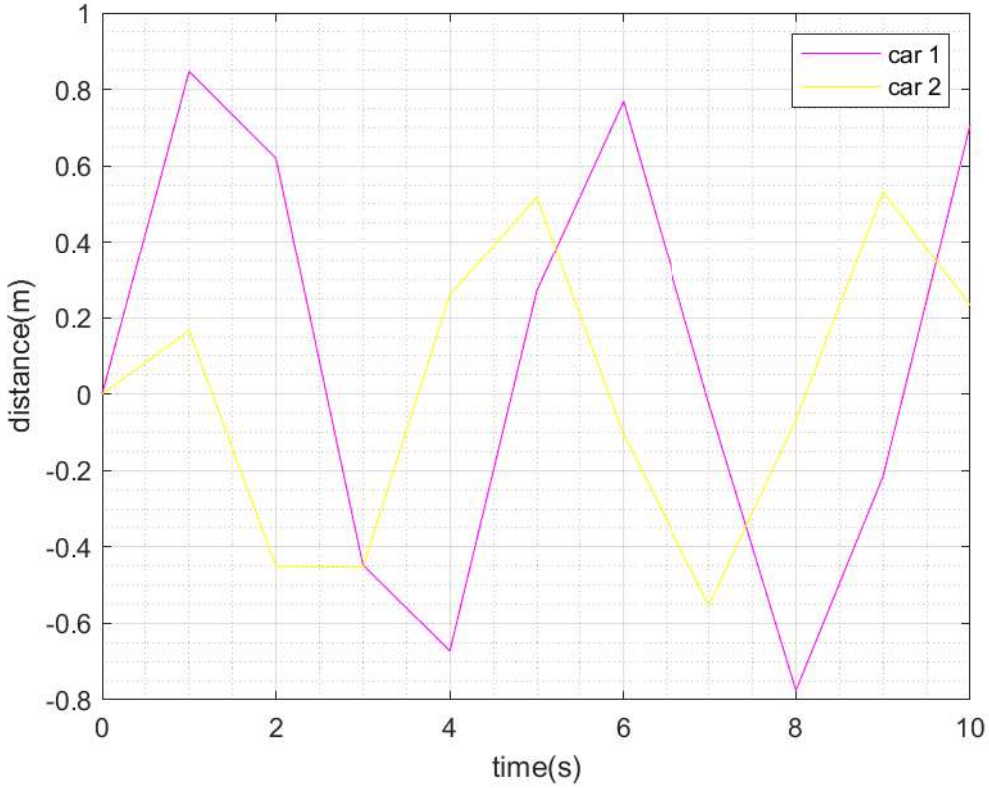
```
% Name : Taiwo Oladipupo Olawale
% Matriculation Number : 18/eng02/090
% Department : Computer Engineering
% Engineering Mathematics (ENG 381) Assigment 2
commandwindow
clear
clc
syms x(t)
A=(0.5)*diff(x,t,2)==-48*x
B=diff(x,t,1)
condition=[x(0)==1/6,B(0)==0]
C=dsolve(A,condition)
t=5
xp=subs(C,t)
xans=eval(xp)
% A = diffrential equation (1/2)*(d^2x/dt^2)=(-48*x)
% B = (dx/dt)
% C = Solution to the diffrential equation A
% xp = Value of the soultion to (x(t)) at t=5
% xans = Value of xp expressed in decimal format
```

```
A(t) =

diff(x(t), t, t)/2 == -48*x(t)


B(t) =

diff(x(t), t)


condition =

[ x(0) == 1/6, subs(diff(x(t), t), t, 0) == 0]


C =

cos(4*6^(1/2)*t)/6


t =

     5


xp =

cos(20*6^(1/2))/6


xans =

    0.0485

>>
```

```
commandwindow
clear
clc
close all
syms y(x)
syms x(t)
X=[diff(x,t,2)-5*diff(x,t,1)+6*x==100*sin(4*t)]
Y=[(x*(x-1)*diff(y,x,2))+((3*x-1)*diff(y,x,1))+y]
Dx=diff(x,t,1)
Dy=diff(y,x,1)
cond1=[y(0)==0,Dx(0)==0]
cond2=[y(0)==0.0005,Dy(0)==0.0005]
xsol=dsolve(X,cond1)
ysol=dsolve(Y,cond2)
t=[1.01:0.01:2.5]
x1=subs(xsol,t)
y1=subs(ysol,t)
figure(1)
plot(y1,t)
title('18/eng02/090')
grid on
grid minor
figure(2)
plot(x1,t)
title('2nd')
grid on
grid minor
figure(3)
plot(t,y1,'m',t,x1,'y')
xlabel('time(s)')
ylabel('distance(m)')
grid on
grid minor
legend('car 1','car 2')
```


car 1
car 2
distance(m)
time(s)
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
0
2
4
6
8
10