```
%RBE3001 Homework #4
%Created by Mathew Schwartzman on 9 October 2017
%Simply generates a transformation matrix based on some dh parameters
%matrices for now.

syms theta1 theta2 l1 l2 %define symbols for function generation

%dhparam simply takes in d, theta, a, and alpha to generate a
%Denavit-Hartenberg 4x4 matrix
t01 = dhparam(0, theta1, l1, 0);
t1l = dhparam(0, theta2, l2, 0);
```

```
dh =

[ cos(theta1), -sin(theta1), 0, l1*cos(theta1)]
[ sin(theta1),  cos(theta1), 0, l1*sin(theta1)]
[           0,            0, 1,              0]
[           0,            0, 0,              0]
```

```
dh =

[ cos(theta2), -sin(theta2), 0, l2*cos(theta2)]
[ sin(theta2),  cos(theta2), 0, l2*sin(theta2)]
[           0,            0, 1,              0]
[           0,            0, 0,              0]
```

```
%final transform matrix for the two-dof arm in question
t0l = t01 * t1l
```

```
t0l =

[ cos(theta1)*cos(theta2) - sin(theta1)*sin(theta2), -
 cos(theta1)*sin(theta2) - cos(theta2)*sin(theta1), 0,
 l2*cos(theta1)*cos(theta2) - l2*sin(theta1)*sin(theta2)]
[ cos(theta1)*sin(theta2) + cos(theta2)*sin(theta1),
 cos(theta1)*cos(theta2) - sin(theta1)*sin(theta2), 0,
 l2*cos(theta1)*sin(theta2) + l2*cos(theta2)*sin(theta1)]
[                                                    0,
                                   0, 1,
                        0]
[                                                    0,
                                   0, 0,
                        0]
```

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