
Lab 6

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```
clc();  
% clear;  
% close all;
```

Q1.Calculate the DFT of the given signal of sampling frequency using DIT-FFT algorithm

```
%xn=input('Enter Input Sequence: ');  
%fs=input('Enter Frequency in HZ: ');  
xn=[1 2 3 4 5];  
fs=500;  
N=power(2,ceil(log2(length(xn))));  
z=fft(xn,N);  
xn=[xn zeros(1,N-length(xn))];  
xnM=bitrevorder(xn);  
xKDITFFT=zeros(1,N);  
  
for i=1:log2(N)  
    count=1;  
    flag=1;  
    for a=1:N  
        if (flag)  
            xKDITFFT(1,a)=xnM(1,a)+(xnM(1,a  
+(2^(i-1)))*exp(-1j*((2*pi*(count-1))/2^i)));  
        else  
            xKDITFFT(1,a)=xnM(1,a-(2^(i-1)))-  
(xnM(1,a)*exp(-1j*((2*pi*(count-1))/2^i)));  
        end  
        count=count+1;  
        if(mod(count,(2^(i-1))+1)==0)  
            count=1;flag=~flag;  
        end  
    end  
    xnM=xKDITFFT;  
    fprintf('After Stage %d :',i);  
    disp(xKDITFFT);  
  
end
```

```
fprintf('DIT FFT Values are :');  
disp(xnM);
```

DIT FFT Values are : Columns 1 through 4

*15.0000 + 0.0000i -5.4142 - 7.2426i 3.0000 + 2.0000i -2.5858 -
1.2426i*

Columns 5 through 8

*3.0000 + 0.0000i -2.5858 + 1.2426i 3.0000 - 2.0000i -5.4142 +
7.2426i*

2. Finding out the frequency range of the given signal and write your observations.

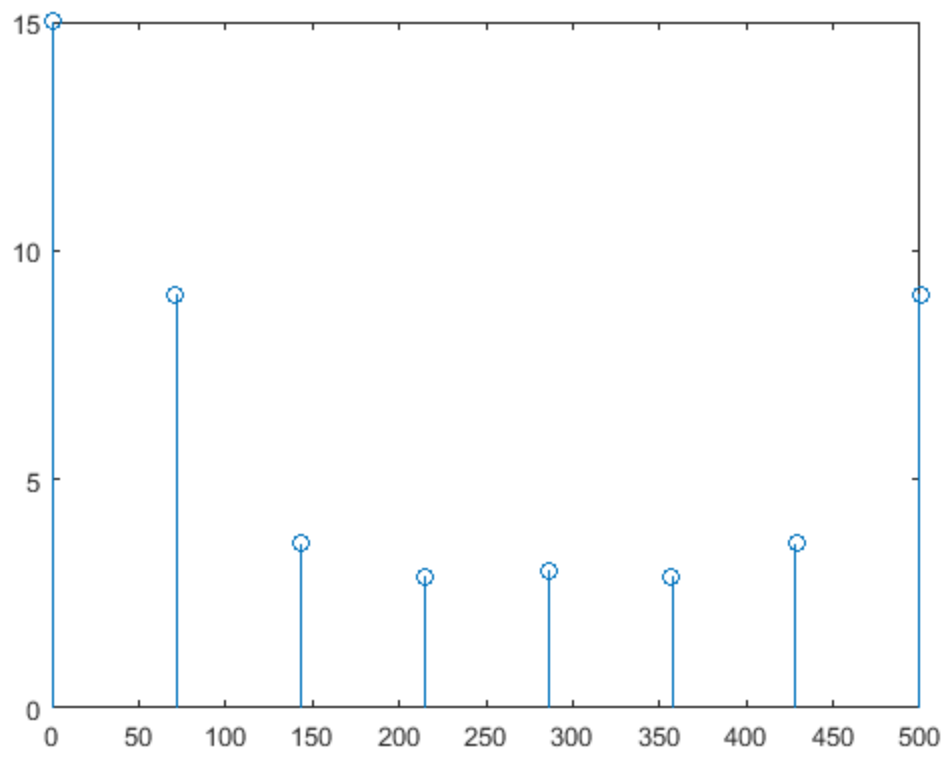
```
f=0:fs/(N-1):fs;  
stem(f,abs(xKDITFFT));  
fprintf('Frequencies present in Hz are : ');  
disp(f);
```

Frequencies present in Hz are : Columns 1 through 7

0 71.4286 142.8571 214.2857 285.7143 357.1429 428.5714

Column 8

500.0000



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