Rviz and Gazebo simulators

After download ROS, create a workspace, and install all packages that you need to execute and control robot arm you can use simulators such as Rviz to simulate the robot arm:

Note: if you don't install the robot arm package and its dependencies yet enter these commands first:

- 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 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

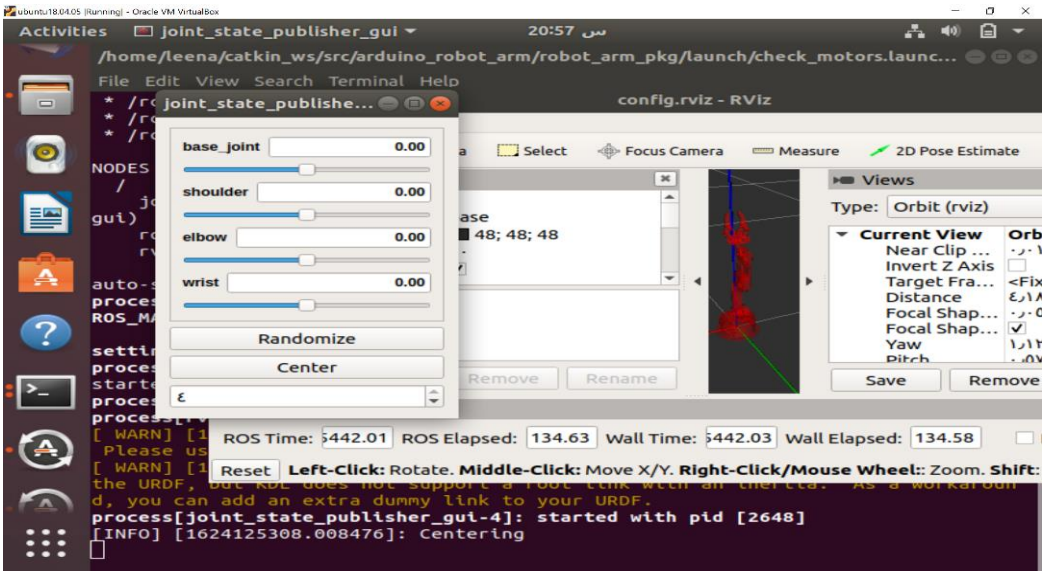
  $ sudo apt-get install ros-melodic-gazebo-ros-control joint-state-publisher

  $ sudo apt-get install ros-melodic-ros-controllers ros-melodic-ros-control

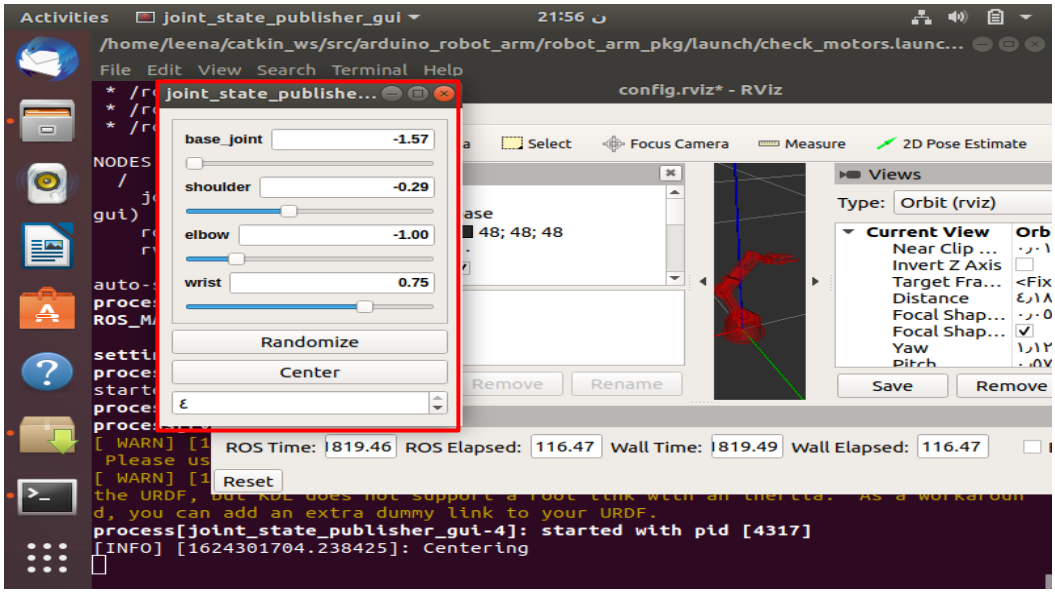
Run Rviz

- To open the Rviz simulator Write the command below on the terminal:

