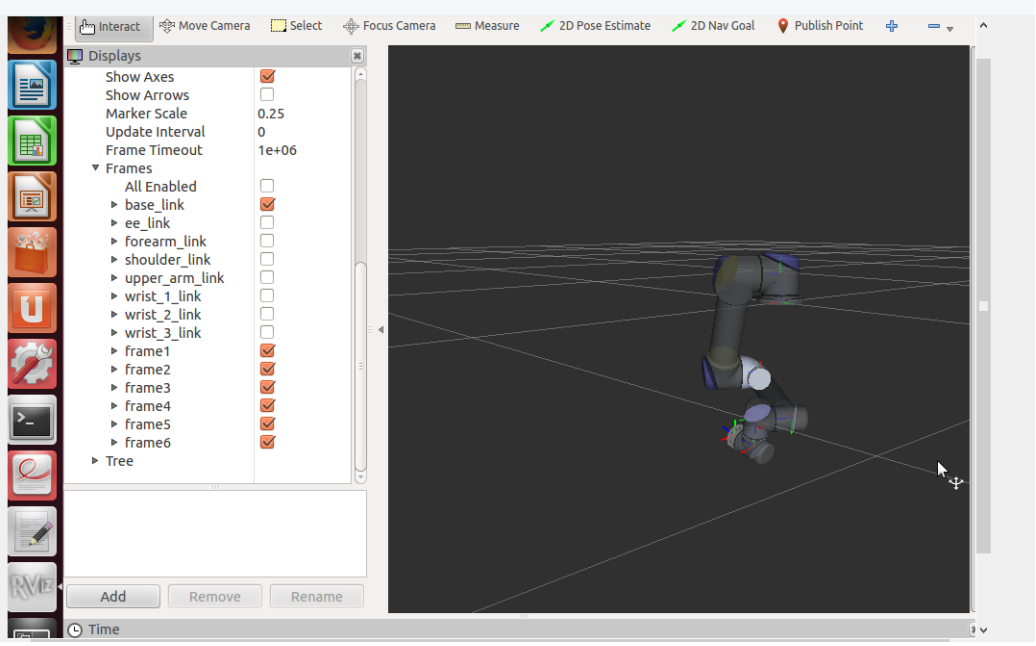
Lab 3 Answers

The sketches for Question2 and Question4 have been already provided, so are not attached here. Three configurations of q1 have been chosen to show the frames, which are: {1, 1, 2, 3, 1, 0}, {0.5, 0.3, 0.9, 1.3, 1.2, 1} and {3, 2, 1.5, 2.5, 1.3, 1.2}.

