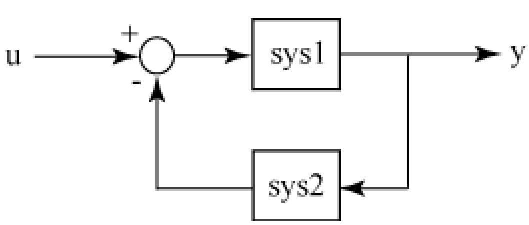
```
clearvars, clc

%define the gains K1 and K2
K1 = 10.69;
K2 = 0.077;

% Forward path, G(s)
s = tf('s');

G1 = K1/(s*(s+1))
```

```
G1 =

   10.69
  -------
  s^2 + s

Continuous-time transfer function.
Model Properties
```

```
% or
% num1 = K1
% den1 = [1, 1, 0]
% G1 = tf(num1, den1)

% Feedback path, H(s)
G2 = 1+K2*s
```

```
G2 =

  0.077 s + 1

Continuous-time transfer function.
Model Properties
```

```


% Reduce the block diagram to a single block by applying the feedback
% formula. For we use a built-in named feedback(sys1,sys2) with input
% arguments sys1,sys2, repectively.

% Documetation in MATLAB:
% sys = feedback(sys1,sys2) returns a model object sys for the negative
feedback
% interconnection of model objects sys1,sys2.  See the figure below:
```



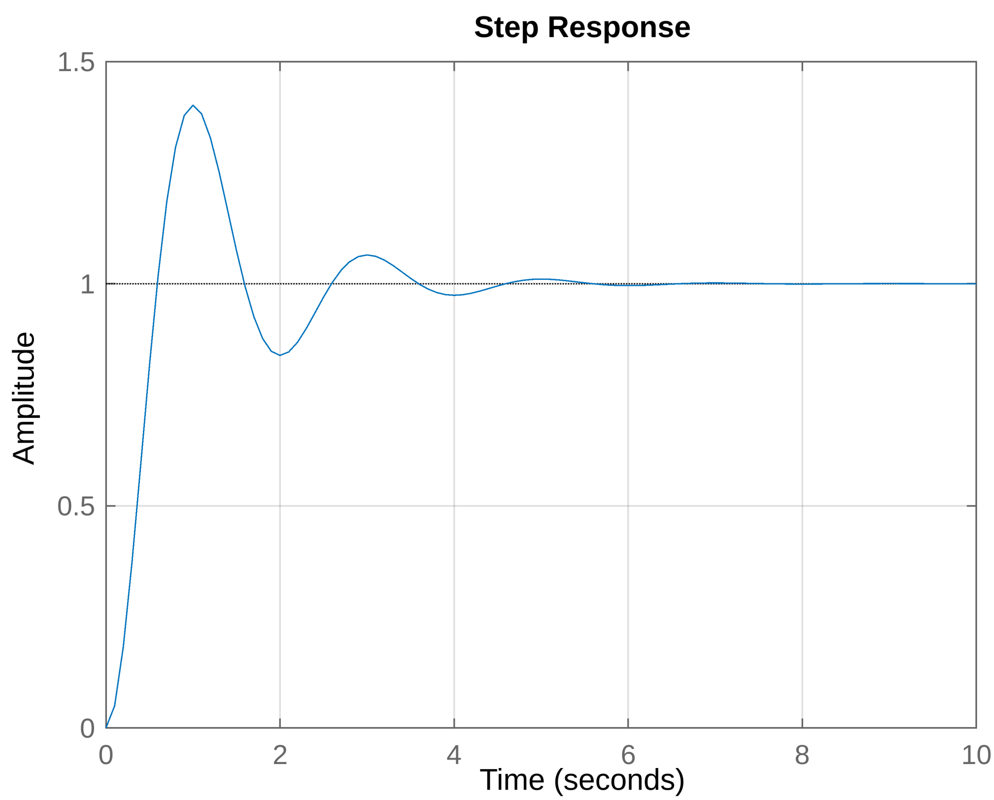

```
sys1 = feedback(G1,G2) % G1 is the transfer function in the forward path, and
```

```
sys1 =

          10.69
  --------------------
  s^2 + 1.823 s + 10.69

Continuous-time transfer function.
Model Properties
```

```
% G2 is the transfer function in the feedback path
```

The step plot automatically includes a horizontal line indicating the steady-state response is reached. In a MATLAB® figure window, you can right-click on the plot to view other step-response characteristics such as peak response and settling time.

```
stepplot(sys1, 10)
grid on;
```



For more information about these characteristics, see stepinfo (This function requires the Control System Toolbox)

```
stepinfo(sys1)
```

```
ans = struct with fields:
         RiseTime: 0.3973
    TransientTime: 4.2292
     SettlingTime: 4.2292
      SettlingMin: 0.8390
```

```
SettlingMax: 1.4015
   Overshoot: 40.1492
  Undershoot: 0
        Peak: 1.4015
    PeakTime: 1.0104
```