Tribhuvan University

Institute of Engineering

Pulchowk Campus

Lab Report on :

FOURIER TRANSFORM

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DSAP Lab3 Fourier transform

a) FFT of x = [1.5 2.3 0 1 6.37]

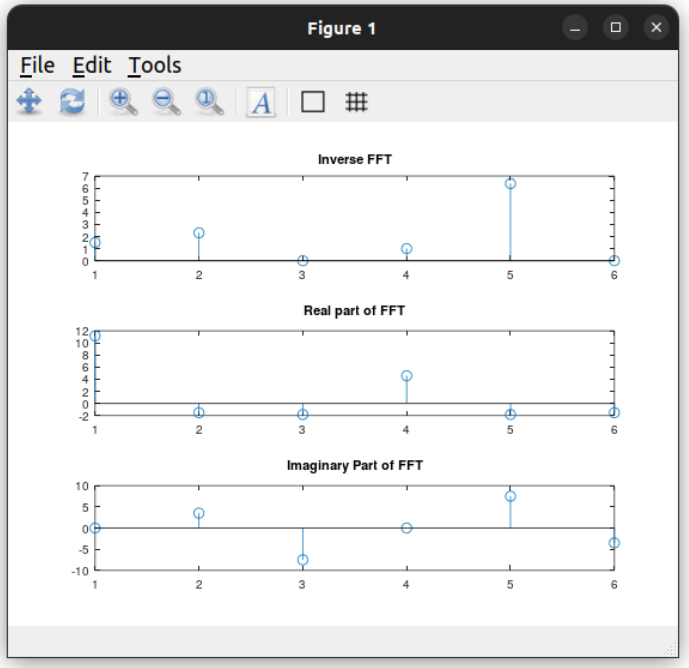
Code:

```
clc;
%x= [6 -2+2i -2 -2-2i];
x = [1.5 2.3 0 1 6.37];
y = fft(x,6)
z = ifft(y)

subplot(3,1,1)
stem(z);
title('Inverse FFT');

subplot(312);
stem(real(y))
title('Real part of FFT');

subplot(313)
stem(imag(y))
title('Imaginary Part of FFT');
```

Output:

```
y =

 Columns 1 and 2:

   11.1700 +       0i   -1.5350 +  3.5247i

 Columns 3 and 4:

   -1.8350 -  7.5084i    4.5700 +       0i

 Columns 5 and 6:

   -1.8350 +  7.5084i   -1.5350 -  3.5247i

z =

 Columns 1 through 4:

   1.5000e+00   2.3000e+00   5.9212e-16   1.0000e+00

 Columns 5 and 6:
```

6.3700e+00 1.4803e-16



b) FFT of x= [0 1 2 3]

Code:

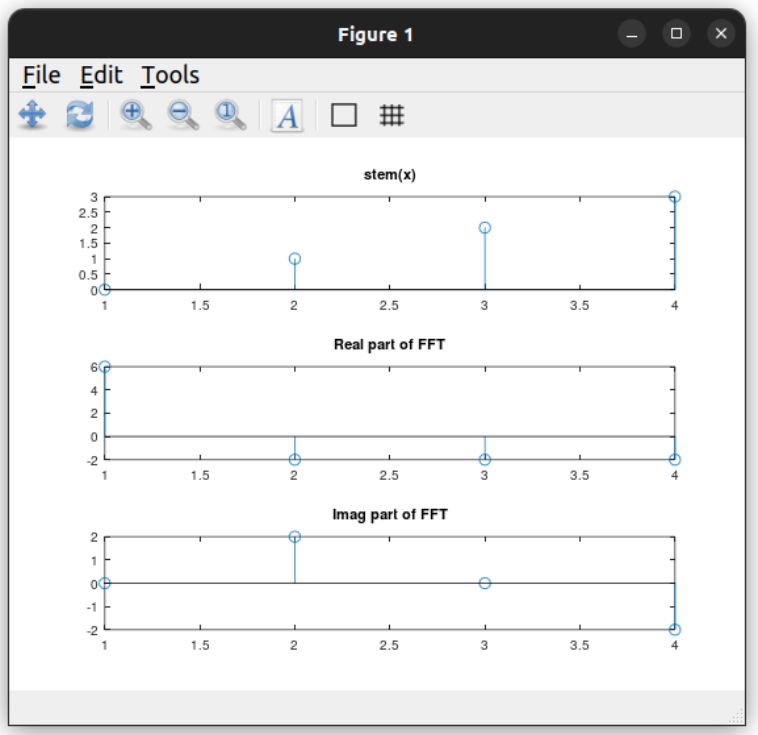
```
clc;
clear all;
x= [0 1 2 3]
y = fft(x,4)
subplot(3,1,1)
stem(x);
title('stem(x)');
subplot(312);
stem(real(y))
title('Real part of FFT');
subplot(313)
stem(imag(y));
title('Imag part of FFT');
```

