

1- Download Oracle VM VirtualBox <https://www.virtualbox.org/wiki/Downloads> Download-windows host.

2- Download ubuntu 20.04.2 https://old-releases.ubuntu.com/releases/20.04.2/?_ga=2.252754894.699435355.1657790569-133109598.1656356073

Create new virtual machine The first ubuntu name and Device type And You set the memory size and file location and size

3 - Modify virtual machine setting Video memory 128 MB and Storage Select empty disk then Cd and choose a disk file Ubuntu 20.04.2 desktop.iso

4- Start Ubuntu Linux installation chose install ubuntu ,keyboard layout , installation type and Where are you Then name and password

5- Restart and login

6-Ubuntu desktop

7-Install Guest Additions `sudo apt-get update` `sudo apt-get upgrade` `sudo apt install build-essential dkms linux-headers-$(uname -r)`

Download ros `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 install curl` `curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add -` `sudo apt-get update` `sudo apt-get install ros-noetic-desktop-full` `echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc` `source ~/.bashrc` `sudo apt install python3-rosdep python3-rosinstall python3-rosinstall-generator python3-wstool build-essential` `sudo apt install python3-rosdep` `sudo rosdep init` `rosdep update` `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-noetic-moveit` `sudo apt-get install ros-noetic-joint-state-publisher` `ros-noetic-joint-state-publisher-gui` `sudo apt-get install ros-noetic-gazebo-ros-control` `joint-state-publisher` `sudo apt-get install ros-noetic-ros-controllers` `ros-noetic-ros-control` `catkin_make` `roslaunch robot_arm_pkg check_motors.launch` The last step was an error, so I set the commands and settings `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-kinetic-desktop-full` `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` `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-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 following line (`source /home/wesam/catkin_ws/devel/setup.bash`) then `ctrl + o` `source ~/.bashrc` `roslaunch robot_arm_pkg check_motors.launch`