

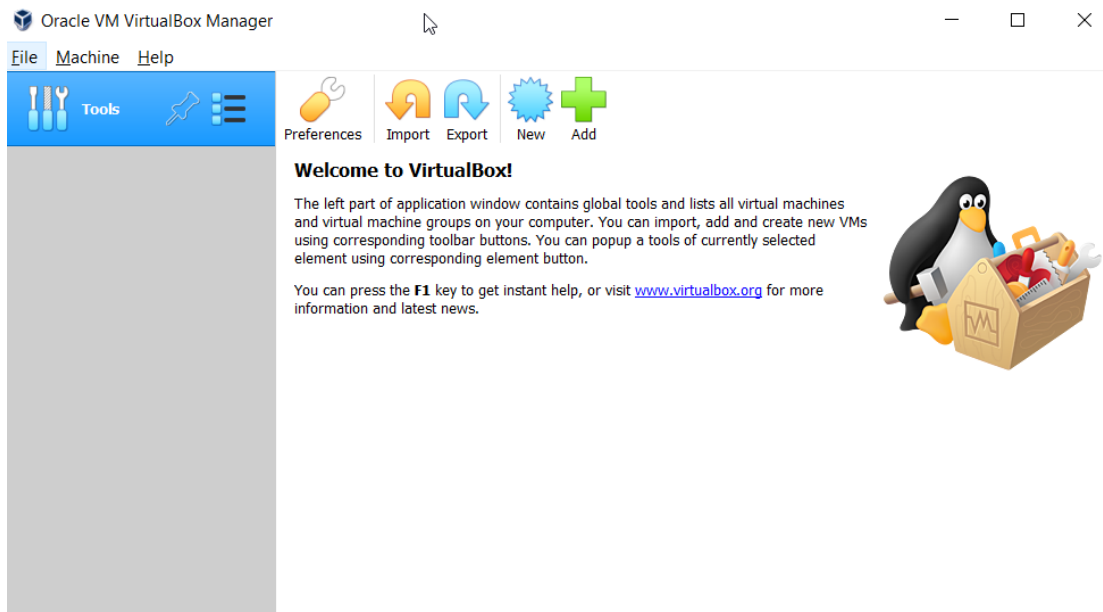
## Task: Install and run the arm package on Ros system

### Steps:

#### Step 1: Install VirtualBox

<https://www.virtualbox.org/wiki/Downloads>

After it's installed



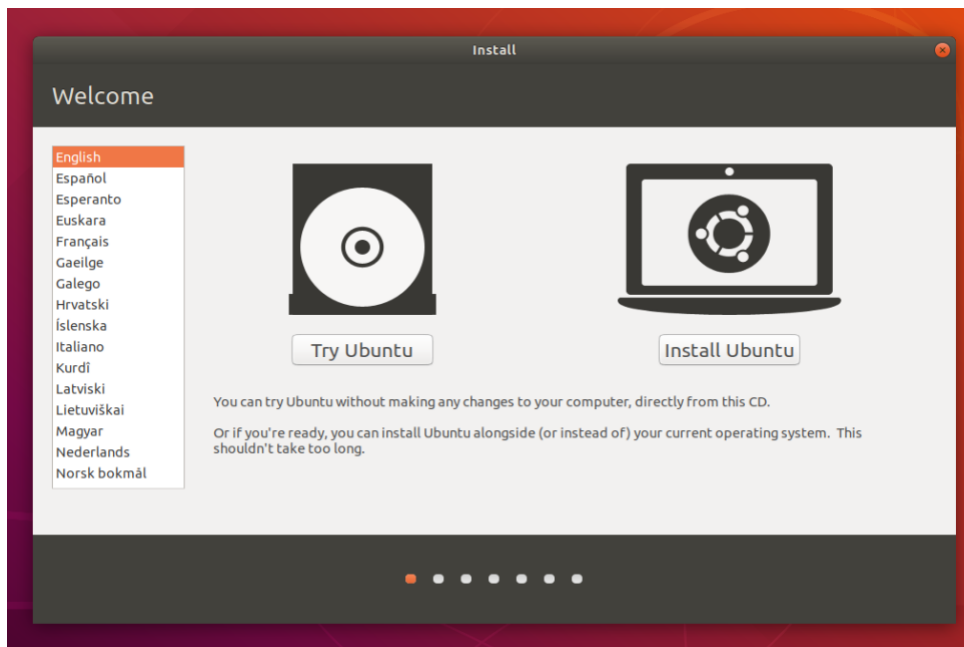
#### Step 2: Install Ubuntu on VirtualBox

