MILESTONE 3

Team 5

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1. Introduction:

In this report, a significant stage in our project that will showcase the team's progress and achievements. In this milestone, we will be focusing on developing an environment using GAZEBO, a powerful simulation tool, where our robot, tables, and a task object will coexist. The primary objective of this milestone is to demonstrate the robot's ability to execute a pick-and-place task, successfully moving the task object from one location to another, while ensuring collision-free operation.

By reaching this milestone, our team aims to showcase our proficiency in designing and implementing a functional simulation environment, as well as our ability to program the robot's movements effectively. This milestone is crucial as it tests the core capabilities of the robot in terms of navigation, perception, and manipulation, emphasizing the importance of seamless and safe interaction with its surroundings.

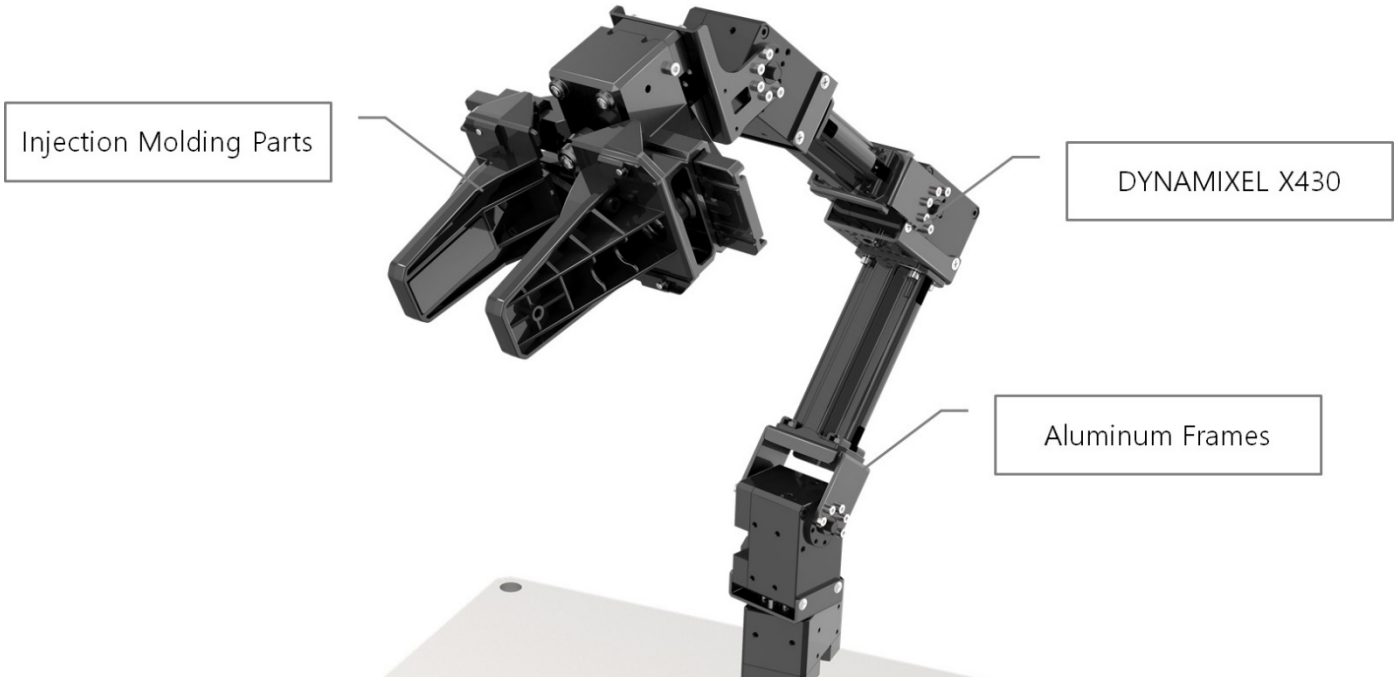

Figure 1:Open manipulator robot

2. Trajectory Planning Node:

This node moves the robot end effector to the required position at which the object needed to be moved is. The motion is performed by two joints (joint1 & joint 2& joint3). Then, the gripper closes to hold the object. After that, the robot moves the end effector to the desired release position. Finally, the gripper opens to release the object.

