EXPERIMENT 4

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LINEAR CONVOLUTION:

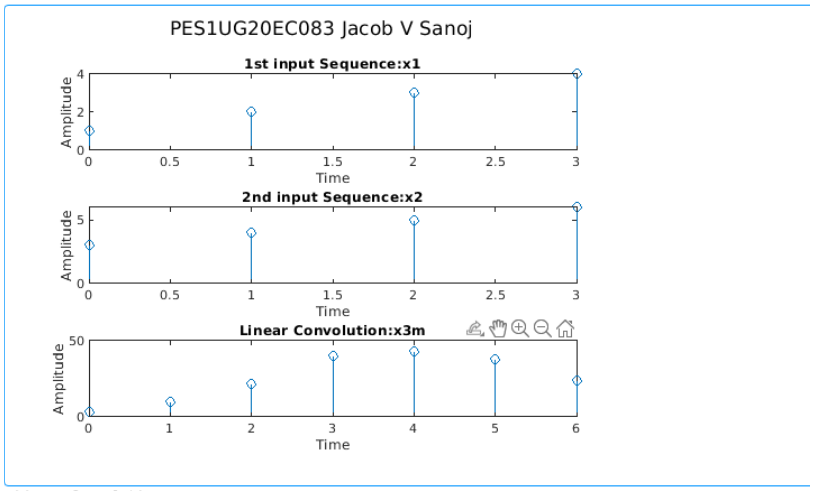
Code:

```
clear;
close all;
clc;
x1=input('Enter the sequence x1: ');
x2=input('Enter the sequence x2: ');
N=length(x1)+length(x2)-1;
Xk1=fft(x1,N);
Xk2=fft(x2,N);
Xk3=Xk1.*Xk2;
x3m=ifft(Xk3,N);
```

```
figure;
subplot(3,1,1);
stem(0:length(x1)-1,x1);
xlabel('Time');
ylabel('Amplitude');
title('1st input Sequence:x1');
```

```
subplot(3,1,2);
stem(0:length(x2)-1,x2);
xlabel('Time');
ylabel('Amplitude');
title('2nd input Sequence:x2');
```

```
subplot(3,1,3);
stem(0:N-1,real(x3m));
xlabel('Time');
ylabel('Amplitude');
title('Linear Convolution:x3m');
sgtitle("PES1UG20EC083 Jacob V Sanoj");
disp('Linear Convolution');
disp(real(x3m));
```




```
Linear Convolution
    3.0000   10.0000   22.0000   40.0000   43.0000   38.0000   24.0000
```

CIRCULAR CONVOLUTION

Code:

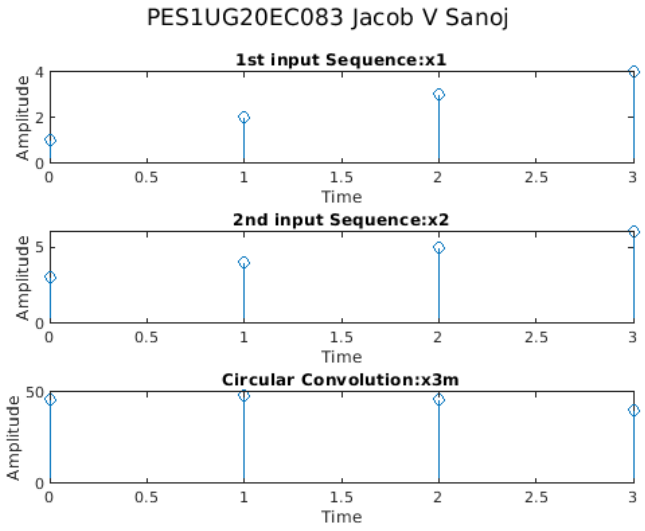
```
% CIRCULAR CONVOLUTION OF 2 SEQs USING DFT & IDFT
clear;
close all;
clc;
x1=input('Enter the sequence x1: ');
x2=input('Enter the sequence x2: ');
N=max(length(x1),length(x2));
Xk1=fft(x1,N);
Xk2=fft(x2,N);
Xk3=Xk1.*Xk2;
x3m=ifft(Xk3,N);

figure;
subplot(3,1,1);
stem(0:length(x1)-1,x1);
xlabel('Time');
ylabel('Amplitude');
title('1st input Sequence:x1');

subplot(3,1,2);
stem(0:length(x2)-1,x2);
xlabel('Time');
```

```
ylabel('Amplitude');
title('2nd input Sequence:x2');

subplot(3,1,3);
stem(0:N-1,real(x3m));
xlabel('Time');
ylabel('Amplitude');
title('Circular Convolution:x3m');
sgtitle("PES1UG20EC083 Jacob V Sanoj");
disp('Circular Convolution');
disp(real(x3m));
```




```
Circular Convolution
    46    48    46    40
```