Output:

```
x =

  0   1   2   3
```

y =

  6 + 0i -2 + 2i -2 + 0i -2 - 2i

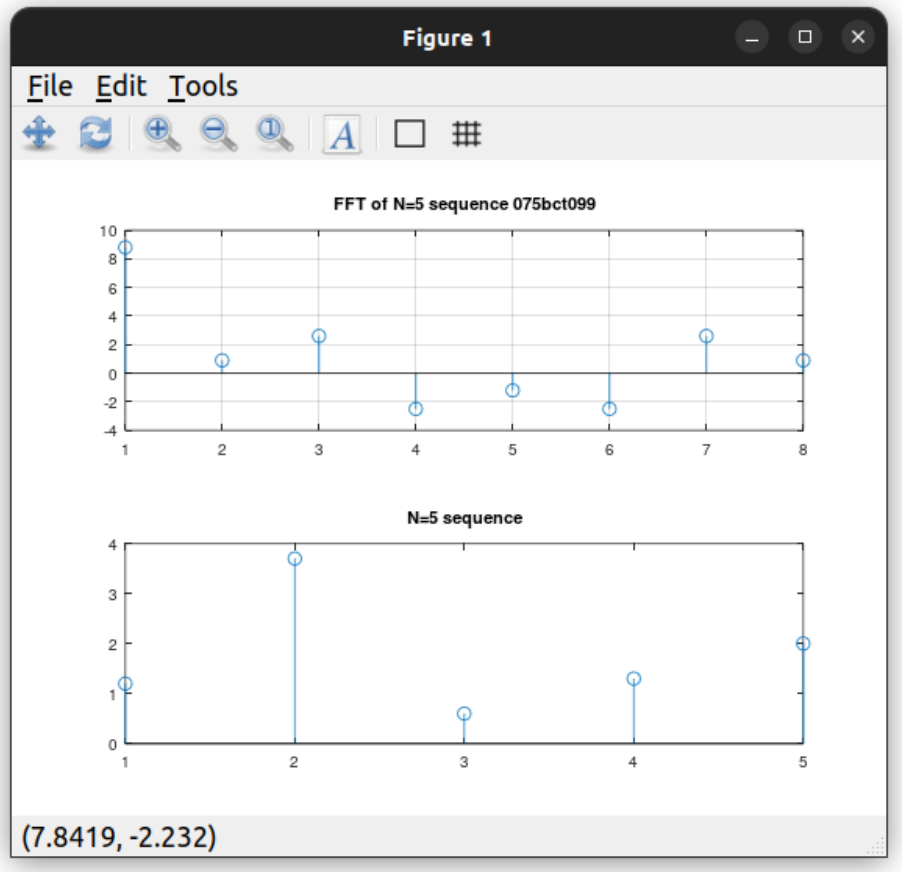


c) FFT of 5 point sequence x = [1.2 3.7 0.6 1.3 2];

Code:

```
x = [1.2 3.7 0.6 1.3 2 0 0 0];
y = fft(x , 8);

subplot(211)
stem(y)
title("FFT of N=5 sequence 075bct099");
grid on;
subplot(212)
stem(x);
title("N=5 sequence")
```

Output:



Conclusion:

Thus in this lab we performed Fast-Fourier Transform of given signals. The real part and imaginary part of the transformed signal was observed seperately. In order to get the original signal back we performed Inverse FFT .