

PROJECT 1

SRN: PES1UG20EC083

Course: Control Systems

```
%PES1UG20EC083
```

```
clc;
```

```
P1 = [1 2 1];
```

```
P2 = [0 1 1];
```

```
P = conv(P1, P2);
```

```
disp(P)
```

```
r = roots(P);
```

```
P3 = poly(r);
```

```
disp(polyval(P3, 2));
```

```
disp(polyder(P3));
```

```
Command Window
0      1      3      3      1
27
3.0000    6.0000    3.0000
fx >>
```

```
clear;
clc;
```

```
% Finding the transfer function of 2 systems connected in series/Cascade
```

```
% First system
```

```
Num1 = input('Enter the coefficients of the 1st system numerator polynomial');
den1 = input('Enter the coefficients of the 1st system denominator polynomial');
```

```
%Second System
```

```
Num2 = input('Enter the coefficients of the 2nd system numerator polynomial');
den2 = input('Enter the coefficients of the 2nd system denominator polynomial');
```

```
% To obtain the transfer function
```

```
sys1 = tf(Num1, den1);
sys2 = tf(Num2, den2);
```

```
disp(sys1)
disp(sys2);
```

```
Enter the coefficients of the 1st system numerator polynomial
[1 5 6]

sys1 =

      s + 1
      ----
      s + 2

Continuous-time transfer function.

sys2 =

          1
      ----
    s^2 + 5 s + 6

Continuous-time transfer function.

sys =

          s + 1
      ----
    s^3 + 7 s^2 + 16 s + 12

Continuous-time transfer function.
>>
```

```
clear;  
clc;
```

```
% Finding the transfer function of 2 systems connected in Parallel
```

```
% First system
```

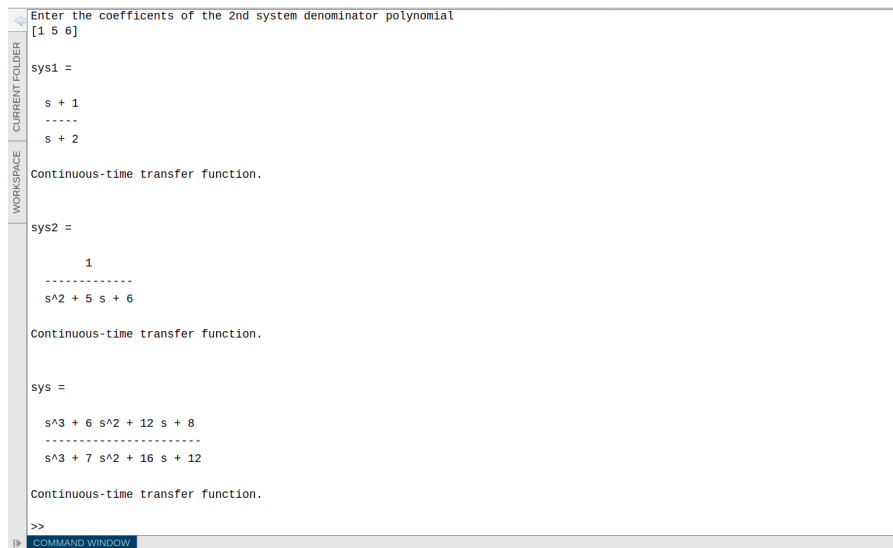
```
Num1 = input('Enter the coefficients of the 1st system numerator polynomial');  
den1 = input('Enter the coefficients of the 1st system denominator polynomial');
```

```
%Second System
```

```
Num2 = input('Enter the coefficients of the 2nd system numerator polynomial');  
den2 = input('Enter the coefficients of the 2nd system denominator polynomial');
```

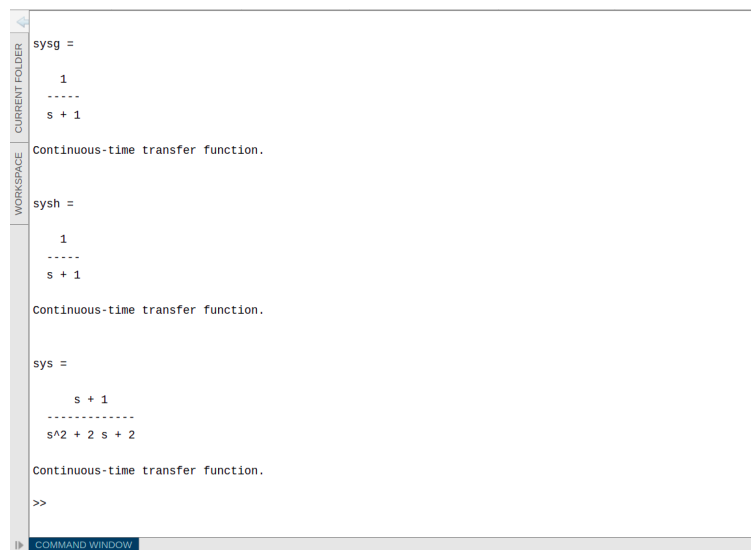
```
% To obtain the transfer function
```

```
sys1 = tf(Num1, den1)  
sys2 = tf(Num2, den2)  
sys = parallel(sys1, sys2)
```

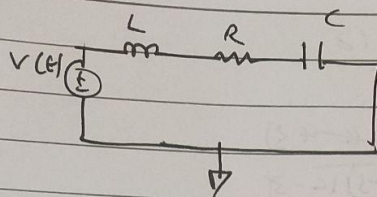


```
Enter the coefficients of the 2nd system denominator polynomial  
[1 5 6]  
  
sys1 =  
  
      s + 1  
      ----  
      s + 2  
  
Continuous-time transfer function.  
  
sys2 =  
  
          1  
      ----  
      s^2 + 5 s + 6  
  
Continuous-time transfer function.  
  
sys =  
  
      s^3 + 6 s^2 + 12 s + 8  
      ----  
      s^3 + 7 s^2 + 16 s + 12  
  
Continuous-time transfer function.  
  
>>
```

```
clear;
clc;
numg = 1;
deng = [1 1];
numh = 1;
denh = [1 1];
sysg = tf(numg, deng)
sysh = tf(numh, denh)
sys = feedback(sysg, sysh)
```



```
sysg =  
      1  
    ----  
    s + 1  
  
Continuous-time transfer function.  
  
sysh =  
      1  
    ----  
    s + 1  
  
Continuous-time transfer function.  
  
sys =  
      s + 1  
    ----  
    s^2 + 2 s + 2  
  
Continuous-time transfer function.  
  
>>
```



$$V(t) = L \frac{di(t)}{dt} + Ri(t) + \frac{1}{C} \int i(t) dt = 0$$

$$V(s) = LsI(s) + RI(s) + \frac{1}{Cs} I(s)$$

$$I(s) = \frac{V(s)}{Ls + R + \frac{1}{Cs}} \quad \text{--- (1)}$$

$$V_c(s) = \frac{I(s)}{Cs} \quad \text{--- (2)}$$

$$\textcircled{2} \text{ in } \textcircled{1}$$

$$I(s) \times V_c(s) = \frac{V(s)}{Ls + R + \frac{1}{Cs}} \times \frac{1}{Cs}$$

$$V_c(s) = \frac{V(s)}{RCs + LCs^2 + 1}$$



Scope



File Tools View Simulation Help

