ELEC-E8126 Robot manipulation
Exercise 3

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1. equations used to compute the poses

$$T_{pregrasp} = T_{pick} * T_z(0.1) * R_x(pi)$$

$$T_{grasp} = T_{pick} * R_x(pi)$$

$$T_{place} = T_{place} * R_x(pi)$$

2. answers to following questions:

1) In which coordinate frame the MoveIt assumes the poses are specified and what should I do if my pose is specified with respect to another frame?

-The MoveIt assumes the poses are specified with respect base_link frame.

-If my pose is specified with respect to another frame, we need use setPoseReferenceFrame() to set the reference frame for the MoveIt library operations.

2) What are the differences between cartesian path computation and planning?

-The planning of joint space is to plan for each joint and calculate the interpolation point of each joint. Cartesian planning is to plan the end trajectory in Cartesian space, and then to inverse solution for each interpolation point to calculate the angle of each joint.

3) Is there any chance that the object will be moved by robot before grasping? Why yes/no?

Robot is asked to move to 10 cm above the pick pose in z-axis of pick coordinate system, so normally object won't be moved by robot before grasping, as well as the arm 's trajectory follow the planning.

4) Can robot collide with itself during execution of computed pick-and-place path?

It can be if the planning is not good, and the robot my collide with itsel.

3. estimates of time spent on this exercise

About 15 hours(5 hours per day, 3 day to finish)