Experiment No: 02
Date of Experiment: 03-05-2023
Name of The Experiment: MATLAB Implementation for

1. Showing The Circular Convolution of Two Signals
2. Plotting The Figure of The Two Signals n1 = [0,0,0,2,2,2,1,1,1,0,2], n2= [2,2,0,1,1,1,0,0,0,0,3] And Also Plotting The Summation and Subtraction of The Two Signals
3. Drawing certain figures

.

Theory:

A continuous signal is a time varying quantity whose domain's function is an uncountable set. The function itself need not to be continuous. A discrete signal is a time series consisting of a sequence of quantities. It is obtained by sampling from a continuous signal. Circular Convolution has certain properties which are:

i. It must be periodic
ii. Length of both signals must be same
iii. Period of both signals must be same

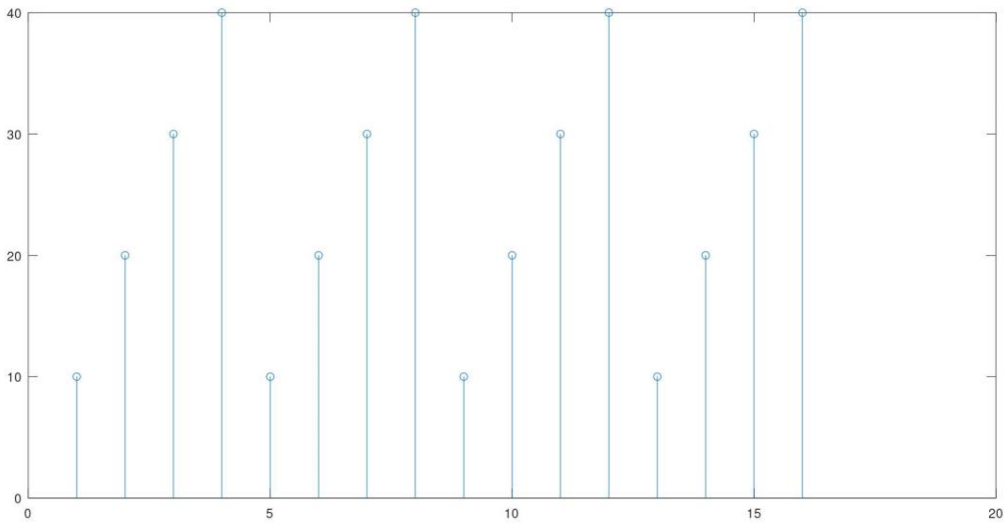
In the discrete time case, the sum of two sequences can be obtained by adding the corresponding sample values. Similarly, the difference of the two sequences can be obtained by subtracting each sample of one signal from the corresponding sample of the other signal.

1. Showing The Circular Convolution of Two Signals:

Source Code:

```
clc;
clear all;
close all;

a= zeros(1,16);
x= [1 2 3 4];
h= [1 2 3 4];
c=1;
k=0;

for i=1:4
    for j=1:4
        a(c)=a(c)+x(j)*h(i);

    end
k=i;
for n=1:3
k=k+4;
    a(k)=a(c);
end
c=c+1;
end
figure(1);
stem(a);
```

Output:

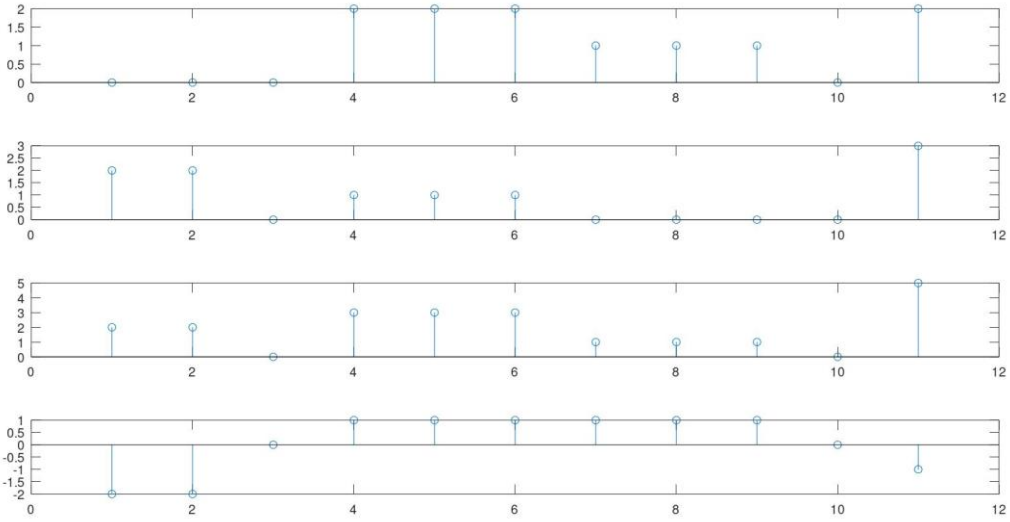


2. Plotting The Figure of The Two Signals n1 = [0,0,0,2,2,2,1,1,1,0,2], n2= [2,2,0,1,1,1,0,0,0,0,3] And Also Plotting The Summation and Subtraction of The Two Signals:

Source Code:

```
clc;
clear all;
close all;

a= zeros(1,11);
b= zeros(1,11);
x= [0 0 0 2 2 2 1 1 1 0 2];
h= [2 2 0 1 1 1 0 0 0 0 3];

for i=1:11
a(i)=x(i)+h(i);
end;

for i=1:11
b(i)=x(i)-h(i);
end;

subplot(4,1,1)
stem(x);
subplot(4,1,2)
stem(h);
subplot(4,1,3)
stem(a);
subplot(4,1,4)
stem(b);
```

Output:

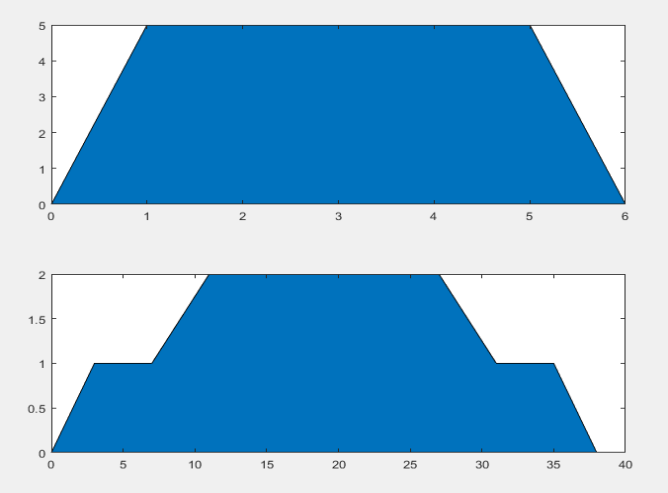


3. Drawing Certain Figures:

Source Code:

```
a=[0 1 5 6];
b=[0 5 5 0];
subplot(2,1,1);
area(a,b,'DisplayName','b');


c=[0 3 7 11 27 31 35 38];
d=[0 1 1 2 2 1 1 0];
subplot(2,1,2);
area(c,d,'DisplayName','d');

```

Output:



Discussion & Conclusion: All the signals were generated applying codes in MATLAB. The output was found as expected. The result of circular convolution was repeated so that it could be shown that the signal was periodic.