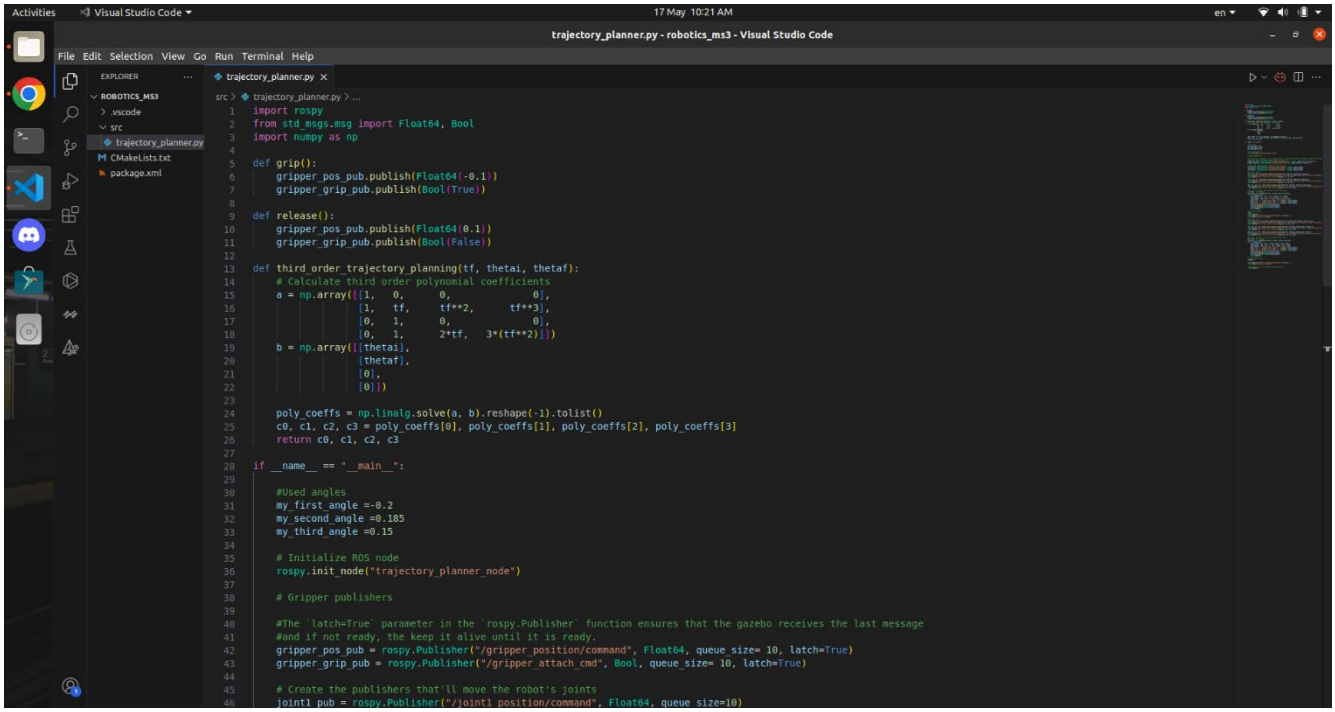

Figure 3: Code Part1

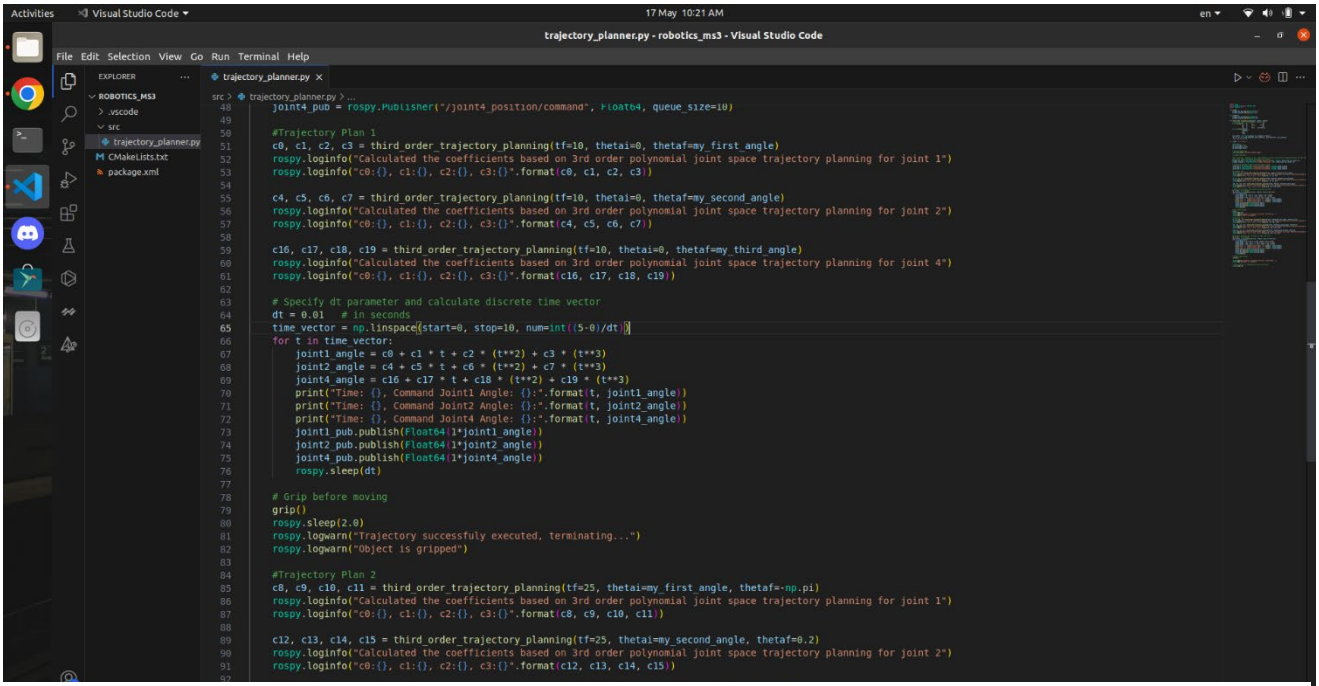

