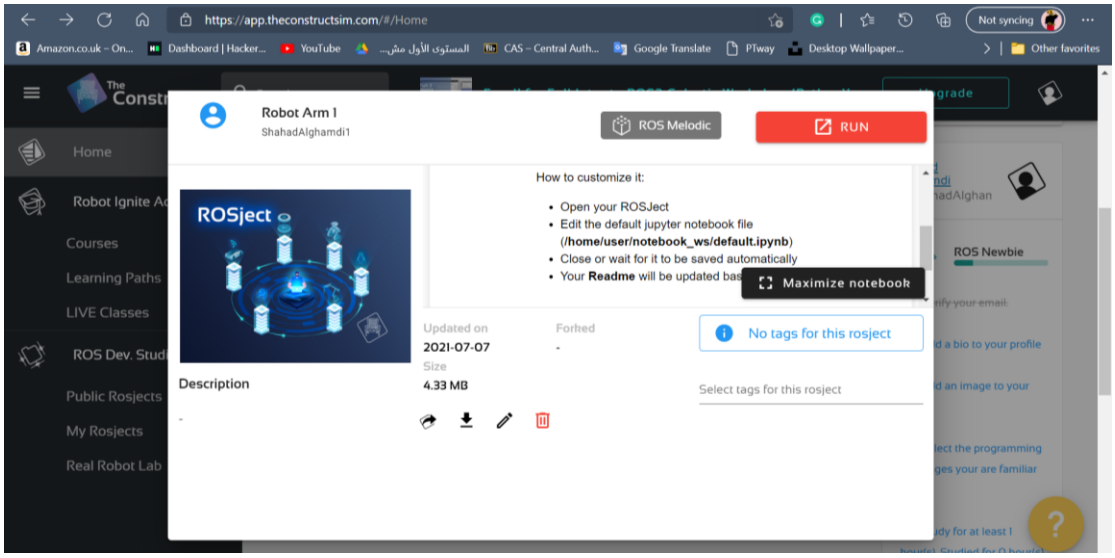
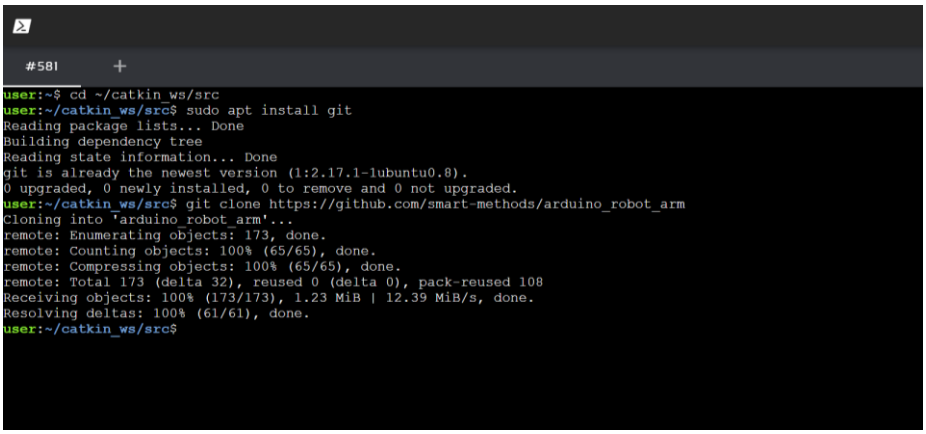
Robot operating system installation and configuration

Signing up at https://www.theconstructsim.com/, click on create a project and the following screen will appear. start filling the blanks by writing the project name, choose which ROS version you want to work with, and in my case, I'm working with ROS Melodic, and finally add a brief description then click create.



