

الإسم: بدار عمر باحسن

المهمة: تثبيت وتشغيل باكيج الذراع على نظام

ROS

المسار: ذكاءً إصطناعي

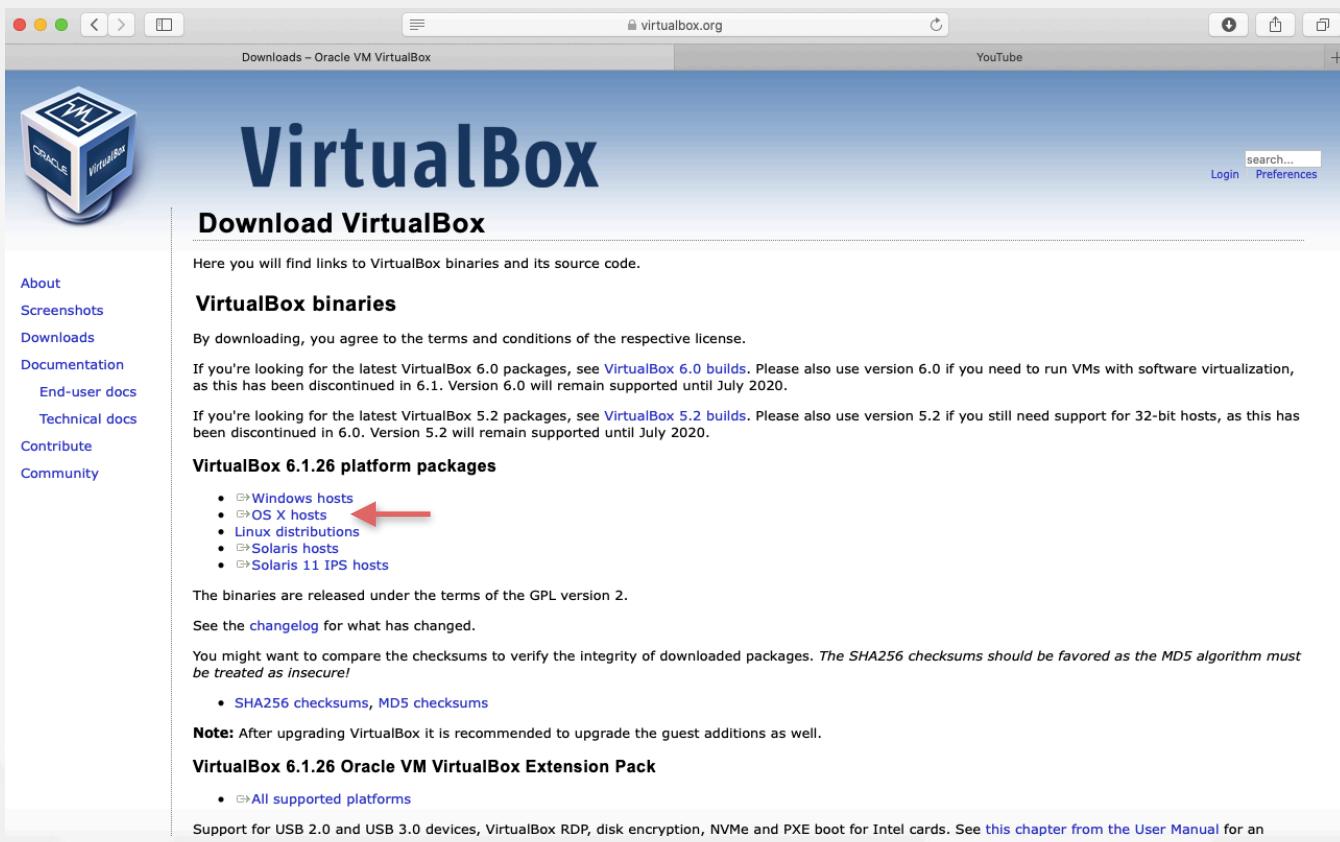
١- تحميل برنامج Oracle Virtual machine

<https://www.virtualbox.org>



The screenshot shows the official VirtualBox website at [virtualbox.org](https://www.virtualbox.org). The main header features the Oracle logo and the word "VirtualBox". Below the header, there's a "Welcome to VirtualBox.org!" message. A large blue button in the center says "Download VirtualBox 6.1". To the left, a sidebar lists links like "About", "Screenshots", "Downloads", "Documentation", "End-user docs", "Technical docs", "Contribute", and "Community". On the right, a "News Flash" box contains a list of recent releases and hiring announcements. At the bottom, there's an "ORACLE" logo and links for "Contact", "Privacy policy", and "Terms of Use".

