**EXPERIMENT 1**

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**19/1031**

Write a MATLAB script to perform the convolution of sequences.

1. Circular convolution / periodic convolution  
2. Linear convolution / aperiodic convolution  
3. Linear convolution using circular convolutions

**Code:**

clc; %clearing the screen

clear; %clearing the variables

close all; %closing all the previous windows

x1 = randi([0,9],1,randi(10));%generating the 1st sequence randomly

x2 = randi([0,9],1,randi(10));%generating the 2nd sequence randomly

subplot(3,2,1); %1st subplot

stem(x1,'filled'); %discrete values of n length

xlabel('time');

ylabel('amplitude');

title('1st sequence'); %raw input sequence 1

subplot(3,2,2); %2nd subplot

stem(x2,'filled'); %discrete values of n length

xlabel('time');

ylabel('amplitude');

title('2nd sequence'); %raw input sequence 2

clin = conv(x1,x2);

subplot(3,2,3); %2nd subplot

stem(clin,'filled'); %discrete values of n length

xlabel('time');

ylabel('amplitude');

title('Linear Convolution of x1 and x2'); %Linear Convolution

ccirc = cconv(x1,x2);

subplot(3,2,4); %2nd subplot

stem(ccirc,'filled'); %discrete values of n length

xlabel('time');

ylabel('amplitude');

title('Circular Convolution of x1 and x2'); %Circular Convolution

n1 = length(x1); %length of the sequence

n2 = length(x2); %length of the sequence

n = max(n1,n2); % to have same length

if n1~=n2

x1 = [x1, zeros(1,n-n1)]; %add zeros if needed

x2 = [x2, zeros(1,n-n2)]; %add zeros if needed

end

ccirc1 = cconv(x1,x2,n1+n2-1);

subplot(3,2,5); %2nd subplot

stem(ccirc1,'filled'); %discrete values of n length

xlabel('time');

ylabel('amplitude');

title('Linear convolution using Circular ');%Circular Convolution

**Output:**

