

-----<(M File)>-----

```
function dy=Task4Fun(t,y,f)
```

```
    m1=1;
```

```
    m2=4;
```

```
    k1=3;
```

```
    k2=2;
```

```
    k3=1;
```

```
    c1=0.03;
```

```
    c2=0.02;
```

```
    c3=0.01;
```

```
    dy(1)=y(2);
```

```
    dy(3)=y(4);
```

```
    dy(2)=1/m1*(f-(k1+k2)*y(1)-(c1+c2)*y(2)+c2*y(4)+k2*y(3));
```

```
    dy(4)=1/m2*(-(c2+c3)*y(4)-(k2+k3)*y(3)+k2*y(1)+c2*y(2));
```

```
    dy=dy';
```

```
end
```

```
clc;
```

```
query=input('Do you want to analyze the system at single Force (5N) or on a range of forces? (Single/Range) >> ','s');
```

```
TR = [0 10];
```

```
X0 = [0;0;0;0];
```

```
if query=="Single" || query=="single"
```

```
    range=[5,5];
```

```
    inc=1;
```

```
elseif query=="Range" || query=="range"
```

```
    range=input('Please enter a start and an end value for the force in the format [start,end] >> ');
```

```
    inc=input('Please enter an increment value >> ');
```

```
end
```

```
for F=range(1):inc:range(2)
```

```
    [t,y]=ode45(@(t,y) Task4Fun(t,y,F),TR,X0);
```

```
    x1=y(:,1);
```

```
v1=y(:,2);

x2=y(:,3);

v2=y(:,4);

subplot(1,4,1);

plot(t,x1);

hold on;

xlabel('time');

ylabel('Displacement-1');

subplot(1,4,2);

plot(t,v1);

hold on;

xlabel('time');

ylabel('Velocity-1');

subplot(1,4,3);

plot(t,x2);

hold on;

xlabel('time');

ylabel('Displacement-2');

subplot(1,4,4);

plot(t,v2);

hold on;

xlabel('time');

ylabel('Velocity-2');

end

text="";

for i=range(1):inc:range(2)

    text(end+1)=sprintf("%dN force",i);

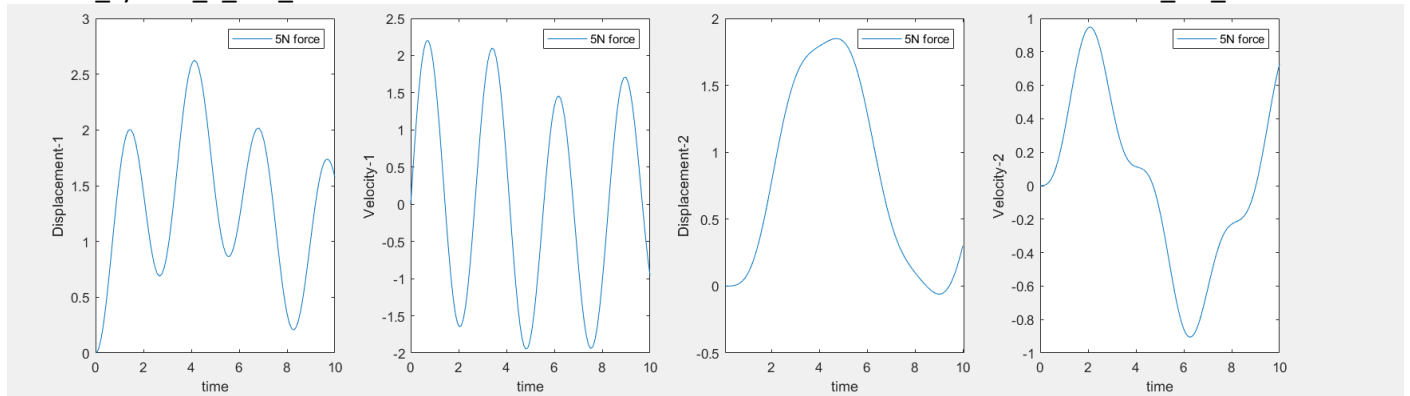
end

text=text(2:end);

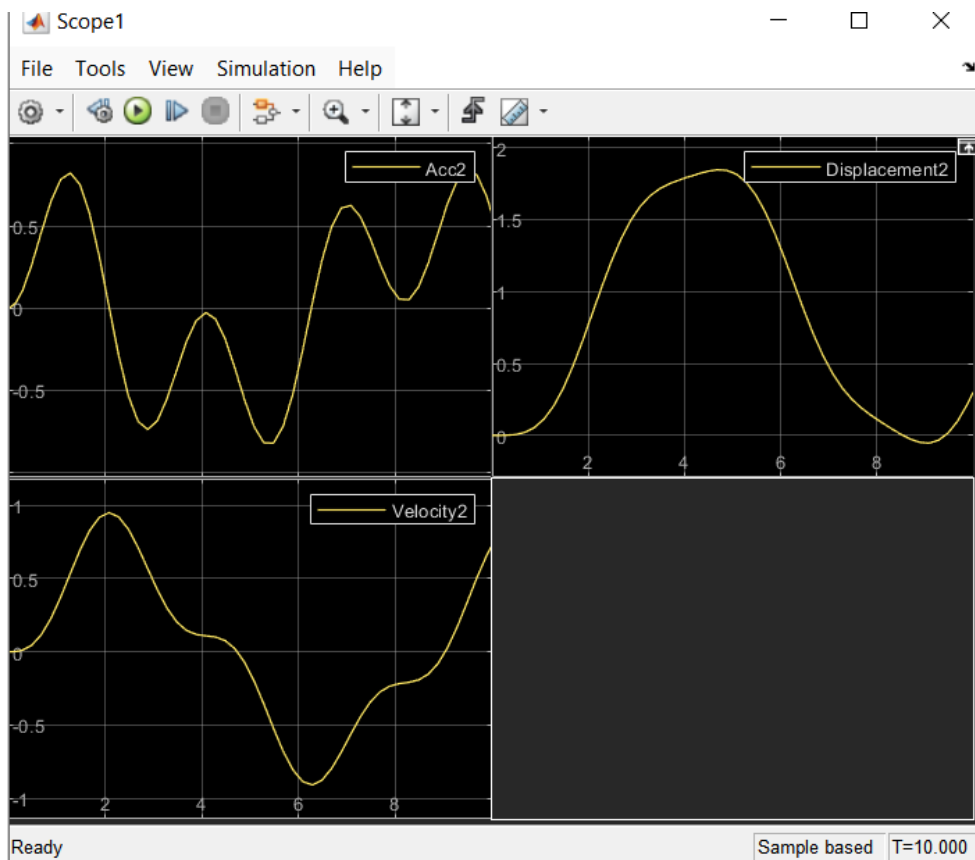
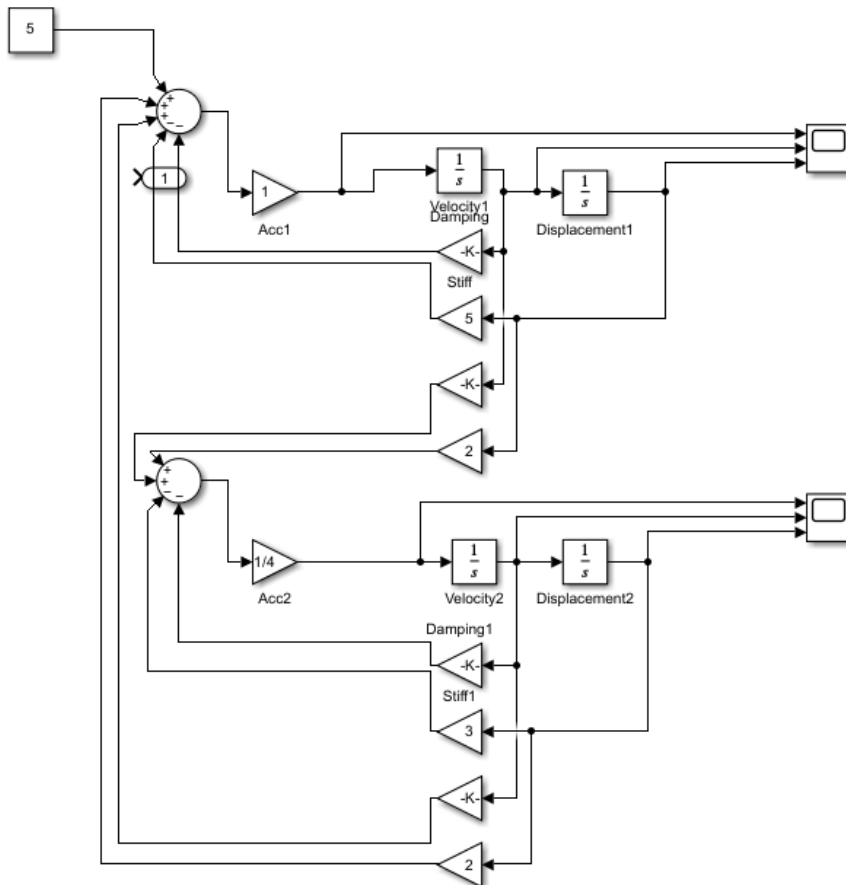
for i=1:4

    subplot(1,4,i);legend(text);

end
```



<(Simulink)>



<(SIMSCAPE)>

