init

```
clear
clc
```

```
% constants
k = 10;     % spring constant
c = 2;     % damping constant
mass = 0.1;  % mass of the object
```

```
% system
A = [0, 1;
    -k/mass, -c/mass]
```

```
A = 2×2
     0     1
  -100   -20
```

```
% Compute eigenvalues of A
eigenvalues = eig(A)
```

```
eigenvalues = 2×1
   -10
   -10
```

```
% Extract real parts (ignore complex parts for time constant calculation)
real_parts = real(eigenvalues)
```

```
real_parts = 2×1
   -10
   -10
```

```
% Compute time constants (for stable eigenvalues)
time_constants = -1 ./ real_parts
```

```
time_constants = 2×1
    0.1000
    0.1000
```

```
% Display results
disp('Eigenvalues of A:')
```

```
Eigenvalues of A:
```