Digital Signals Processing Lab

مختبر معالجة الاشارات الرقمية

Experiments number Seven

Experiment Name: DFT

DFT

Example

Given a sequence *x(n)* for $0 \leq n \leq 3$, where *x(0)* = 1, *x(1)* = 2, *x(2)* = 3, and *x(3)* = 4,

Evaluate its DFT X(k).

```
N = input ('type length of time sequence ')
x = input ('type the time vector ')
for k = 1:N
    y(k) = 0;
    for n = 1:N
        y(k) = y(k)+x(n)*exp(-j*2*pi*(n-1)*(k-1)/N);
    end;
end;
k = 1:N
subplot(2,1,1)
F = stem(k-1,real(y(k)));
subplot(2,1,2)
F = stem(k-1,imag(y(k)));
%to see the results of y(k)
for k = 1:N
    y(k)
end;

%the input N = 4;  x = [1 2 3 4]
```

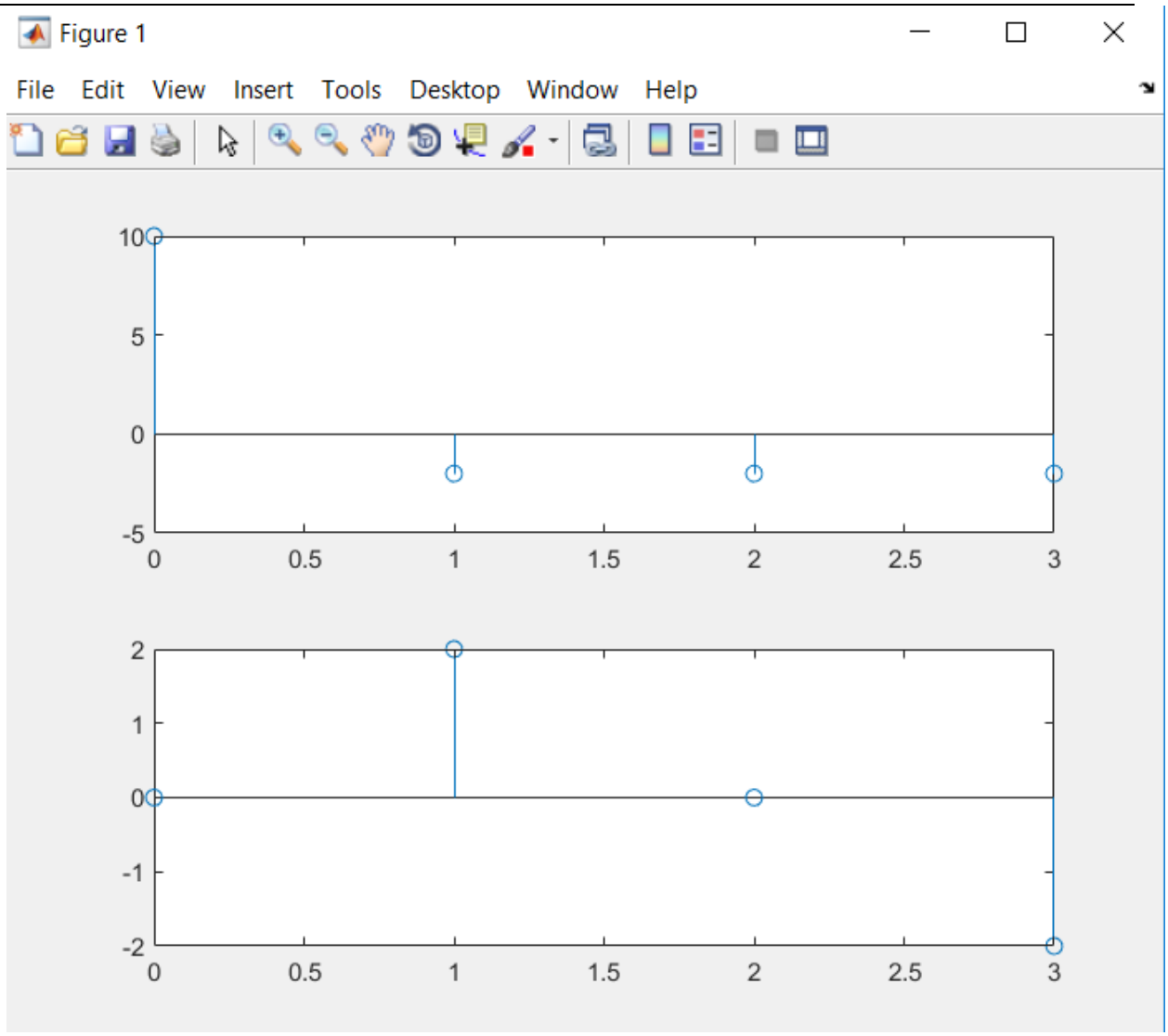
Figure 1
File Edit View Insert Tools Desktop Window Help
10
5
0
-5
0 0.5 1 1.5 2 2.5 3
2
1
0
-1
-2
0 0.5 1 1.5 2 2.5 3