Figure 2: Code Part2

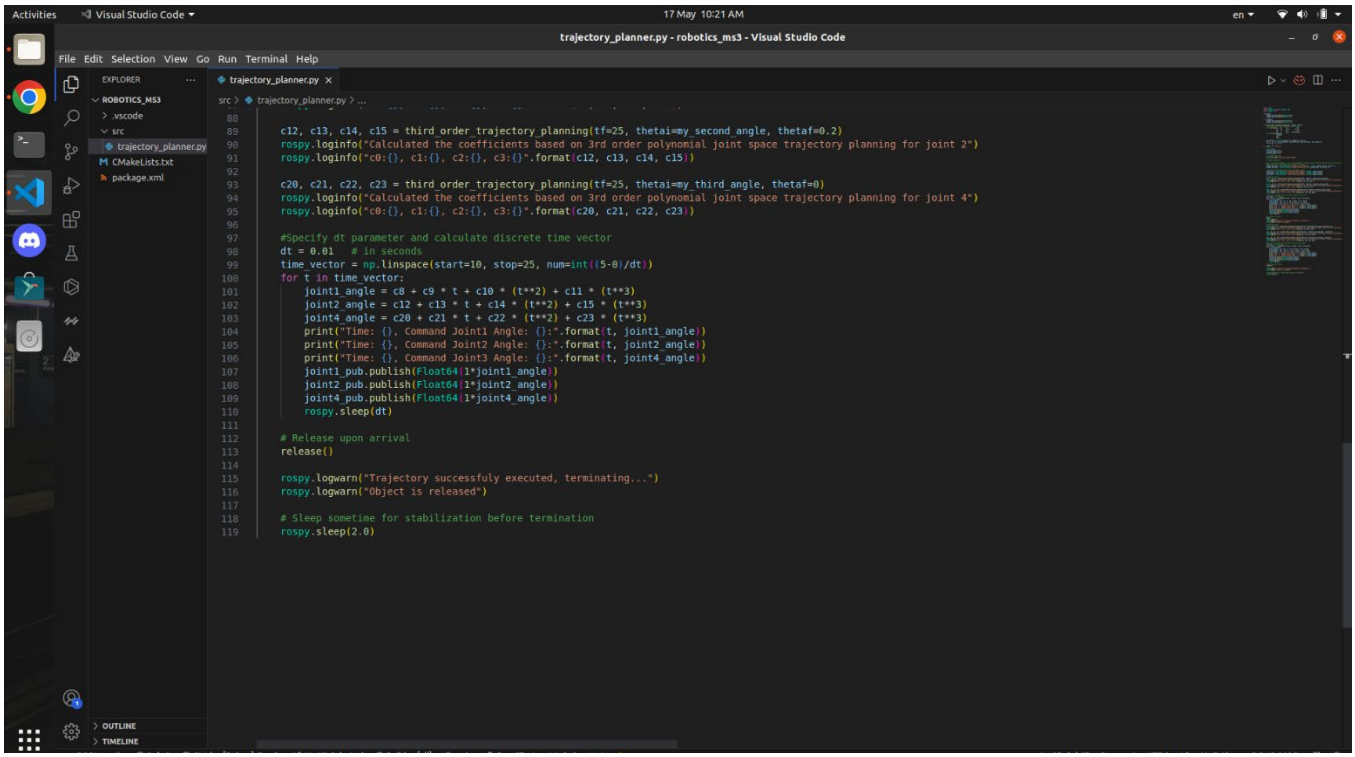

Figure 4: Code Part3