<https://releases.ubuntu.com/16.04/>

After the .exe file is installed, go to the VB and click new, and fill on the following information



Then when this window is open click install ubuntu



Then chose the English language and continue pressing next until the system installed

### Step 3: Install ROS and Arm package in Ubuntu

Open the terminal on Ubuntu and write the following codes:

```
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
```

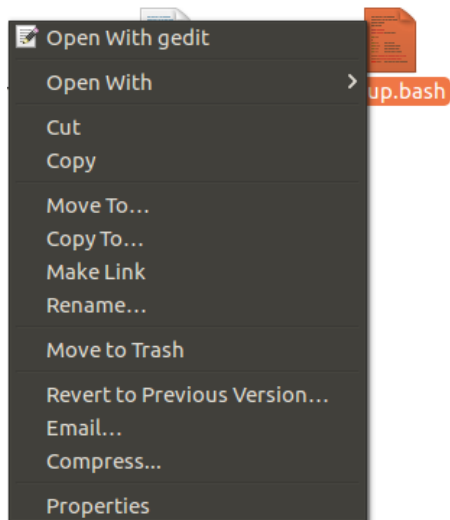
```
sudo nano ~/.bashrc
```

at the end of the (bashrc) file add the following line

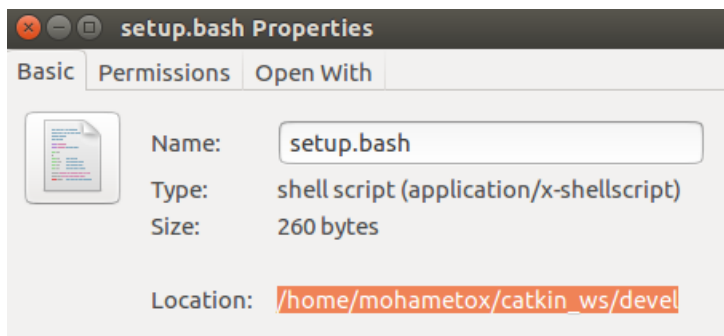
Go to (File) then to the folder that we given it a name as => (Catkin\_ws)

Then click on the second folder that is called => (devel)

Then click on the setting option for the file ([setup.bash](#)) => (Properties)



Then read the location of this file:



Then write this code:

```
source /home/mohammetox/catkin_ws/devel/setup.bash
```

then

```
ctrl + o
```

Enter

```
ctrl + x
```

```
source ~/.bashrc
```

```
roslaunch robot_arm_pkg check_motors.launch
```