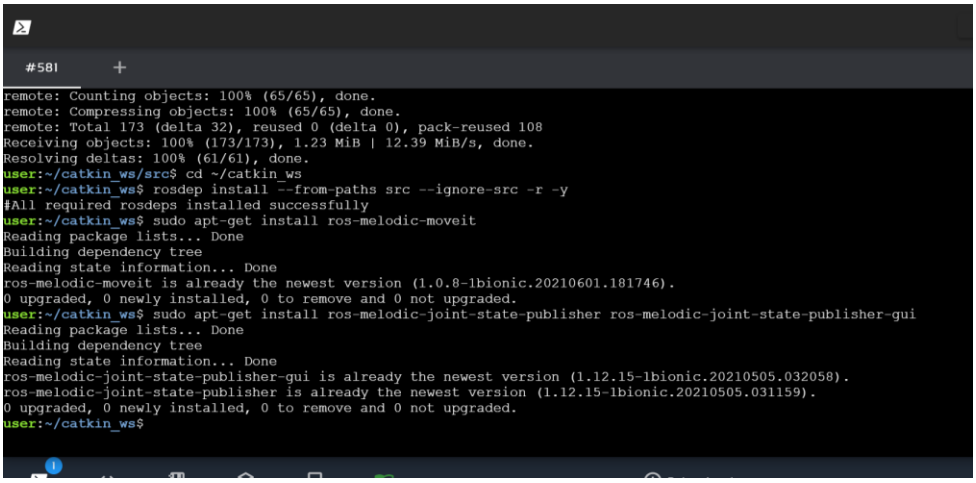
1. installing the package (arduino_robot_arm)

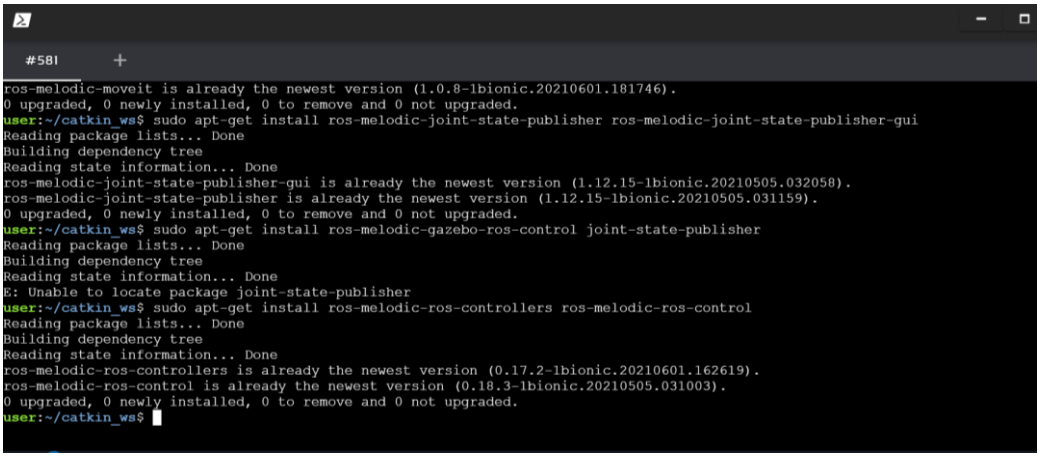
The next step is to clone the robot arm package from GitHub, so we will use the command (Sudo apt install git) to install Github on ROS to clone the project using its' path from GitHub to ROS.