٢- اختيار OS X host للماك بوك



This screenshot shows the "Downloads" section of the VirtualBox website. It features the same header and sidebar as the main page. The main content area is titled "Download VirtualBox" and includes a note about finding binaries and source code. It has sections for "VirtualBox binaries" and "VirtualBox 6.1.26 platform packages". Under "platform packages", there's a list with "OS X hosts" highlighted by a red arrow. Other items in the list include "Windows hosts", "Linux distributions", "Solaris hosts", and "Solaris 11 IPS hosts". The page also contains notes about GPL version 2, checksums (SHA256 and MD5), and guest additions.

٣- بعد إكمال التثبيت ستظهر واجهة البرنامج

بالشكل التالي:



٤- تنصيب ubuntu

A screenshot of the Canonical Ubuntu website. The header includes the Canonical logo, an orange "ubuntu" button, and navigation links for "Enterprise", "Developer", "Community", "Download", "We are hiring", "Products", "Search", and "Sign in". The main content features a large blue banner with white text stating "85% of enterprises yet to cross the chasm to full Kubernetes and Cloud Native adoption". Below this, a subtext says "Survey data from developers, DevOps and decision makers with insights from industry experts" and a "Read full report" button. To the right, there's a graphic of a smartphone displaying various charts and graphs, with three specific ones circled in red. At the bottom, there's a link to "CentOS users, 6 things to know when considering a migration to Ubuntu LTS >".

٥- الذهاب عند خانة **Download** ثم **Download**

واخيرا اختيار **20.04 LTS**

The screenshot shows the Canonical Ubuntu website's download page. At the top, there are navigation links for 'Enterprise', 'Developer', 'Community', 'Download' (which is highlighted with a red arrow), 'We are hiring', 'Products', 'Search', and 'Sign in'. Below this, there are four main sections: 'Ubuntu Desktop', 'Ubuntu Server', 'Ubuntu for IoT', and 'Ubuntu Cloud'. The 'Ubuntu Desktop' section is expanded, showing '20.04 LTS' (highlighted with a purple arrow) and '21.04' as options. Under 'Ubuntu Desktop', there are links for 'Download Ubuntu desktop and replace your current operating system whether it's Windows or Mac OS, or run Ubuntu alongside it.', 'Get Ubuntu Server', 'Mac and Windows', 'ARM', 'IBM Power', and 's390x'. The 'Ubuntu Server' section describes it as the most popular server Linux and lists 'Raspberry Pi 2, 3 or 4', 'Intel NUC', 'KVM', 'Qualcomm Dragonboard 410c', 'UP2 IoT Grove', and 'Intel IEI TANK 870'. The 'Ubuntu for IoT' section is for developers and lists 'Raspberry Pi 2, 3 or 4', 'Intel NUC', 'KVM', 'Qualcomm Dragonboard 410c', 'UP2 IoT Grove', and 'Intel IEI TANK 870'. The 'Ubuntu Cloud' section describes it as using Ubuntu optimised and certified server images on major clouds, with links to 'Amazon AWS', 'Microsoft Azure', 'Google Cloud Platform', and more. Below these sections are 'TUTORIALS', 'READ THE DOCS', 'OTHER WAYS TO DOWNLOAD', and 'UBUNTU FLAVOURS' sections.

٦- تم التنصيب بنجاح

The screenshot shows a confirmation message: 'Thank you for downloading Ubuntu Desktop'. It says, 'Your download should start automatically. If it doesn't, [download now](#). You can [verify your download](#), or get [help on installing](#)'. There are also links for 'Community projects' and 'NEWSLETTER SIGNUP'.

Help us to keep Ubuntu free to download, share and use by contributing to ...

Community projects

I support LoCo teams, UbuCons and other events, upstream projects and all the good work the community does.

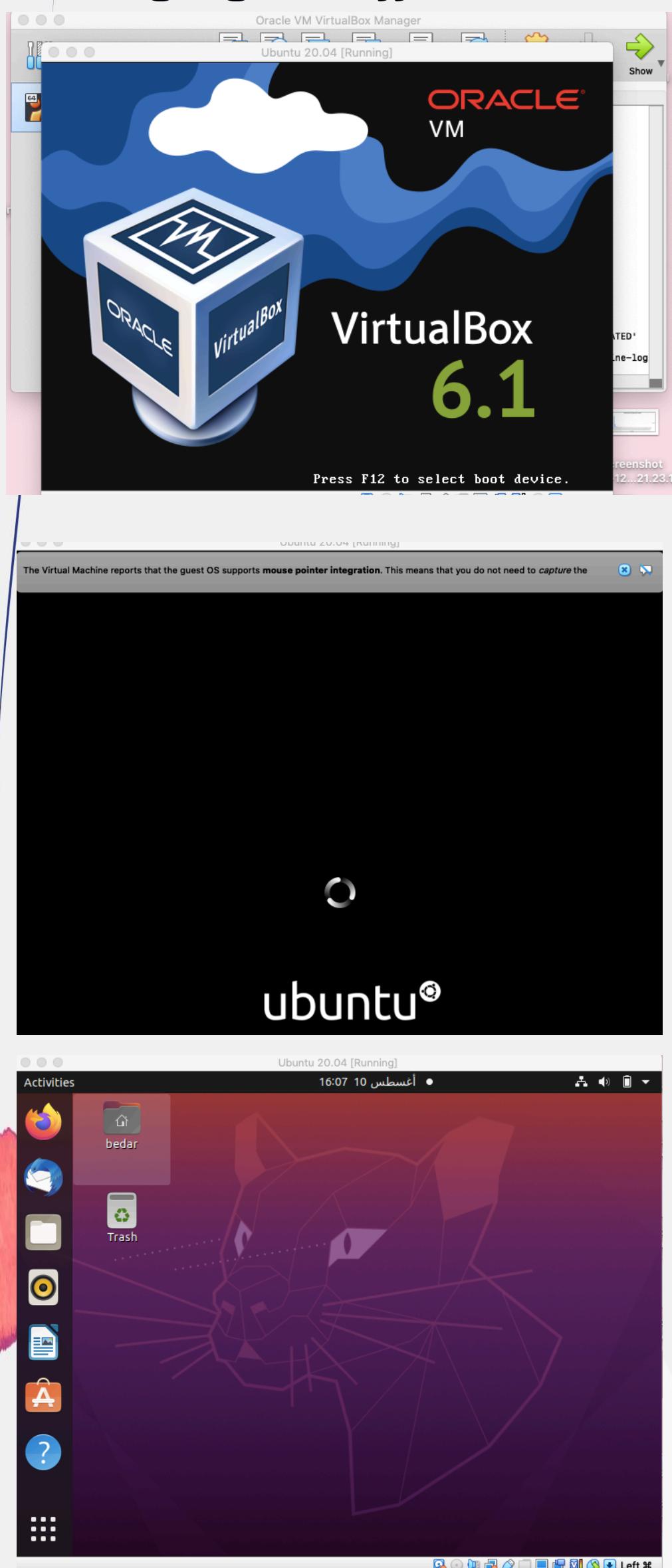
NEWSLETTER SIGNUP

Select topics you're interested in

- Cloud and Server
- Desktop
- Internet of Things
- Robotics

٧- بعد فتح البرنامج للبدء بالعمل واجهت عدة مشاكل في الالaptop

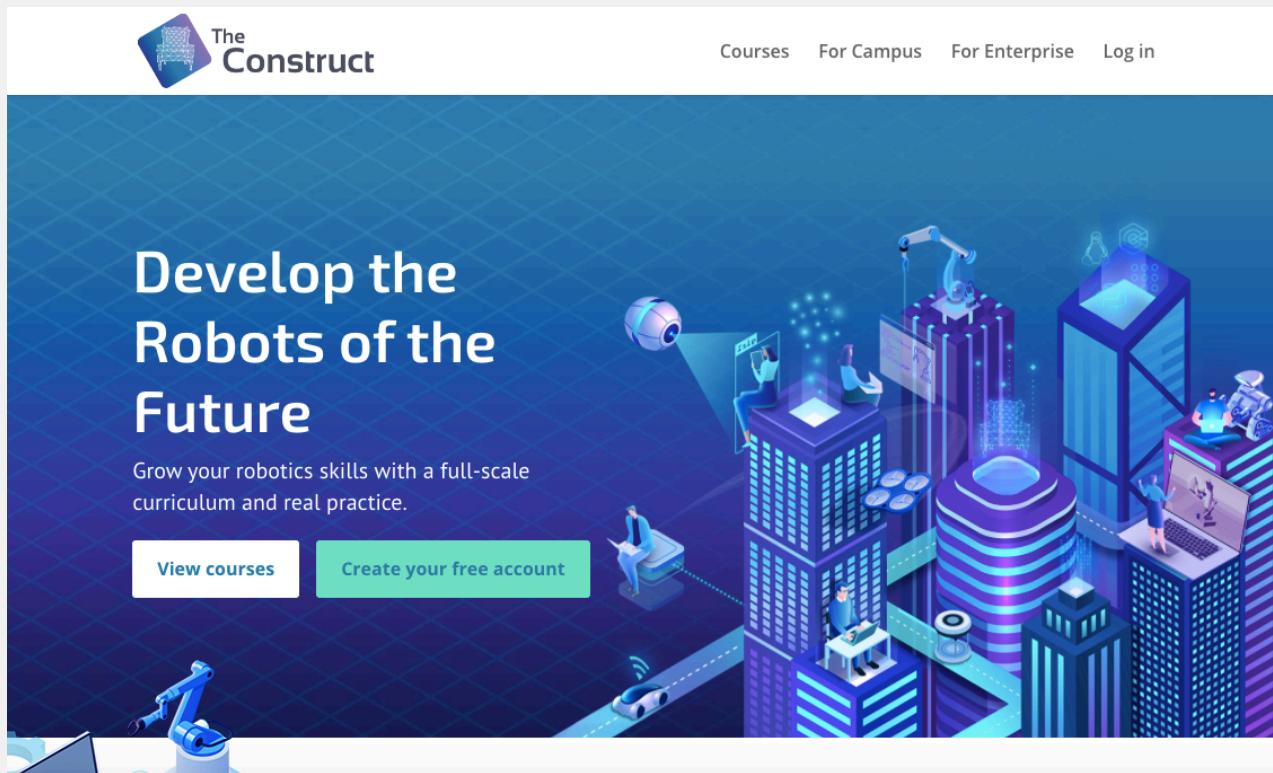
لأنه بمساحة منخفضة فاضطررت للعمل على التاسكات أونلاين