## The screenshot of the codes:

```
mohametoX@mohametoX-VirtualBox:~$ sudo sh -c 'echo "deb http://packages.ros.org/r
os/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
[sudo] password for mohametoX:
Sorry, try again.
[sudo] password for mohametoX:
mohametoX@mohametoX-VirtualBox:~$ sudo apt-key adv --keyserver 'hkp://keyserver.u
buntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
Executing: /tmp/tmp.5UfxWox1he/gpg.1.sh --keyserver
hkp://keyserver.ubuntu.com:80
--recv-key
C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
gpg: requesting key AB17C654 from hkp server keyserver.ubuntu.com
gpg: key AB17C654: "Open Robotics <info@osrfoundation.org>" not changed
gpg: Total number processed: 1
gpg: unchanged: 1
mohametoX@mohametoX-VirtualBox:~$ sudo apt-get update
Hit:1 http://security.ubuntu.com/ubuntu xenial-security InRelease
Hit:2 http://sa.archive.ubuntu.com/ubuntu xenial InRelease
Hit:3 http://sa.archive.ubuntu.com/ubuntu xenial-updates InRelease
Hit:4 http://packages.ros.org/ros/ubuntu xenial InRelease
Hit:5 http://sa.archive.ubuntu.com/ubuntu xenial-backports InRelease
Reading package lists... Done
mohametoX@mohametoX-VirtualBox:~$ sudo apt-get install ros-kinetic-desktop-full
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-kinetic-desktop-full is already the newest version (1.3.2-0xenial-20210503-22
2014-0800).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~$ apt-cache search ros-kinetic
ros-kinetic-abb - ROS-Industrial support for ABB manipulators (metapackage).
ros-kinetic-abb-driver - ROS-Industrial nodes for interfacing with ABB robot cont
rollers.
ros-kinetic-abb-egm-msgs - Provides ROS message definitions, representing Externa
lly Guided Motion (EGM) data from ABB robot controllers.
ros-kinetic-abb-irb2400-moveit-config - MoveIt package for the ABB IRB 2400.
ros-kinetic-abb-irb2400-moveit-plugins - MoveIt plugins for the ABB 2400 (and var
iants).
```

```
mohametoX@mohametoX-VirtualBox:~$ echo "source /opt/ros/kinetic/setup.bash" >> ~/.
.bashrc
mohametoX@mohametoX-VirtualBox:~$ source ~/.bashrc
mohametoX@mohametoX-VirtualBox:~$ sudo apt install python-rosdep python-rosinstal
l python-rosinstall-generator python-wstool build-essential
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version (12.1ubuntu2).
python-rosdep is already the newest version (0.21.0-1).
python-rosinstall is already the newest version (0.7.8-1).
python-rosinstall-generator is already the newest version (0.1.22-1).
python-wstool is already the newest version (0.1.17-1).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~$ sudo apt install python-rosdep
Reading package lists... Done
Building dependency tree
Reading state information... Done
python-rosdep is already the newest version (0.21.0-1).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~$ sudo rosdep init
ERROR: default sources list file already exists:
/etc/ros/rosdep/sources.list.d/20-default.list
Please delete if you wish to re-initialize
mohametoX@mohametoX-VirtualBox:~$ rosdep update
reading in sources list data from /etc/ros/rosdep/sources.list.d
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/osx-homebrew.ya
ml
```

```
mohametoX@mohametoX-VirtualBox:~$ sudo apt-get install ros-noetic-catkin
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package ros-noetic-catkin
mohametoX@mohametoX-VirtualBox:~$
mohametoX@mohametoX-VirtualBox:~$ mkdir -p ~/catkin_ws/src
mohametoX@mohametoX-VirtualBox:~$
mohametoX@mohametoX-VirtualBox:~$ cd ~/catkin_ws/
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ catkin_make
Base path: /home/mohametoX/catkin_ws
Source space: /home/mohametoX/catkin_ws/src
Build space: /home/mohametoX/catkin_ws/build
Devel space: /home/mohametoX/catkin_ws/devel
Install space: /home/mohametoX/catkin_ws/install
```

```
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ rosdep install --from-paths src --ignore-src -r -y
#All required rosdeps installed successfully
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ sudo apt-get install ros-kinetic-moveit
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-kinetic-moveit is already the newest version (0.9.18-1xenial-20210503-183018-0800).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ sudo apt-get install ros-kinetic-joint-state-publisher ros-kinetic-joint-state-publisher-gui
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-kinetic-joint-state-publisher is already the newest version (1.12.15-1xenial-20210503-123115-0800).
ros-kinetic-joint-state-publisher-gui is already the newest version (1.12.15-1xenial-20210503-123445-0800).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ sudo apt-get install ros-kinetic-gazebo-ros-control joint-state-publisher
Reading package lists... Done
Building dependency tree
Reading state information... Done
joint-state-publisher is already the newest version (1.11.8-3-fakesync).
ros-kinetic-gazebo-ros-control is already the newest version (2.5.21-1xenial-20210503-133045-0800).
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ sudo apt-get install ros-kinetic-ros-controllers ros-kinetic-ros-control
Reading package lists... Done
```

```
0 upgraded, 0 newly installed, 0 to remove and 375 not upgraded.
mohametoX@mohametoX-VirtualBox:~/catkin_ws$
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ sudo nano ~/.bashrc
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ source ~/.bashrc
mohametoX@mohametoX-VirtualBox:~/catkin_ws$ roslaunch robot_arm_pkg check_motors.launch
```

Finally, ROS and Arm package have been installed Successfully