3. RQT Graph:

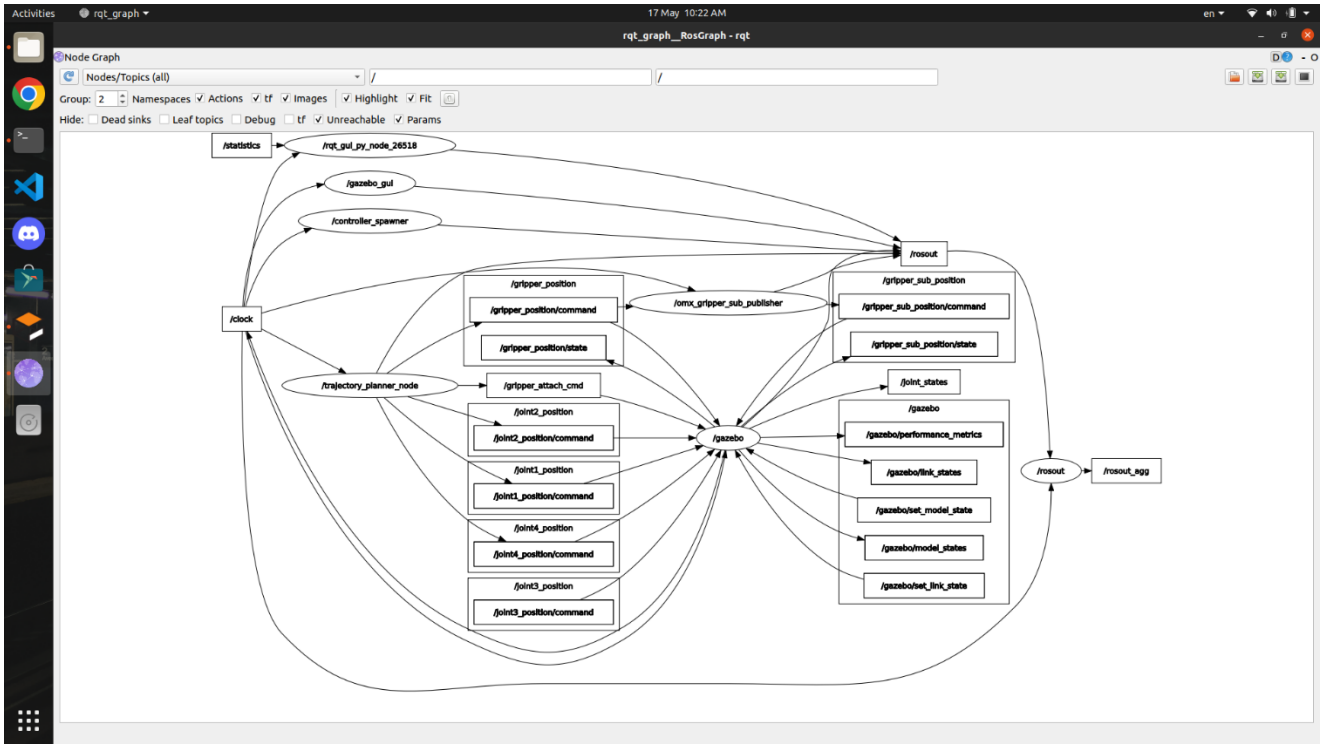

Figure 5: RQT Graph (all)