من هنا بداية الشغل اونلاين

ا- إنشاء حساب جديد من الرابط التالي:

<https://www.theconstructsim.com/rds-ros-development-studio/>



ج- إنشاء مشروع جديد

This screenshot shows the 'My projects' section of the ROS Development Studio. At the top, there's a search bar and an 'Upgrade' button. Below the search bar, it says 'I registers' and '0.00 KB out of 2.00 GB'. A file upload bar shows a progress of '0.00 KB out of 2.00 GB'. There are filters for 'Name/Description', 'Tags', 'Distro', and 'Sort by'. On the left, a large button says '+ Create a New Rosject'. On the right, there's a card for a project named 'ROSject' with a circular icon showing a robot arm. The card includes details: 'Task1 arm package' by 'Bedar20', and 'ROS Noetic (0.00 KB)'. To the right of the card are two circular buttons: a red one with a '+' sign and a yellow one with a question mark '?'.

۳- تثبيت arduino_robot_arm package

- Add the “arduino_robot_arm” package to “src” folder

```
$ cd ~/catkin_ws/src
```

```
$ sudo apt install git
```

```
$ git clone https://github.com/smart-methods/arduino\_robot\_arm
```

- Install all the dependencies

```
$ cd ~/catkin_ws
```

```
$ rosdep install --from-paths src --ignore-src -r -y
```

```
$ sudo apt-get install ros-melodic-moveit
```

```
$ sudo apt-get install ros-melodic-joint-state-publisher ros-melodic-joint-state-publisher-gui
```

```
$ sudo apt-get install ros-melodic-gazebo-ros-control joint-state-publisher
```

```
$ sudo apt-get install ros-melodic-ros-controllers ros-melodic-ros-control
```

- Compile the package

```
$ catkin_make
```

The terminal window on the left shows the command `catkin_make` being run, which fails due to missing dependencies. The file explorer window on the right shows the directory structure of the workspace, including the `src` folder containing the `arduino_robot_arm` package.

```
#560 +  
E: Unable to locate package joint-state  
-publisher  
ic-ros-controlos-controllers ros-melodi  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
E: Unable to locate package ros-melodic  
-ros-controllers  
E: Unable to locate package ros-melodic  
-ros-control  
user:~/catkin_ws$ catkin_make  
Base path: /home/user/catkin_ws  
Source space: /home/user/catkin_ws/src  
Build space: /home/user/catkin_ws/build  
Devel space: /home/user/catkin_ws/devel  
Install space: /home/user/catkin_ws/ins  
tall  
####  
#### Running command: "cmake /home/user  
/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/h  
ome/user/catkin_ws/devel -DCMAKE_INSTALL  
PREFIX=/home/user/catkin_ws/install -  
G Unix Makefiles" in "/home/user/catkin  
_ws/build"  
####
```

