1. يبقى بعد ما تثبتون Ubuntu على VirtualBox، تروحون على Terminal وتكتبون الأوامر هذي:

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-get update

sudo apt-get install ros-melodic-desktop-full

apt-cache search ros-melodic

echo "source /opt/ros/melodic/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

sudo apt-get install ros-noetic-catkin

mkdir -p ~/catkin\_ws/src

cd ~/catkin\_ws/

catkin\_make

cd ~/catkin\_ws/src

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

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

sudo nano ~/.bashrc

بعدها تنزل لآخر سطر وتكتب الأمر هذا مع تغير الاسم اللي بالأحمر إلى اسمك على نظام Ubuntu:

source /home/wesam/catkin\_ws/devel/setup.bash

بعدها تضغط ctrl + o بعدها Enter بعدها ctrl + x

source ~/.bashrc

roslaunch robot\_arm\_pkg check\_motors.launch