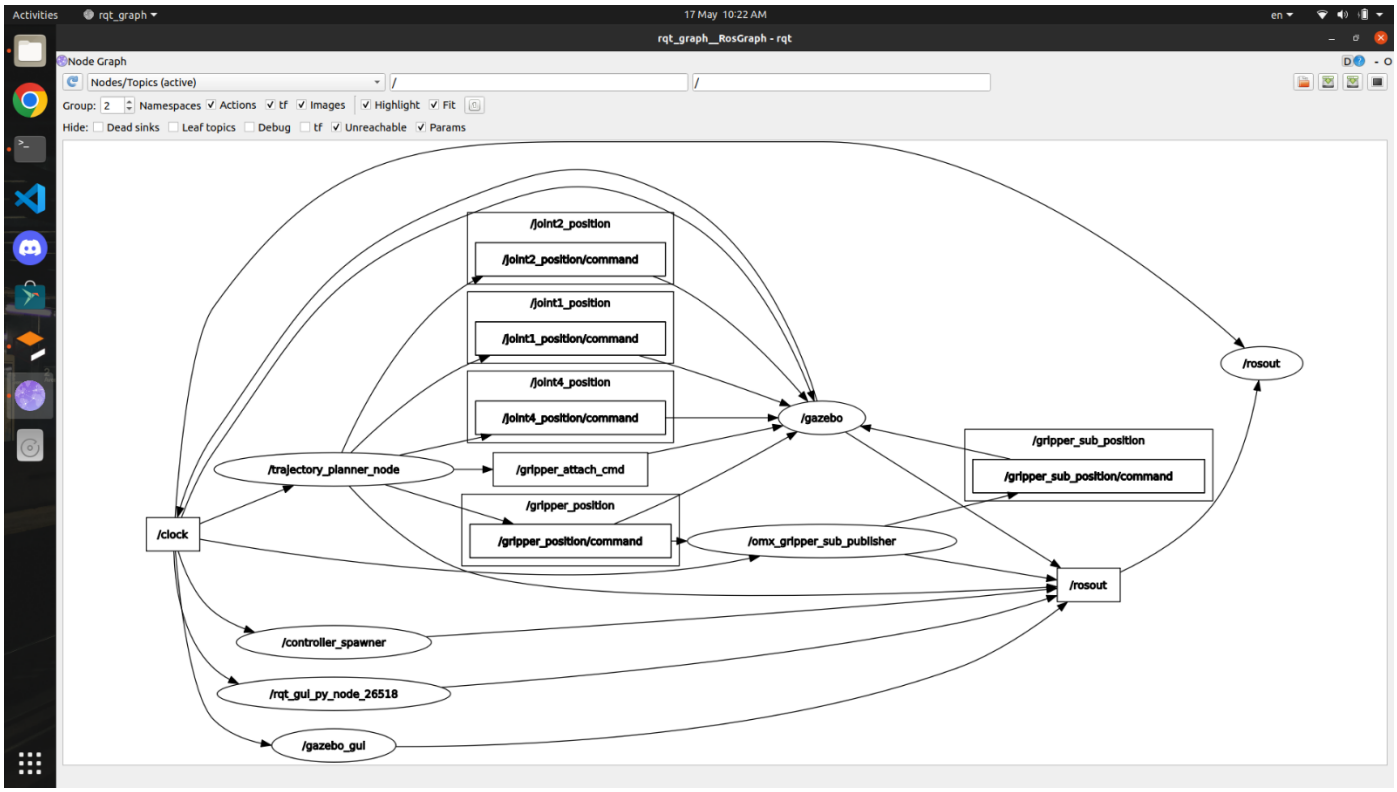

Figure 7: RQT Graph (active)