  $ roslaunch robot_arm_pkg check_motors.launch

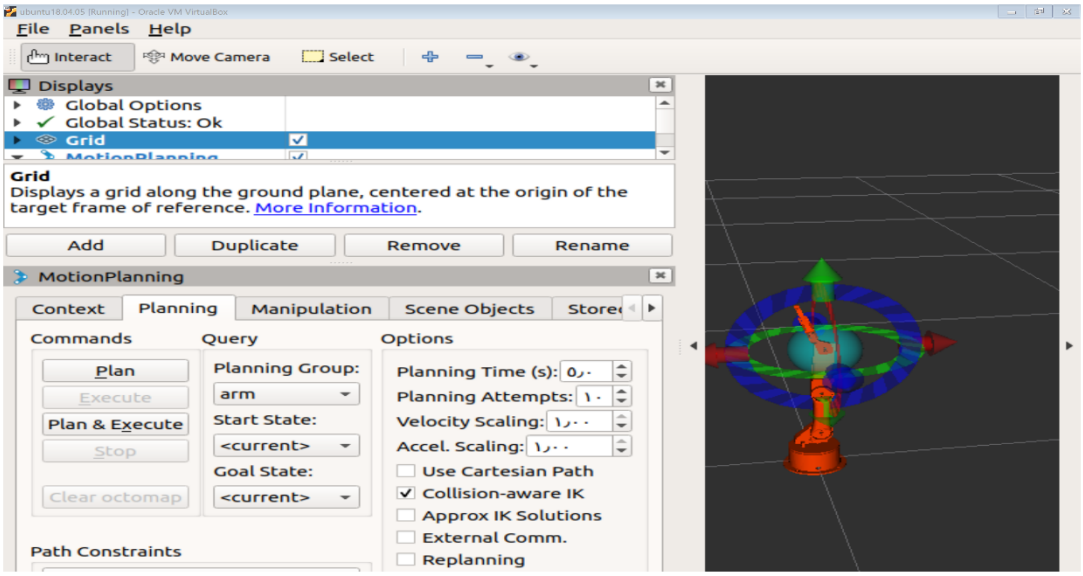


  - The robot arm is visible but it can't move yet, you can change the position on this window:

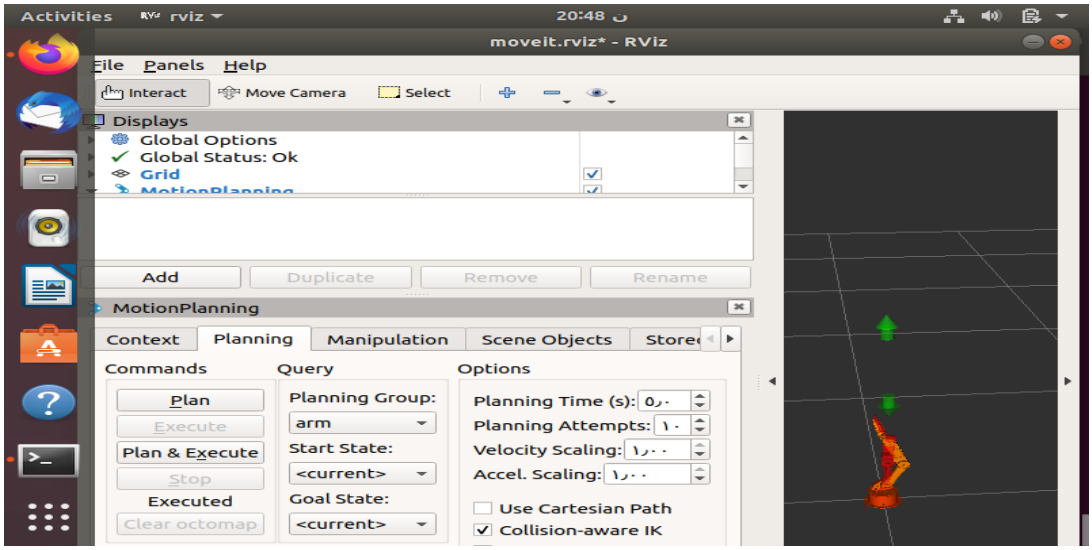


- To move and control the robot arm use MoveIt software. Enter this command in the terminal to open it:

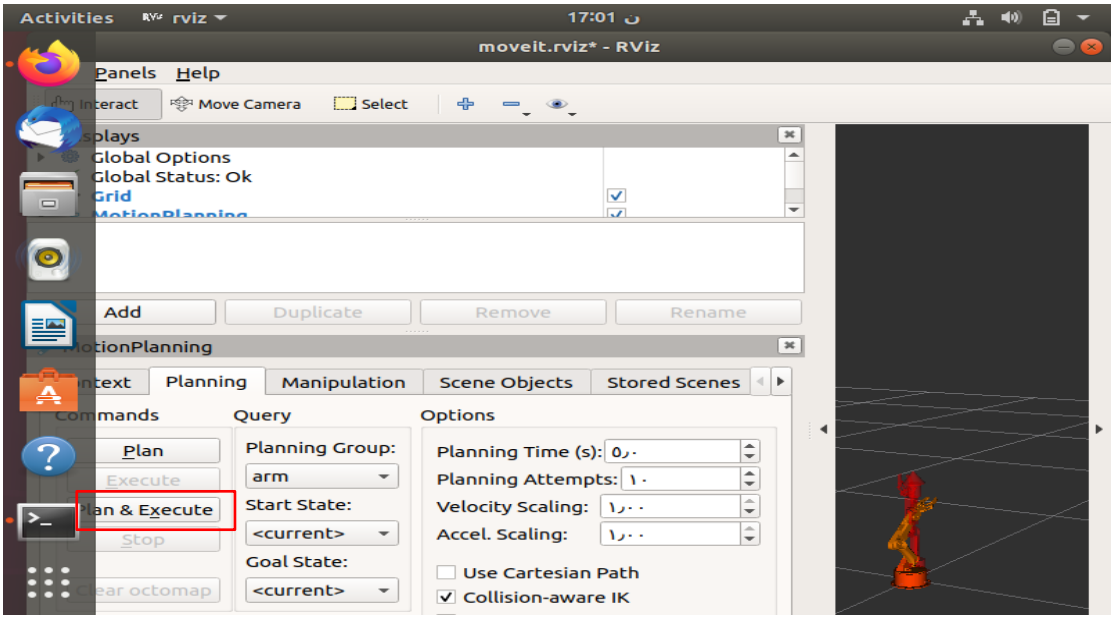
```
$ roslaunch moveit_pkg demo.launch
```



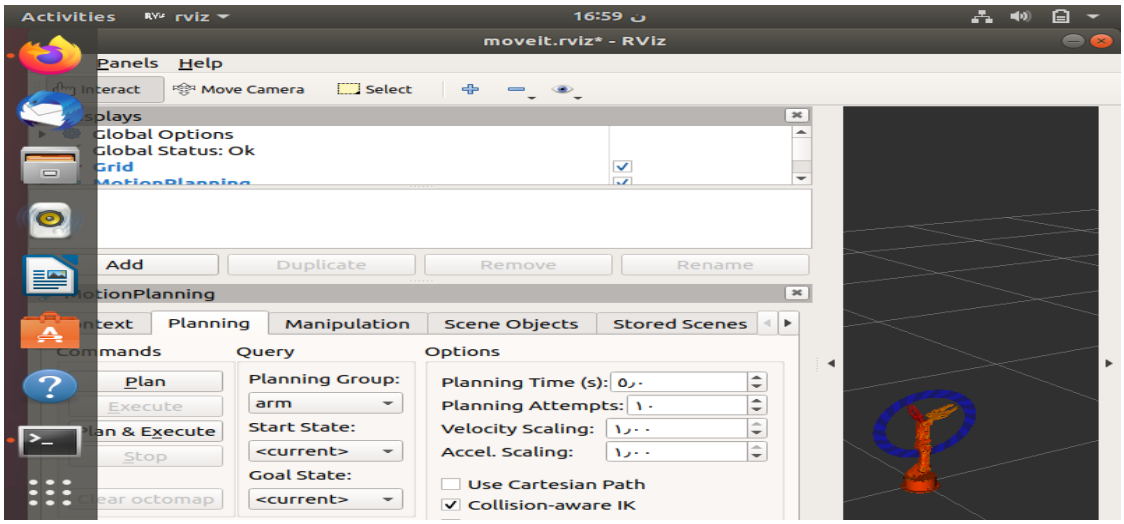
- To move the elbow drag the green arrow up and down:



- To execute the arm motion You can click plan & Execute:



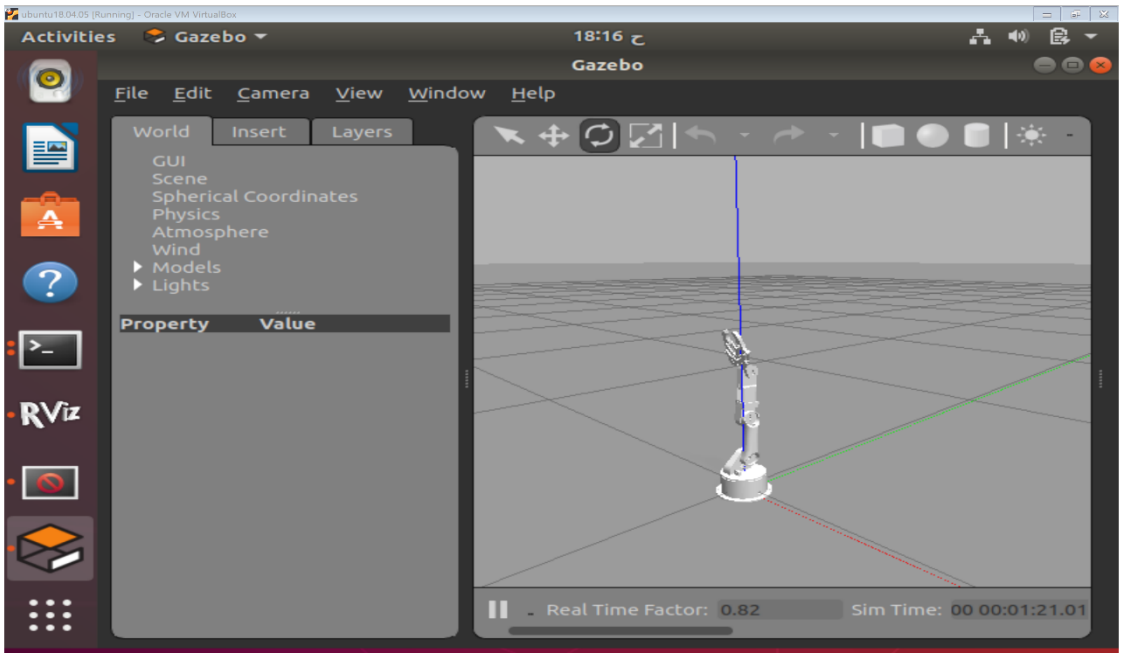
- To move the gripper move the blue ring in a circular motion:



Gazebo

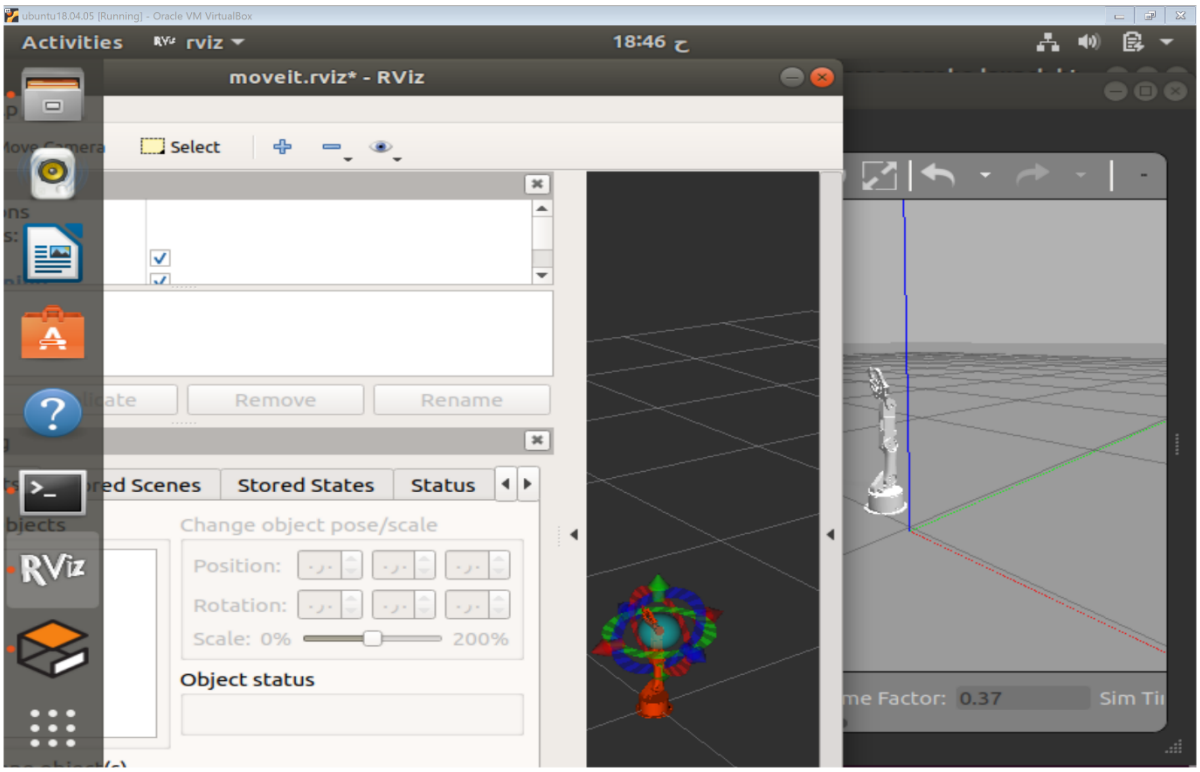
- **To open Gazebo enter this command:**

```
$ roslaunch robot_arm_pkg check_motors_gazebo.launch
```



- To open Rviz and Gazebo use this command:

```
$ roslaunch moveit_pkg demo_gazebo.launch
```



- You can move the arm in Rviz as we mentioned earlier and press plan & execute button to see the simulation on Gazebo: