3. Program Forward Kinematics for Puma 560 Robots using Matlab.

Matlab code:

clear all;

clc;

%DH parameter

alpha = [0 -90 0 -90 90 -90] ; %link twist

a = [0 0 1 0.3 0 0]; %link length

d = [0 0 0.5 1 0 0]; %link offset

theta = [45 60 45 60 45 30]; % joint variable

P6\_T = [0; 0; 0.2; 1];

%Apply forward kinematics joints

T = [];

for n = 1:6

matT = [cosd(theta(n)) -sind(theta(n)) 0 a(n);

sind(theta(n))\*cosd(alpha(n)) cosd(theta(n))\*cosd(alpha(n)) -sind(alpha(n)) -sind(alpha(n))\*d(n);

sind(theta(n))\*sind(alpha(n)) cosd(theta(n))\*sind(alpha(n)) cosd(alpha(n)) cosd(alpha(n))\*d(n);

0 0 0 1];

T = [T; {matT}];

end

T0\_6 = T{1}\*T{2}\*T{3}\*T{4}\*T{5}\*T{6}

P0\_T = T0\_6\*P6\_T

The result of T0\_6

Text

Description automatically generated with low confidence

And the result of P0\_T

Graphical user interface, text

Description automatically generated