4. Environment From Gazebo:

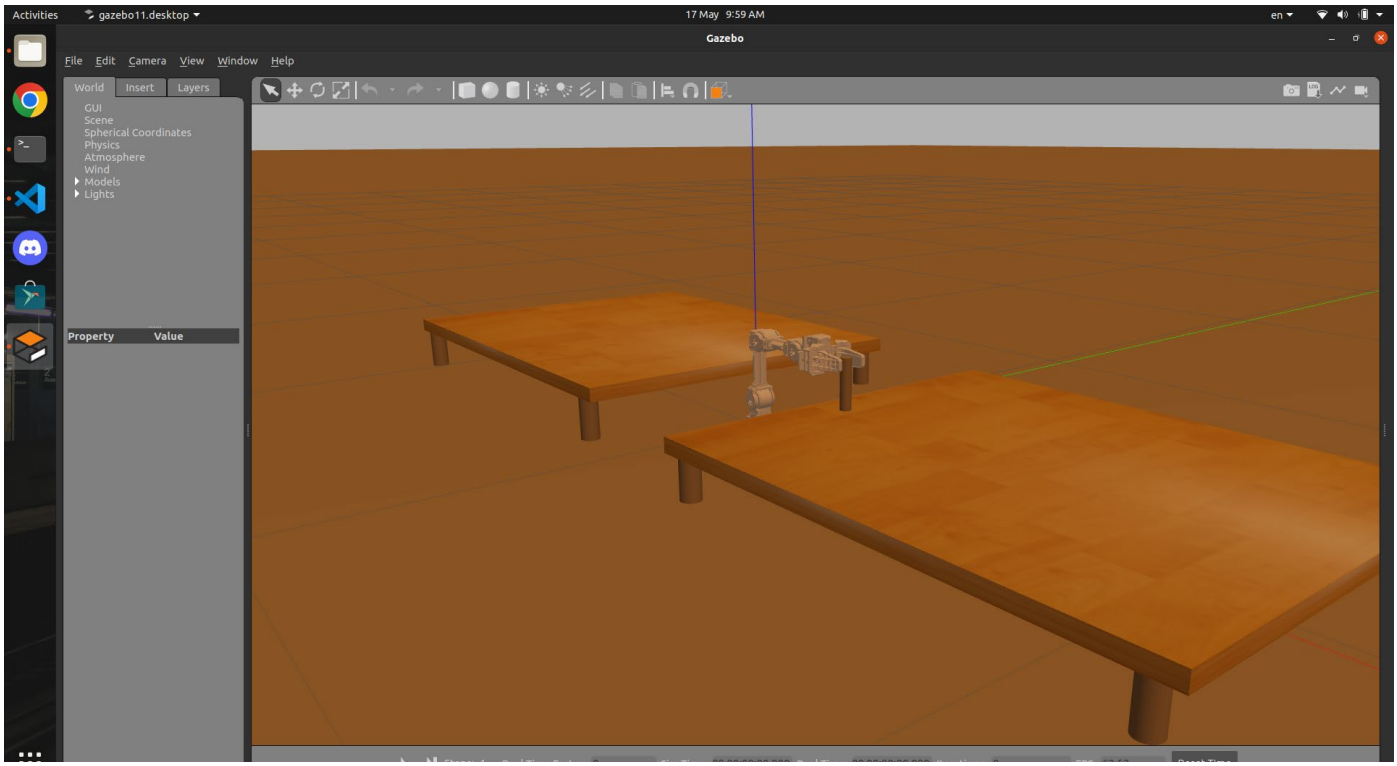

Figure 6: Gazebo Environment

