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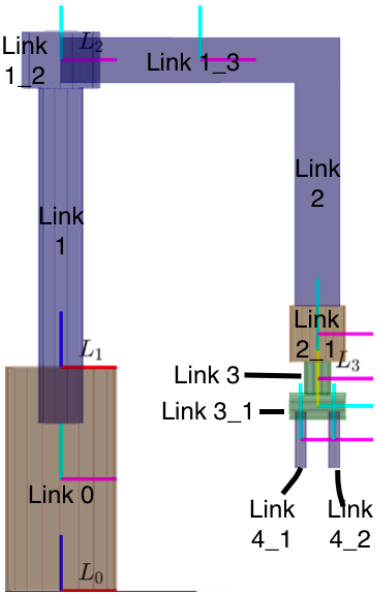
MATLAB CODE ON ROBOT ARM

The robot simple robot arm was created using cylinders and box provided in the folder. The robot is a **mixer** which has two revolute joints and a prismatic joint.

make_scara_robot.m:

Links:

To better understand the defined links, the robot figure has been labelled with the name of the links:



The entire structure of the robot has 10 links in total. The base link is a cylinder of radius 0.05units and a length of 0.2units. The Link 1_3 and Link 2 are boxes of sides [0.25, 0.02, 0.04] and [0.2, 0.02, 0.04] respectively. All of the other links are cylinder of different radius and length. The sphere representing the end effector has not been included in the robot since it already has a hand.

Joints:

The objective was to create a robot with a hand which can be used as a mixer. Hence, the hand should be able to revolute about the z-axis. To give the robot further mobility, the Link1_2 acts as a revolute joint and the Link1 is made a prismatic joint so it can be translated in the z-direction. *All of the joints are translated with reference to Link 0 and are easy to understand.*

The robot consists of 9 joints which have been described below:

Joint 1:

This joint is between Links 0 and Link 1 which is made prismatic to increase mobility of the arm.

Joint 2:

This is a revolute joint is between Links 1 and Links 1_2.

Joint 3:

This is also a revolute joint between Links 2_1 and Link 3.

All of the other joints have been fixed which are between:

Link 1 and Link 1_3
Link 1_3 and Link 2
Link 2 and Link 2_1
Link 3 and Link 3_1
Link 3_1 and Link 4_1
Link 3_1 and Link 4_2

Each joint is made a children of the previous joint in order to ensure the movement of robot as a whole instead of only just certain parts. This can be seen in the code at the end of each joint.

Animation:

The animation code is almost identical to the original code. Since, the robot has only 3 movable joints, an extra loop has been deleted for each part. The pause command for Joint 3 has been removed to achieve the fastest rotation of the link below Link 2_1.