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PROBLEM 1:

clc

clear all;

prompt = 'Enter xn1';

xn1 = input(prompt);

prompt = 'Enter xn2';

xn2 = input(prompt);

n = max(length(xn1),length(xn2));

conv\_n = cconv(xn1,xn2,n);

display(conv\_n);

display('cconv for N:')

conv\_n2 = cconv(xn1,xn2,n);

display(conv\_n2);

display('cconv for 2N:')

conv\_n2\_2 = cconv(xn1,xn2,2\*n);

display(conv\_n2\_2);

**OUTPUT:**

Enter xn1[1,2,3,4]

Enter xn2[1,2,3,4]

conv\_n =

26 28 26 20

cconv for N:

conv\_n2 =

26 28 26 20

cconv for 2N:

conv\_n2\_2 =

1.0000 4.0000 10.0000 20.0000 25.0000 24.0000 16.0000 -0.0000

PROBLEM 2:

clc

clear all;

prompt = 'Enter x1n';

x1n = input(prompt);

prompt = 'Enter x2n';

x2n = input(prompt);

%Linear Convolution

l\_conv = conv(x1n,x2n);

display(l\_conv);

l = length(x1n);

m = length(x2n);

n = l+m-1;

%Linear convolution using circular convolution

x1n = [x1n, zeros(1,m-1)];

x2n = [x2n, zeros(1,l-1)];

l\_using\_c\_conv = cconv(x1n,x2n,n);

display(l\_using\_c\_conv);

**OUTPUT:**

Enter x1n[1,2,3,4]

Enter x2n[1,2,3,4]

l\_conv =

1 4 10 20 25 24 16

l\_using\_c\_conv =

1.0000 4.0000 10.0000 20.0000 25.0000 24.0000 16.0000

PROBLEM 3:

clc

clear all;

prompt = 'Enter xn';

xn = input(prompt);

prompt = 'Enter hn';

hn = input(prompt);

N = max(length(xn),length(hn));

hn = fliplr(hn);

display(hn);

hn = circshift(hn,[0 1]);

display(hn);

n = N;

mat = hn;

for i=1:N-1

hn1 = circshift(hn,[0,i]);

mat = [mat;hn1];

n=n-1;

end

display(mat);

display(xn');

ans = mat \* (xn');

display(ans');

**OUTPUT:**

Enter xn[1,2,3,4]

Enter hn[1,2,3,4]

hn =

4 3 2 1

hn(circshift) =

1 4 3 2

mat =

1 4 3 2

2 1 4 3

3 2 1 4

4 3 2 1

ans =

1

2

3

4

ans = 26 28 26 20