2. Install all the dependencies

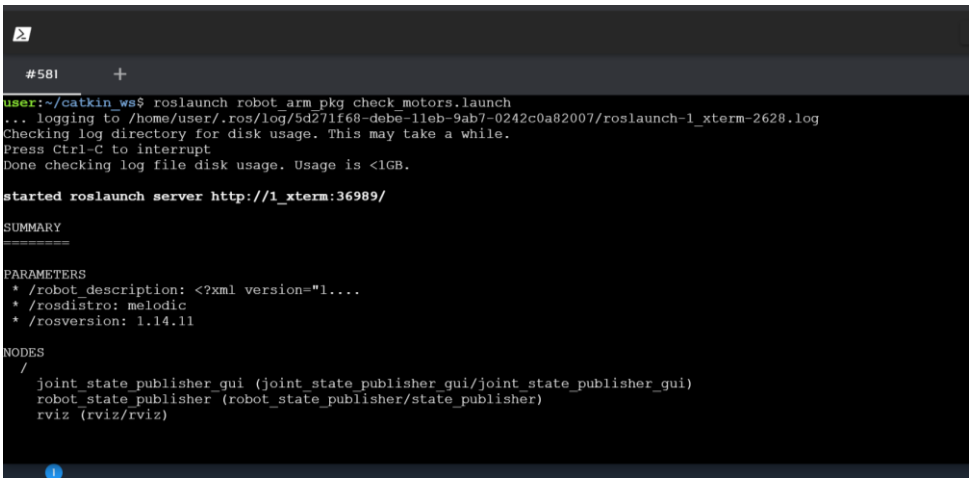
To run the package we need other dependencies (MoveIt, joint state publisher, gazebo ..etc), so we used the following commands to install those dependencies on ROS, and we complied the package after the installation is completed.