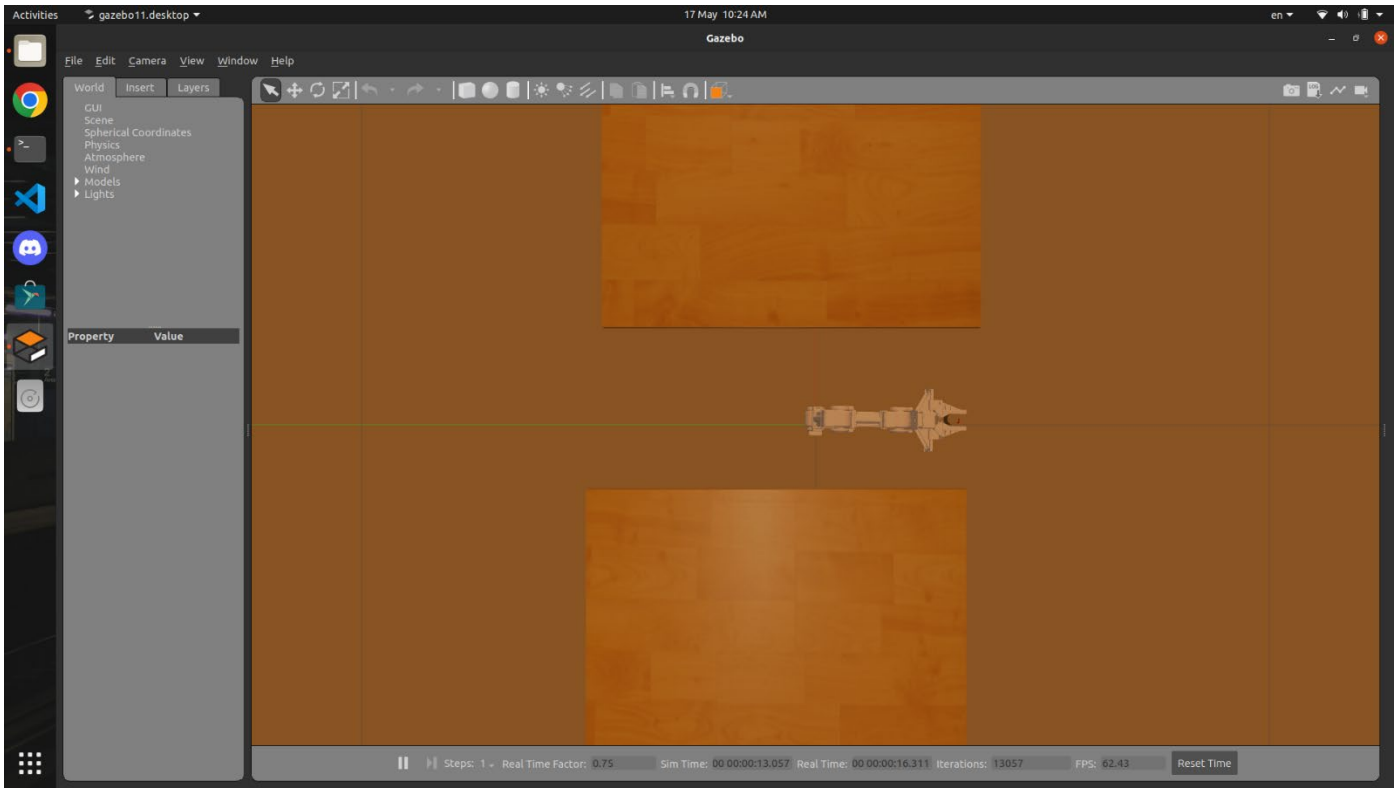

Figure 9:Robot is moving in Gazebo.