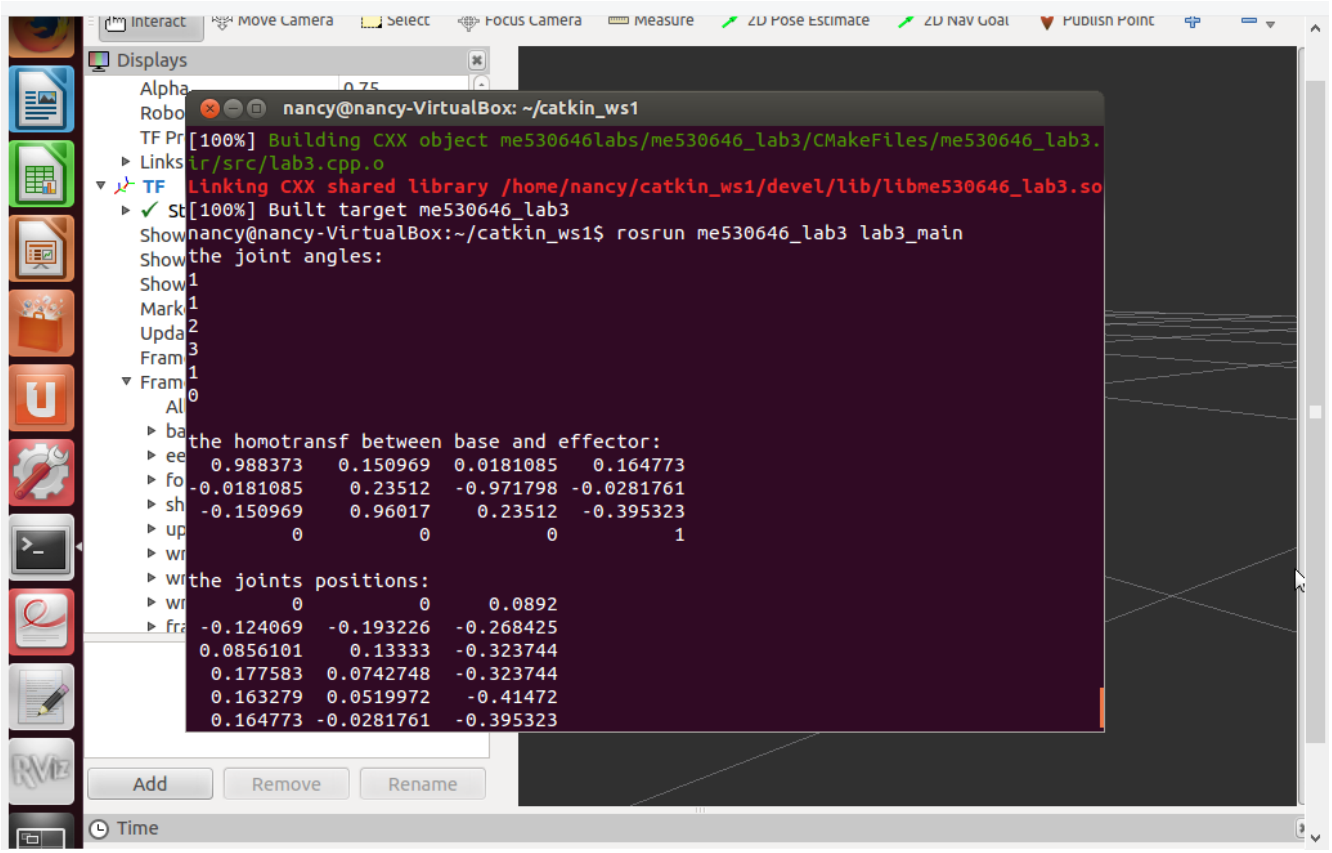
1. Question 7

   a. q1= {1, 1, 2, 3, 1, 0}

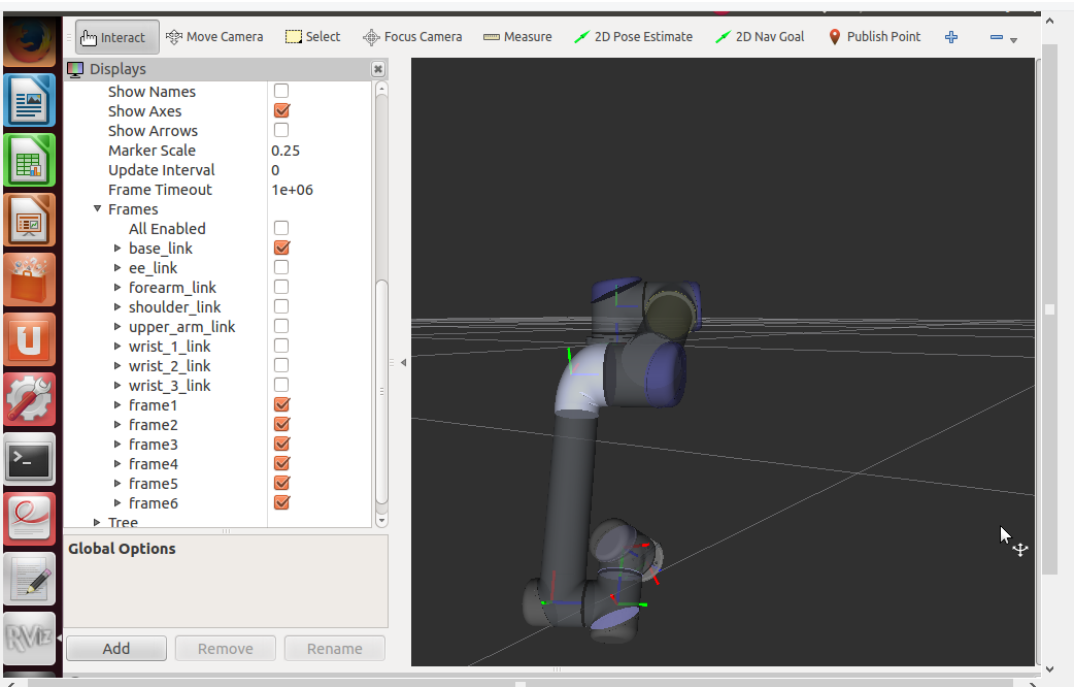
      Below is the screenshot of the RViz window, showing the robot position and the DH frames got by the function plotframes (same for b and c).

