M.E. 530.646 Lab 3: Forward Kinematics

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1. See source codes

3.
The DH parameters we get according to question 2 and the UR5 Manuel are:

alpha[] = {PI/2,0,0,PI/2,-PI/2,0};
a[] = {0.00000, -0.42500, -0.39225, 0.00000, 0.00000, 0.0000};
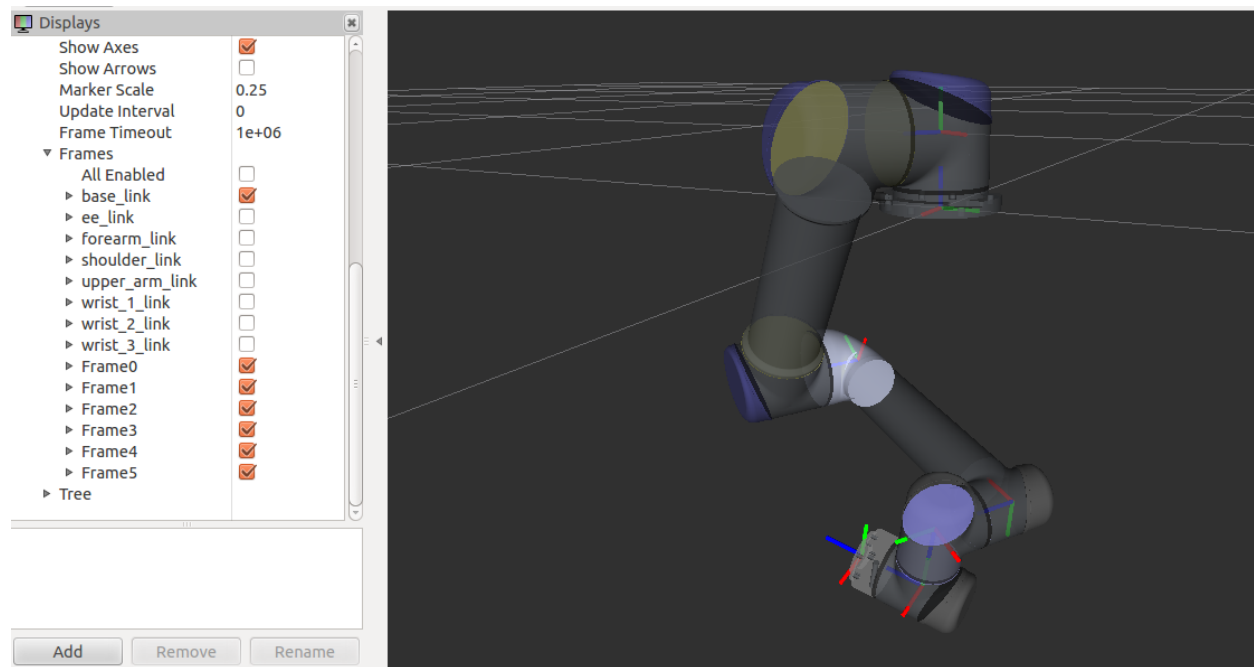d[] = {0.089159, 0.00000, 0.00000, 0.10915, 0.09465, 0.0823};

5. See source codes

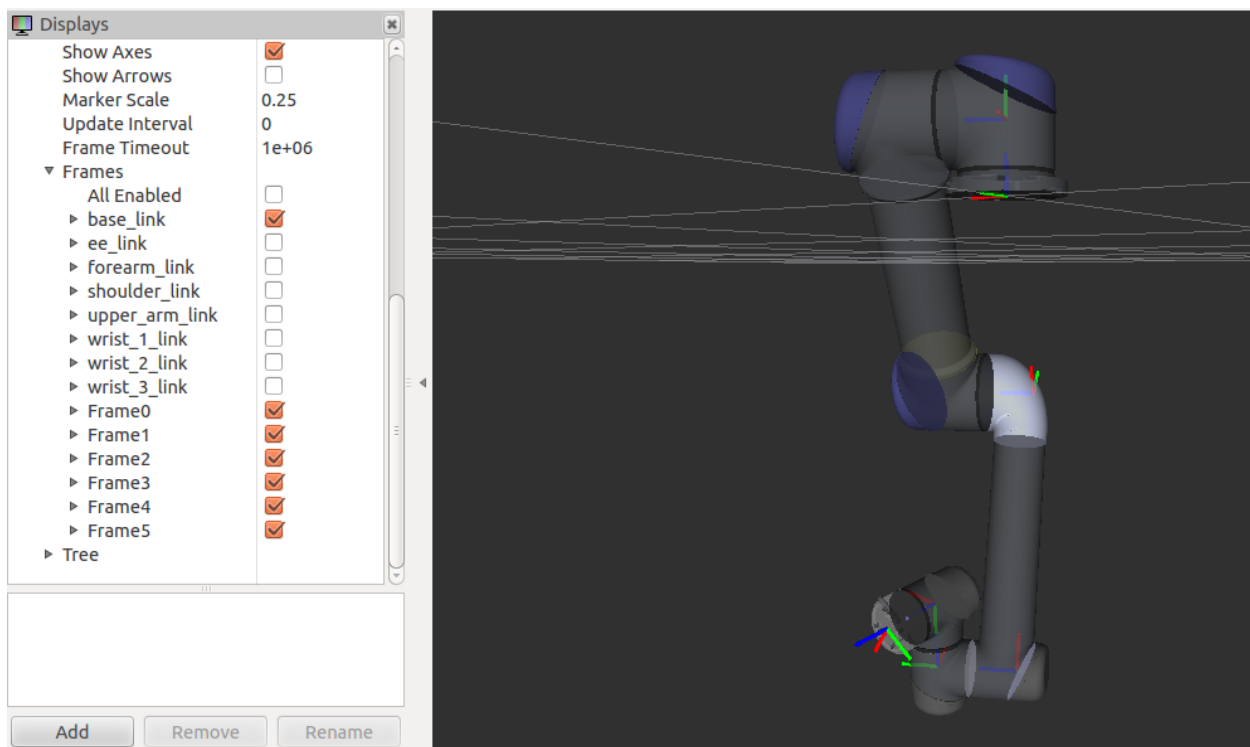6. See source codes

7.

The first plot is

Joint positions and transformation from robot base to end-effector are:

```
Joint Position 1:
[1]
[1]
[2]
[3]
[1]
[0]

Transformation from robot_base to end_effector:
[  0.99,    0.15,   0.018,    0.16]
[-0.018,    0.24,   -0.97,  -0.028]
[ -0.15,    0.96,    0.24,    -0.4]
[     0,       0,       0,       1]
```

The second plot is

Joint positions and transformation from robot base to end-effector are:

```
Joint Position 2:
[2]
[1]
[1]
[1]
[1]
[1]

Transformation from robot_base to end_effector:
[ 0.58,  -0.8,  0.14,  0.13]
[-0.18, 0.045,  0.98, 0.078]
[-0.79,  -0.6, -0.12, -0.54]
[    0,     0,     0,    1]
```