```
%Matrices homogeneas
syms theta1
syms theta2
syms theta3
syms L1
syms L2
syms L
syms d1
syms d2

%Robot1
T01=[cos(theta1) -sin(theta1) 0 0; 0 0 1 0; -sin(theta1) -cos(theta1) 0 0; 0 0 0 1]

T12=[cos(theta2) -sin(theta2) 0 L1; 0 0 1 0; 0 cos(theta2) 0 0; 0 0 0 1]

T23=[cos(theta3) -sin(theta3) 0 L2; sin(theta3) cos(theta3) 0 0; 0 0 1 0; 0 0 0 1]

%Robot2
T01=[cos(theta1) -sin(theta1) 0 0; sin(theta2) cos(theta2) 0 0; 0 0 1 0; 0 0 0 1]

T12=[cos(theta2) -sin(theta2) 0 L1; 0 0 1 0; 0 cos(theta2) 0 0; 0 0 0 1]

T23=[cos(theta3) -sin(theta3) 0 L2; sin(theta3) cos(theta3) 0 0; 0 0 1 0; 0 0 0 1]

%Robot3
T01=[cos(theta1) -sin(theta1) 0 0; 0 0 1 0; -sin(theta1) cos(theta1) 0 0; 0 0 0 1]

T12=[cos(theta2) -sin(theta2) 0 L1; 0 0 1 0; -sin(theta2) -cos(theta2) 0 0; 0 0 0 1 ]

T23=[cos(theta3) -sin(theta3) 0 L2; 0 0 1 0; -sin(theta3) -cos(theta3) 0 0; 0 0 0 1]

%Robot4
T01=[cos(theta1) -sin(theta1) 0 0; sin(theta1) cos(theta1) 0 0; 0 0 1 0; 0 0 0 1]

T12=[cos(theta2) -sin(theta2) 0 0.75*L; sin(theta2) cos(theta2) 0 0; 0 0 1 d1; 0 0 0 1]

T23=[cos(theta3) -sin(theta3) 0 L2; sin(theta3) cos(theta3) 0 0; 0 0 1 d2; 0 0 0 1]
```

```
T01 =

[  cos(theta1), -sin(theta1), 0, 0]
[            0,            0, 1, 0]
[ -sin(theta1), -cos(theta1), 0, 0]
[            0,            0, 0, 1]


T12 =

[ cos(theta2), -sin(theta2), 0, L1]
[           0,            0, 1,  0]
[           0,  cos(theta2), 0,  0]
[           0,            0, 0,  1]
```

```
T23 =

[ cos(theta3), -sin(theta3), 0, L2]
[ sin(theta3),  cos(theta3), 0,  0]
[           0,            0, 1,  0]
[           0,            0, 0,  1]


T01 =

[ cos(theta1), -sin(theta1), 0, 0]
[ sin(theta2),  cos(theta2), 0, 0]
[           0,            0, 1, 0]
[           0,            0, 0, 1]


T12 =

[ cos(theta2), -sin(theta2), 0, L1]
[           0,            0, 1,  0]
[           0,  cos(theta2), 0,  0]
[           0,            0, 0,  1]


T23 =

[ cos(theta3), -sin(theta3), 0, L2]
[ sin(theta3),  cos(theta3), 0,  0]
[           0,            0, 1,  0]
[           0,            0, 0,  1]


T01 =

[  cos(theta1), -sin(theta1), 0, 0]
[            0,            0, 1, 0]
[ -sin(theta1),  cos(theta1), 0, 0]
[            0,            0, 0, 1]


T12 =

[  cos(theta2), -sin(theta2), 0, L1]
[            0,            0, 1,  0]
[ -sin(theta2), -cos(theta2), 0,  0]
[            0,            0, 0,  1]


T23 =

[  cos(theta3), -sin(theta3), 0, L2]
[            0,            0, 1,  0]
[ -sin(theta3), -cos(theta3), 0,  0]
[            0,            0, 0,  1]
```

```
T01 =

[ cos(theta1), -sin(theta1), 0, 0]
[ sin(theta1),  cos(theta1), 0, 0]
[           0,            0, 1, 0]
[           0,            0, 0, 1]


T12 =

[ cos(theta2), -sin(theta2), 0, (3*L)/4]
[ sin(theta2),  cos(theta2), 0,       0]
[           0,            0, 1,      d1]
[           0,            0, 0,       1]


T23 =

[ cos(theta3), -sin(theta3), 0, L2]
[ sin(theta3),  cos(theta3), 0,  0]
[           0,            0, 1, d2]
[           0,            0, 0,  1]
```

---

*Published with MATLAB® R2017b*