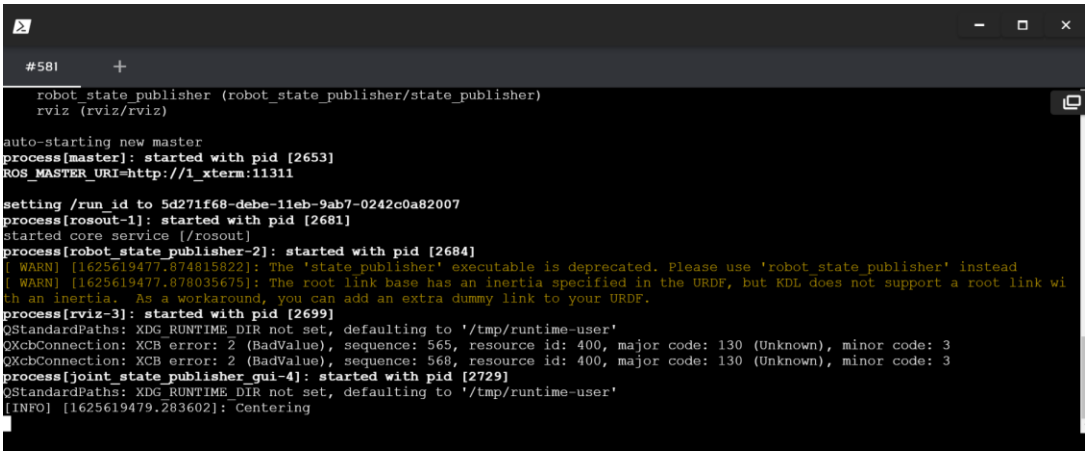


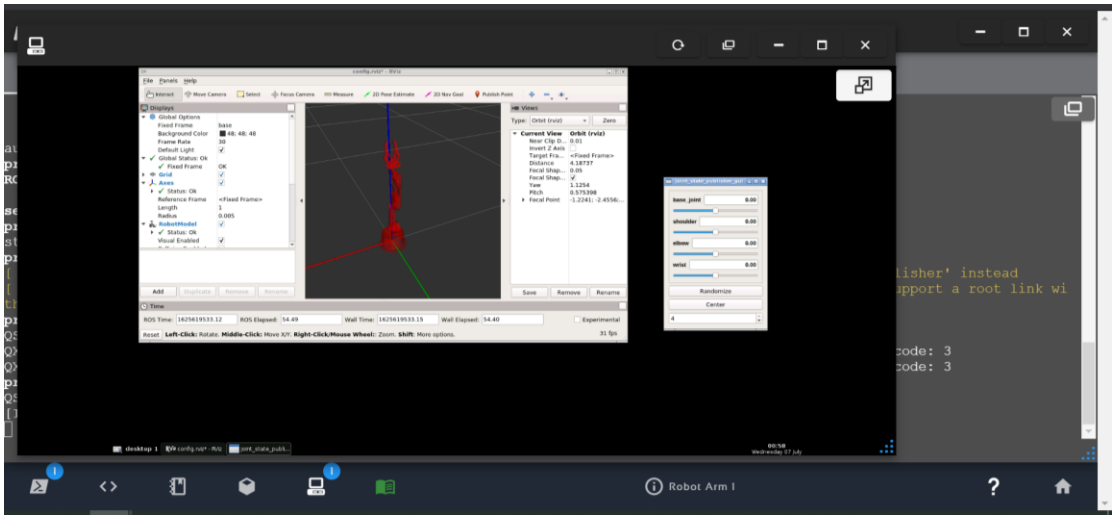


3. Controlling the motors

Now we run the robot arm package using the following command (roslaunch robot_arm_pkg check_motors.launch) which will result in two separate windows, where RVis window will show the arm structure simulation and the other is the joint state publisher window showing 4 controls to adjust the positioning of the parts.



