```
% init_system.m
%% Initialize system

%% raster

dt = 0.01;
t = (0:dt:12);

Tstepnum = size(t,2);

%% system matrices

M = [45 ,  0;...
      0 , 45];

K = [ 36000 , -18000;...
     -18000 ,  18000];

Ndim = size(M,1);

[V,Omega2] = eigs(K,M,2,'sa');
Omega =  sqrt(Omega2);

ksi = 0.05;

alpha = (2*ksi*Omega(1,1)*Omega(2,2))/(Omega(1,1)+Omega(2,2));
beta = (2*ksi)/(Omega(1,1)+Omega(2,2));

C = alpha*M+beta*K;

%% load vector

q = zeros(Ndim,Tstepnum);

for j = 1:(Tstepnum/2)
        q(:,j) = [10;10]*sin(20*j);
end

%% initial conditions

U0(1:Ndim,1) = [0;0];
V0(1:Ndim,1) = [0;0];
A0 =  M\(q(:,1)-C*V0-K*U0);
```