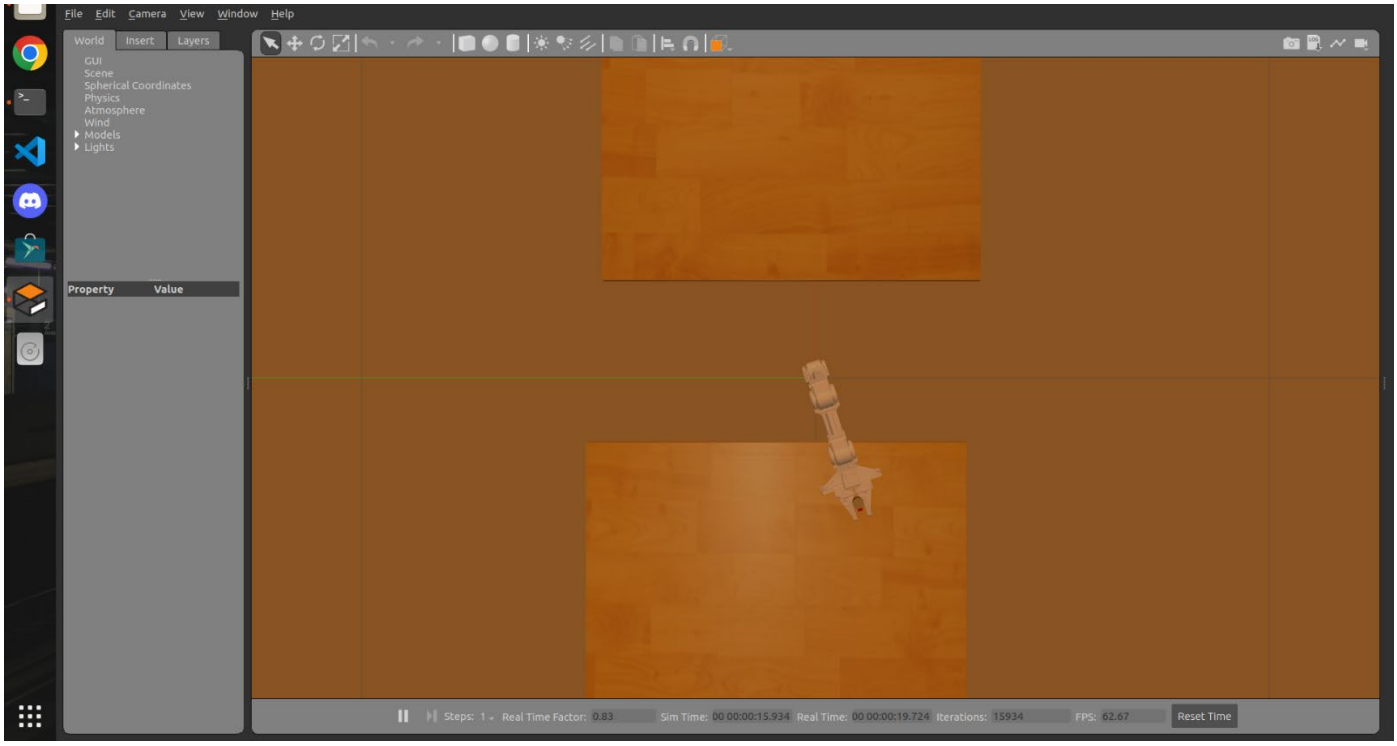

Figure 8: Robot reached in Gazebo.

5. Simulation Video Link:

You can watch the video of our project here.