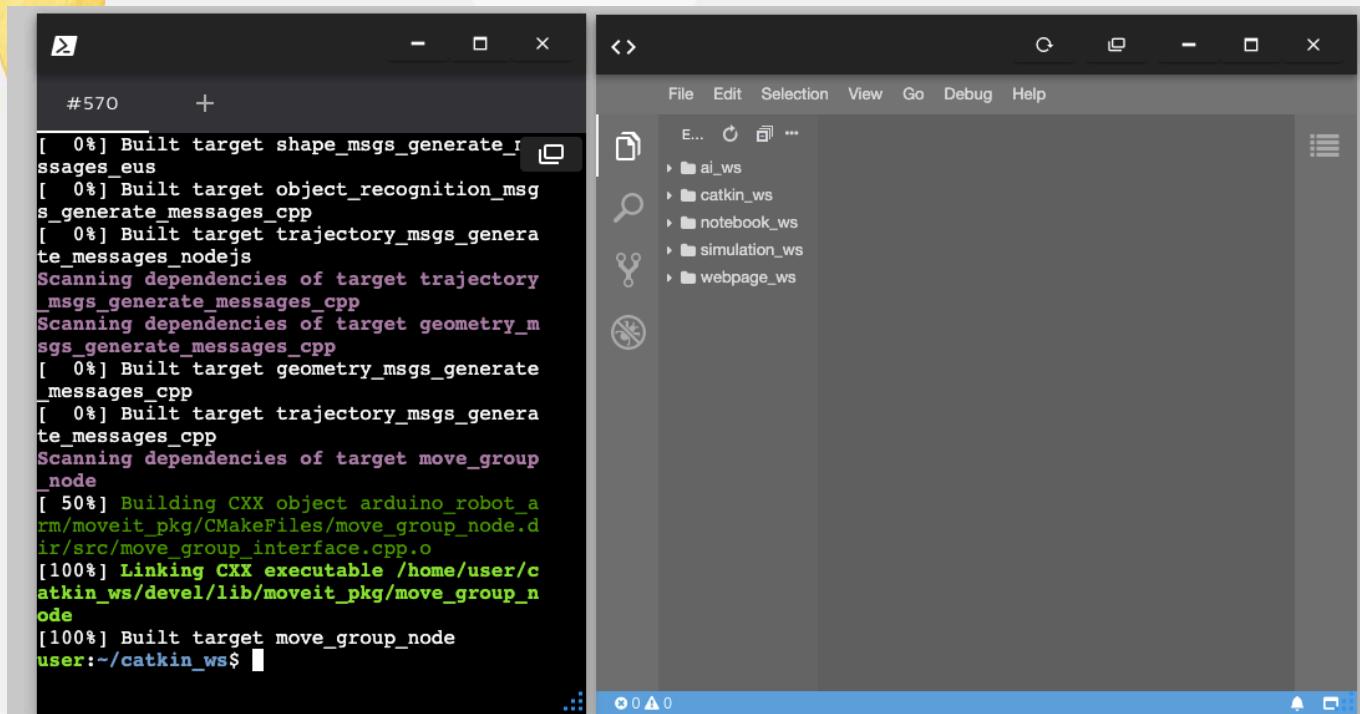
EXPLORER: USER

- ai_ws
- catkin_ws
- build
- devel
- src
 - arduino_robot_arm
 - arduino_code
 - moveit_pkg
 - robot_arm_pkg
 - circuit.png
 - positions.png
 - README.md
 - notebook_ws
 - simulation_ws
 - build
 - devel
 - src
 - CMakeLists.txt
 - webpage_ws

ERROR: cannot launch node of type [robot_state_publisher/state_publisher]: Cannot locate node of type [state_publisher] in package [robot_state_publisher]. Make sure file exists in package path and permission is set to executable (chmod +x)

٤- حل مشكلة robot state publisher

تحويل ROS kinetic إلى ROS noetic



```
#570
[ 0%] Built target shape_msgs_generate_messages_eus
[ 0%] Built target object_recognition_msgs_generate_messages_cpp
[ 0%] Built target trajectory_msgs_generate_messages_nodejs
Scanning dependencies of target trajectory_msgs_generate_messages_cpp
Scanning dependencies of target geometry_msgs_generate_messages_cpp
[ 0%] Built target geometry_msgs_generate_messages_cpp
[ 0%] Built target trajectory_msgs_generate_messages_cpp
Scanning dependencies of target move_group_node
[ 50%] Building CXX object arduino_robot/arm/moveit_pkg/CMakeFiles/move_group_node.dir/src/move_group_interface.cpp.o
[100%] Linking CXX executable /home/user/catkin_ws/devel/lib/moveit_pkg/move_group_node
[100%] Built target move_group_node
user:~/catkin_ws$
```

And finaaaalyyyyy! 🎉🎉🎉

