

```

clc
clear

TR = [0 5]; % time RANGE

X0 = [0;0;0;0];%initial conditions

[t,z] = ode45(@func1, TR, X0);%calling the solver to solve by function

%storing given array as vectors

theta1 = z(:, 1);

AngVel1 = z(:, 2);

theta2 = z(:, 3);

AngVel2 = z(:, 4);

%plotting the angular displacements and velocities

acc1 = diff(AngVel1);

acc2 = diff(AngVel2);

plot(t,theta1,t,AngVel1,t,[0;acc1],t,theta2,t,AngVel2,t,[0;acc2]);

xlabel('time')

legend('Angular Displacement 1','Angular Velocity 1','Angular acceleration 1','Angular Displacement 2','Angular Velocity 2','Angular acceleration 2')

ylabel('position & Velocity')

title("m-file")

%function containing the differentialequationsa

function dx = func1(~, x)

% Values of Coefficients

% J1=1; J2=10; D1=0.9; D2=0.02; k=3

T=5;

%

% State Equations

dx(1) = x(2);

dx(3) = x(4);

dx(2) = (T-2*x(2)-x(1)+x(3)+x(4));

dx(4) = (x(2)-x(3)-2*x(4)+x(1));

dx = dx';

end

```

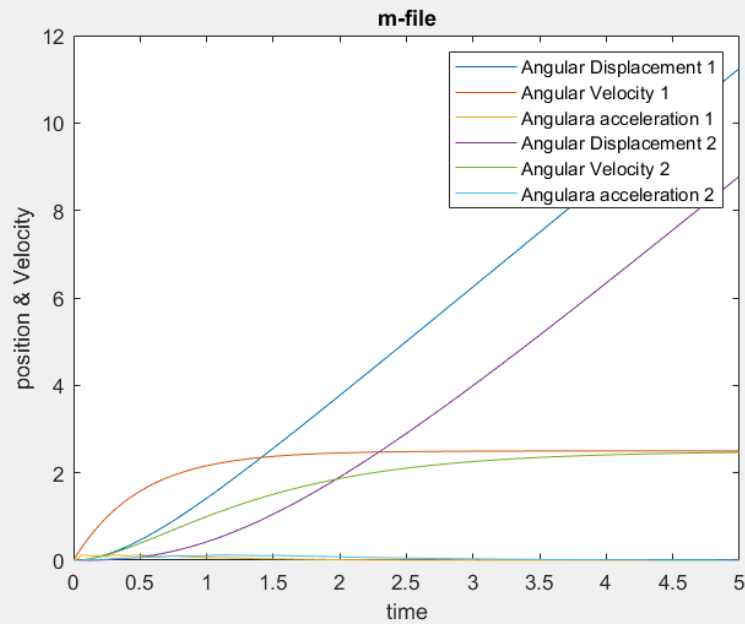
```

2022_MC_58\Semester6\Control_System_I\Lab\2022_MC_58
% TIME RANGE
;0];%initial conditions
45(@func1, TR, X0);%calling the ode solver
ven array as vectors
:, 1);
(:, 2);
(:, 3);
(:, 4);
the angular displacements and velocities
(AngVel1);
AngVel2);
a1,t,AngVel1,t,[0;acc1],t,theta2,t,AngV
e')
ular Displacement 1','Angular Velocity
ition & Velocity')
le")
ontaining the differentialequationsa
= func1(~, x)
Coefficients
10; D1=0.9; D2=0.02; k=3

```

Figure 1

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