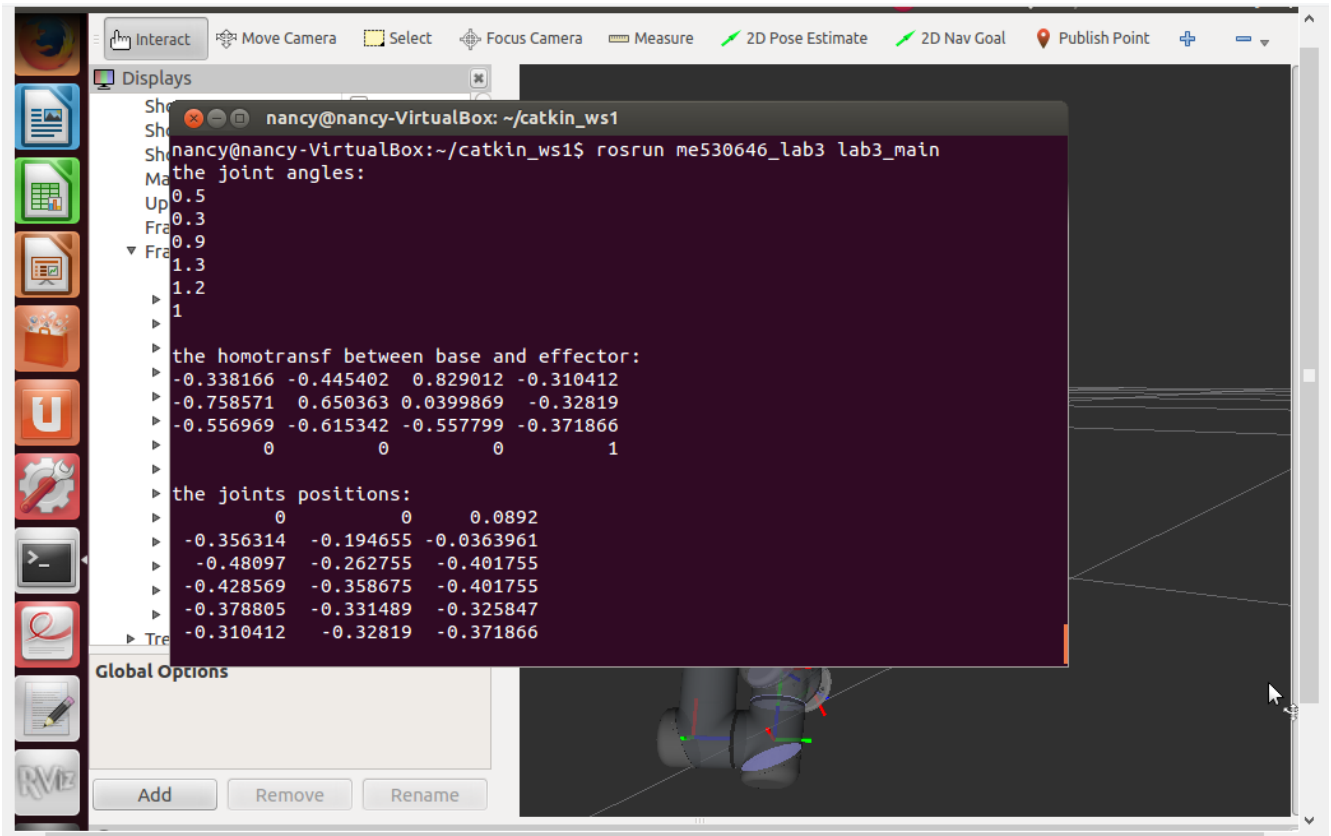


Below is the screenshot showing the configurations (q1), the transformation from the base of the robot to its end-effector, and the origins of the frames. The joints positions are approximately the origin of the transformation frames, and each column represents the position of a joint, starting from the 2nd joint to the end-effector (same for b and c).



b. q1= {0.5, 0.3, 0.9, 1.3, 1.2, 1}





c. q1= {3, 2, 1.5, 2.5, 1.3, 1.2}