**References:**

[**https://youtu.be/x5MhydijWmc**](https://youtu.be/x5MhydijWmc)

[**https://www.youtube.com/watch?v=WKlk\_2EGfM4**](https://www.youtube.com/watch?v=WKlk_2EGfM4)

**Step 1: Downloading and installing Virtual Machine(VM)**

-First we download VM <https://www.virtualbox.org/wiki/Downloads>

And Ubuntu 18.04 (Bionic) <https://releases.ubuntu.com/18.04/>

-Now we install virtual machine

-after the installation, we open the VM

-Click on NEW icon



-We fill the description, then click NEXT

Graphical user interface, application

Description automatically generated

-In this section, you could leave the memory as it is or put memory size into 2048 for better performance.

-Click Next.

Graphical user interface, text, application

Description automatically generated

-We will leave this one as it is and click Next

Graphical user interface, text, application

Description automatically generated

-Same for this one too, click Next.

Graphical user interface, text, application, Word

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-Again, click Next.

Graphical user interface, text, application, Word

Description automatically generated

-For Hard disk size, we will put 20GB or as much as you want.

-click Next.

Graphical user interface, text, application, Word

Description automatically generated

-This is what we have created

Graphical user interface, application

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**Step 2: Running Ubuntu.**

-**Optional**: We may change the settings (for better resolution and have flexibility to our Ubuntu).

-**Optional**: Right click on Ubuntu and select settings.

-**Optional:** On General Tab, go to Advanced, and change these to Bidirectional.

Graphical user interface, text, email

Description automatically generated

-Now right click on it and run Normal Start.

Graphical user interface, text, application

Description automatically generated

-Then the Ubuntu will run through installation.

-A window will pop up; you will select your language and click on install Ubuntu.

Graphical user interface, application, Teams

Description automatically generated

-Keyboard layout, you will choose the preferences that you like.

Graphical user interface, application

Description automatically generated

-Check on install third-party software

-Click Continue.

Graphical user interface, text, application

Description automatically generated

-Leave this default setting, click on install now.

Graphical user interface, text, application

Description automatically generated

-A pop window will come, click Continue.

Graphical user interface, text, application

Description automatically generated

-Choose your location for time and date.

Graphical user interface, application, website

Description automatically generated

-Fill the form, then continue.

Graphical user interface, application

Description automatically generated

-After the installation, click on restart now.

Graphical user interface, text, application

Description automatically generated

-Ubuntu will boot up, and login profile

A screenshot of a computer

Description automatically generated with medium confidence

-There will be features preview, you can skip through it.

-Click on this

A screenshot of a computer

Description automatically generated

-then search up terminal, and run it

A screenshot of a computer

Description automatically generated with medium confidence

-run this code.

Sudo apt install build-essential dkms linux-headers-$(uname -r)

Text

Description automatically generated

-Enter your password.

-Enter y

Text

Description automatically generated

-close the terminal

-insert guest additions CD image

A screenshot of a computer

Description automatically generated with medium confidence

-click Run

Application

Description automatically generated with low confidence

-Enter your password for authentication.

-let the installation finish.

-Shut down Ubuntu.

-Then your Ubuntu Should be ready for the next step.

**Step 3: Installing ROS melodic.**

-open Terminal, and run these codes

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

curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add -

(if curl command does not work, <https://www.cyberciti.biz/faq/how-to-install-curl-command-on-a-ubuntu-linux/> )

sudo apt update

sudo apt install ros-melodic-desktop-full

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

**Step 4: Preparing ROS**

source /opt/ros/melodic/setup.bash

mkdir -p ~/catkin\_ws/src

cd ~/catkin\_ws/

catkin\_make

echo "source ~/catkin\_ws/devel/setup.bash" >> ~/.bashrc

source ~/.bashrc

**Step 5: Installing the package arduino\_robot\_arm**

-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

**Step 6: install Arduino IDE in Ubuntu.**

sudo snap install arduino

(There will be an issue if USB port is not supported in Ubuntu and command line suggest to run it.)

Run this command to open the Arduino IDE

arduino

Install Rosserial

sudo apt-get install ros-kinetic-rosserial-arduino

sudo apt-get install ros-kinetic-rosserial

Install Library ros\_lib

cd <sketchbook>/libraries

rm -rf ros\_lib

rosrun rosserial\_arduino make\_libraries.py