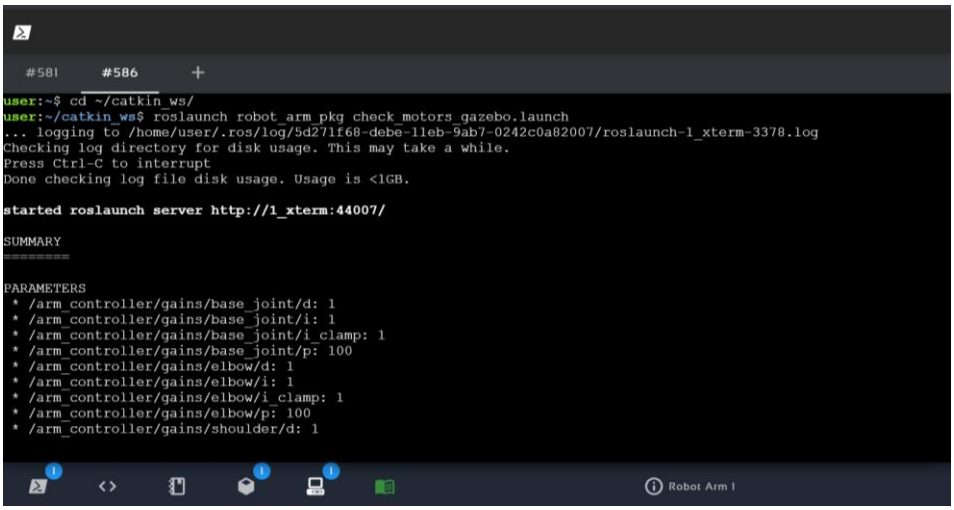


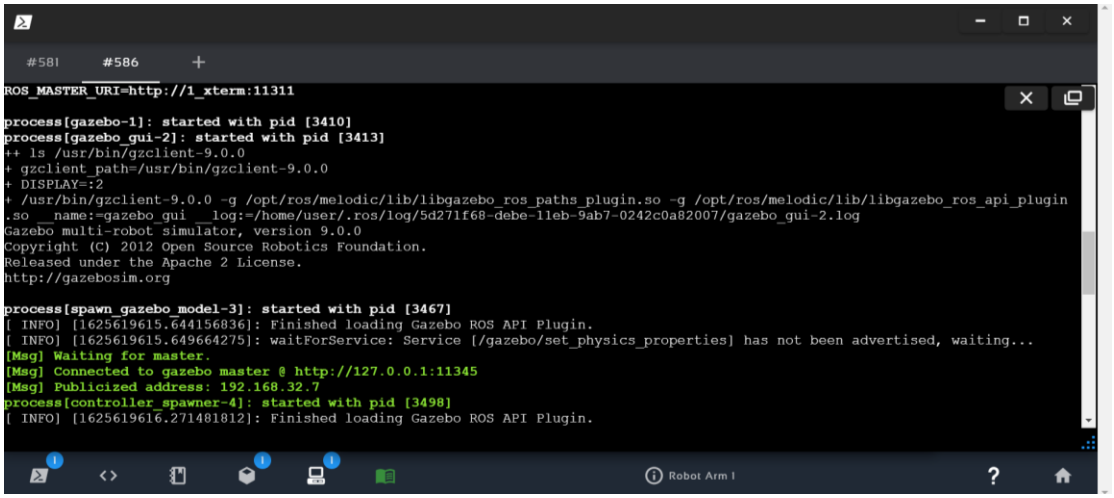

Robot Arm I

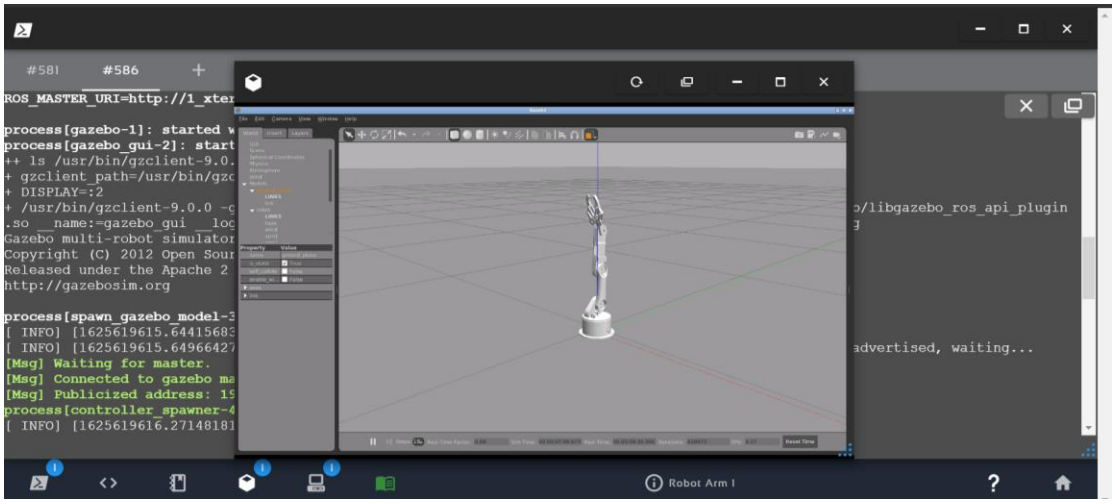
4. Controlling the motors in simulation

using the following commands, now we will run the arm simulation on both RVis and Gazebo and adjust the arm using the controls. $ roslaunch robot_arm_pkg check_motors.launch $ roslaunch robot_arm_pkg check_motors_gazebo.launch

which will result in the following windows:






#581
#586
ROS_MASTER_URI=http://1_xter
process[gazebo-1]: started w
process[gazebo_gui-2]: start
++ ls /usr/bin/gzclient-9.0.
+ gzclient_path=/usr/bin/gzc
+ DISPLAY=:2
+ /usr/bin/gzclient-9.0.0 -g
.so __name:=gazebo_gui __log
Gazebo multi-robot simulator
Copyright (C) 2012 Open Sour
Released under the Apache 2
http://gazebosim.org
process[spawn_gazebo_model-3
[INFO] [1625619615.6441568
[INFO] [1625619615.6496642
[Msg] Waiting for master.
[Msg] Connected to gazebo ma
[Msg] Publicized address: 19
process[controller_spawner-4
[INFO] [1625619616.2714818
o/libgazebo_ros_api_plugin
advertised, waiting...
Robot Arm I

5. MoveIt in RVis

To define the positioning of the arm and its' movements we use MoveIt which simulates the arm movement in different directions and scenarios (facing obstacles or not) and we can run it using the command (roslaunch moveit_pkg demo.launch)

which will result in the following windows: