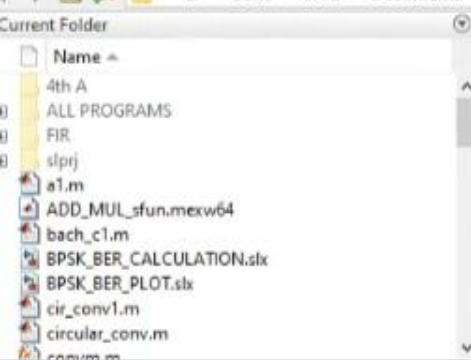


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Workspace



Editor - C:\Users\SHRI\Documents\MATLAB\Untitled12.m

```
1 - clear; close all; clear all;
2 - b=input('Enter the co-efficients of b ie x[n]=');
3 - a=input('Enter the co-efficients of a ie y[n]=');
4 - N=input('Enter the length of response required N=');
5 - n=0:N-1;
6 - x=cos(0.05*pi*n);
7 - y=filter(b,a,x);
8 - subplot(211); stem(n,x); title('Steady input');
9 - subplot(212); stem(n,y); title('Steady State response');
```

Command Window

into initial conditions for the state variables Z needed in the TRANSPOSED DIRECT FORM II filter structure. The vectors of past inputs & outputs are stored with more recent values first, i.e.

$$X = [x[-1] \ x[-2] \ x[-3] \ \dots \ x[-nb] \ \dots]$$
$$Y = [y[-1] \ y[-2] \ y[-3] \ \dots \ y[-na] \ \dots]$$

where $nb = \text{length}(B)-1$ and $na = \text{length}(A)-1$. Short input vectors X and Y are zero-padded to length nb and na respectively. If X or Y are longer than nb or na , the values beyond those lengths are irrelevant to the filter's initial conditions and are ignored.

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```
% A generalized convolution computing code in matlab
```

```
% without using matlab builtin function conv(x,h)
```

```
clc; close all; clear all;
```

```
x=input('Enter x: ');
```

```
h=input('Enter h: ');
```

```
m=length(x);
```

```
n=length(h);
```

```
X=[x,zeros(1,n)];
```

```
H=[h,zeros(1,m)];
```

```
for i=1:n+m-1
```

```
Y(i)=0;
```

```
for j=1:m
```

```
if(i-j+1>0)
```

```
Y(i)=Y(i)+X(j)*H(i-j+1);
```

```
end
```

```
end
```

```
end
```

```
Y
```

```
stem(Y);
```

```
ylabel('Y[n]');
```

```
xlabel('----->n');
```

```
title('Convolution of Two Signals without conv function');
```



% A generalized convolution computing code in matlab

% without using matlab builtin function conv(x,h)

clc; close all; clear all;

x=input('Enter x: ');

h=input('Enter h: ');

m=length(x);

n=length(h);

X=[x,zeros(1,n)];

H=[h,zeros(1,m)];

for i=1:n+m-1

Y(i)=0;

for j=1:m

if(i-j+1>0)

Y(i)=Y(i)+X(j)*H(i-j+1);

end

end

end

Y

stem(Y);

ylabel('Y[n]');

xlabel('---->n');

title('Convolution of Two Signals without conv function');

$x(n) = \{4\}$
 $h(n) = \{-2, 1, 5\}$

$i = m+n-1$
 $j = 3+2-1$
 $j = 1:4$

$y(i)$	j	$i-j+1 > 0$	$Y(i) = Y(i) + X(j)$
1	1	$3-1+1 > 0$ 1 > 0	
2	2		
2	1		
2	2		
3	1		
	2		

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- circular_conv.m
- convum.m

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Workspace

Name	Value	Min	Max
h	[1,2,3,4]	1	4
H	[1,2,3,4,0,0,0,0]	0	4
i	7	7	7
j	4	4	4
m	4	4	4
n	4	4	4
x	[1,2,3,4]	1	4
X	[1,2,3,4,0,0,0,0]	0	4

Editor - C:\Users\SHRI\Documents\MATLAB\Untitled3.m

```
Untitled9.m x Untitled10.m x Untitled11.m x Untitled12.m x Untitled.m x Untitled2.m x Untitled3.m x +
5 - n=length(h);
6 - X=[x,zeros(1,n)];
7 - H=[h,zeros(1,m)];
8 - for i=1:n+m-1
9 -     Y(i)=0;
10 - for j=1:m
11 -     if(i-j+1>0)
12 -         Y(i)=Y(i)+X(j)*H(i-j+1);
13 -     end
14 - end
15 - end
16 - Y
17 - stem(Y);
18 - ylabel('Y[n]');
19 - xlabel('----->n');
20 - title('Convolution of Two Signals without conv function');
```

Command Window

```
Enter x: [1 2 3 4]
Enter h: [1 2 3 4]

Y =

     1     4    10    20    25    24    16

fx >> |
```

Kumar P

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