How to install Ros on ubuntu 16.04 (you may need virtual environment to get ubuntu system) :

1. Open terminal on ubuntu
2. Write in terminal :

* sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb\_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'

(you may need to write the password which is your password )

* sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
* and then to update system :

sudo apt-get update

* sudo apt-get install ros-kinetic-desktop-full

this instruction take long time to finish( if you get an error in this instruction you can rewrite the instruction )

* apt-cache search ros-kinetic
* echo "source /opt/ros/kinetic/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
* to install catkin workspace :

sudo apt-get install ros-noetic-catkin

* mkdir -p ~/catkin\_ws/src

( note: catkin\_ws where is the name of workspace folder, you can change it as you want )

* cd ~/catkin\_ws/
* catkin\_make
* now wil install arm machin package in catkin\_ws folder:

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-kinetic-moveit
* sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-state-publisher-gui
* sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher
* sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control
* sudo nano ~/.bashrc
* at the end of the (bashrc) file add the follwing line:

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

(note: raghadkr is my username, you must change it to your username in ubuntu system, you cane get the same path from: 1- enter catkin\_ws folder 2- select and right click on setup.bash file 3- go to properties 4- copy path location)

save file and exit

* again in terminal :
* source ~/.bashrc
* roslaunch robot\_arm\_pkg check\_motors.launch

and here the ros system with arm machine package going to open