3
-- catkin 0.6.6
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
-- Configuring done
-- Generating done
-- Build files have been written to: /home/sreen/Documents/wallE_ws/build
#####
##### Running command: "make -j1 -l1" in "/home/sreen/Documents/wallE_ws/build"
#####
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ ls build/
build  devel  src
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ ls build/
atomic_configure  catkin_generated  CMakeCache.txt  CTestConfiguration.ini  gtest      test_results
bin                CMAKE_IGNORE    CMakeFiles      CTestCustom.cmake   lib
Catkin             catkin_nake.cache  cmake_install.cmake  CTestTestfile.cmake  Makefile
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ ls devel/
cmake.lock  lib          local_setup.sh  setup.bash _setup_util.py
env.sh     local_setup.bash  local_setup.zsh  setup.sh  setup.zsh
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ ls src/
CMakeLists.txt
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ cd src/
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ catkin_create_pkg_robot_tutorials rospy roscpp std_msgs
catkin_create_pkg_robot_tutorials rospy roscpp std_msgs: command not found
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ catkin_create_pkg_robot_tutorials rospy roscpp std_msgs
catkin_create_pkg_robot_tutorials: command not found
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ catkin_create_pkg robot_tutorials rospy roscpp std_msgs
Created file robot_tutorials/package.xml
Created file robot_tutorials/CMakeLists.txt
Created folder robot_tutorials/include/robot_tutorials
Created folder robot_tutorials/src
Successfully created files in /home/sreen/Documents/wallE_ws/src/robot_tutorials. Please adjust the values in package.xml.
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$
```

```
sreen@sreen-VirtualBox: ~/Documents/wallE_ws
n package.xml.
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ ls
CMakeLists.txt  robot_tutorials
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ ls robot_tutorials
CMakeLists.txt  include  package.xml  src
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ ls robot_tutorials/
CMakeLists.txt  include  package.xml  src
sreen@sreen-VirtualBox:~/Documents/wallE_ws/src$ cd ..
sreen@sreen-VirtualBox:~/Documents/wallE_ws$ catkin_make
Base path: /home/sreen/Documents/wallE_ws
Source space: /home/sreen/Documents/wallE_ws/src
Build space: /home/sreen/Documents/wallE_ws/build
Devel space: /home/sreen/Documents/wallE_ws/devel
Install space: /home/sreen/Documents/wallE_ws/install
#####
##### Running command: "cmake /home/sreen/Documents/wallE_ws/src -DCATKIN_DEVEL_PREFIX=/home/sreen/Documents/wallE_ws/devel -DCMAKE_INSTALL_PREFIX=/home/sreen/Documents/wallE_ws/install -G Unix Makefiles" in "/home/sreen/Documents/wallE_ws/build"
#####
CMake Warning (dev) in CMakeLists.txt:
  No project() command is present. The top-level CMakeLists.txt file must
  contain a literal, direct call to the project() command. Add a line of
  code such as

    project(ProjectName)

  near the top of the file, but after cmake_minimum_required().
  CMake is pretending there is a "project(Project)" command on the first
  line.
  This warning is for project developers. Use -Wno-dev to suppress it.

-- Using CATKIN_DEVEL_PREFIX: /home/sreen/Documents/wallE_ws/devel
-- Using CMAKE_PREFIX_PATH: /opt/ros/noetic
-- This workspace overlays: /opt/ros/noetic
-- Found PythonInterp: /usr/bin/python3 (found suitable version "3.8.2", minimum required is "3")
-- Using PYTHON_EXECUTABLE: /usr/bin/python3
-- Using Debian Python package layout
-- Using empy: /usr/lib/python3/dist-packages/empy
-- Using CATKIN_ENABLE_TESTING: ON
-- Call enable_testing()
-- Using CATKIN_TEST_RESULTS_DIR: /home/sreen/Documents/wallE_ws/build/test_results
-- Forcing gtest/gmock from source, though one was otherwise available.
```

وهذا نكون انتهينا من انشاء catkin workspace يمكن التعديل على بيانات الملف وإلقاء نظره على المكتبات المرفقة مع ملفكم عن طريق استخدام هذا الامر:

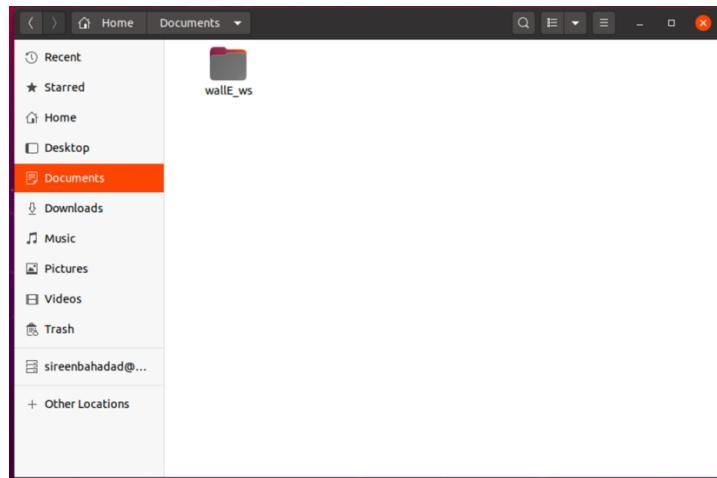
rosls filename

rosed log

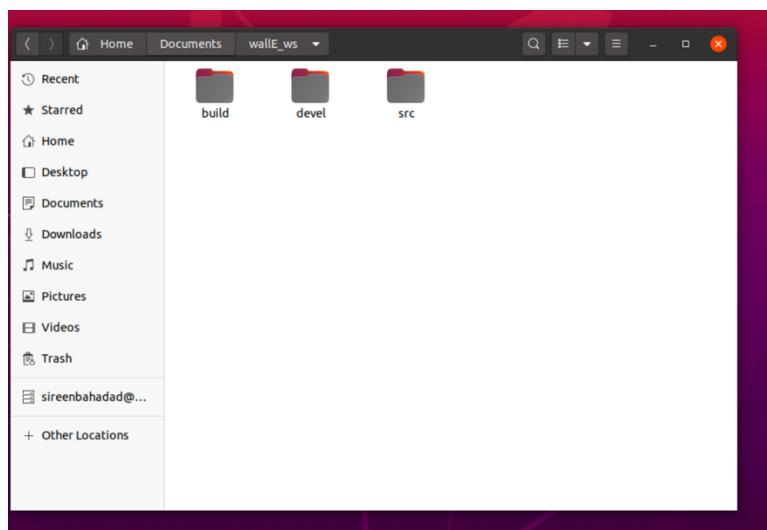
cd

cat package.xml

vim package.xml



قم بفتح المكان الذي خزنت فيه الملفات:



ستجدون كل الملفات والمكتبات محفوظة في
.....Catkin workspace....

