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Lab 3 Jesse Layman SID: 861135479

```
% Professor: Ertem Tuncel,  
% TA: Ceren Sevinc,  
% EE141-022
```

a) Attached at the end of the report.

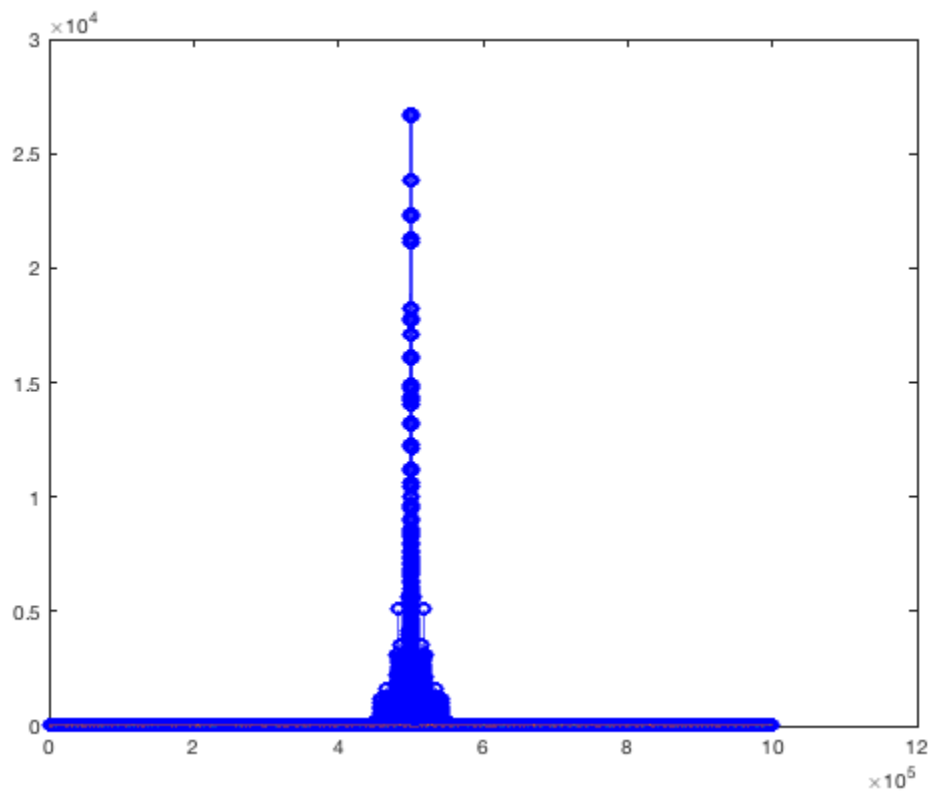
b)

```
close all  
clear all  
load ride;  
p = audioplayer(audio_sample,fs)  
n = 1:1000;  
j=sqrt(-1);  
a = 0.9+0.1*j;  
c = 0.02;  
H(n) = c/(1-(conj(a)/a))*a.^n+c/(1-(a/conj(a)))*conj(a).^n;  
Y1 = conv(audio_sample(:,1),H);  
Y2 = conv(audio_sample(:,2),H);  
Y = [Y1 Y2];  
%play(p)  
  
p =  
    audioplayer with properties:  
  
        SampleRate: 44100  
        BitsPerSample: 16  
    NumberOfChannels: 2  
        DeviceID: -1  
    CurrentSample: 1  
    TotalSamples: 1000000  
        Running: 'off'  
        StartFcn: []  
        StopFcn: []  
        TimerFcn: []  
    TimerPeriod: 0.0500  
        Tag: ''
```

```
UserData: []  
Type: 'audioplayer'
```

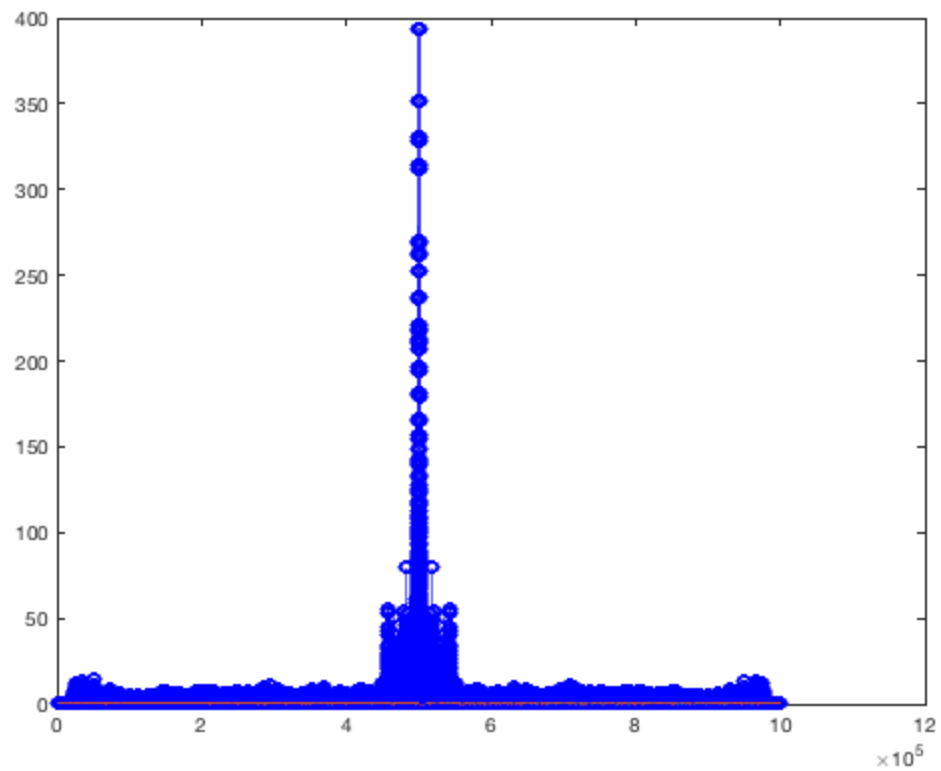
c)

```
yf = fft(Y);  
figure  
plot(fftshift(abs(yf)), 'b-o');  
hold on  
plot(fftshift(abs(audio_sample)));
```



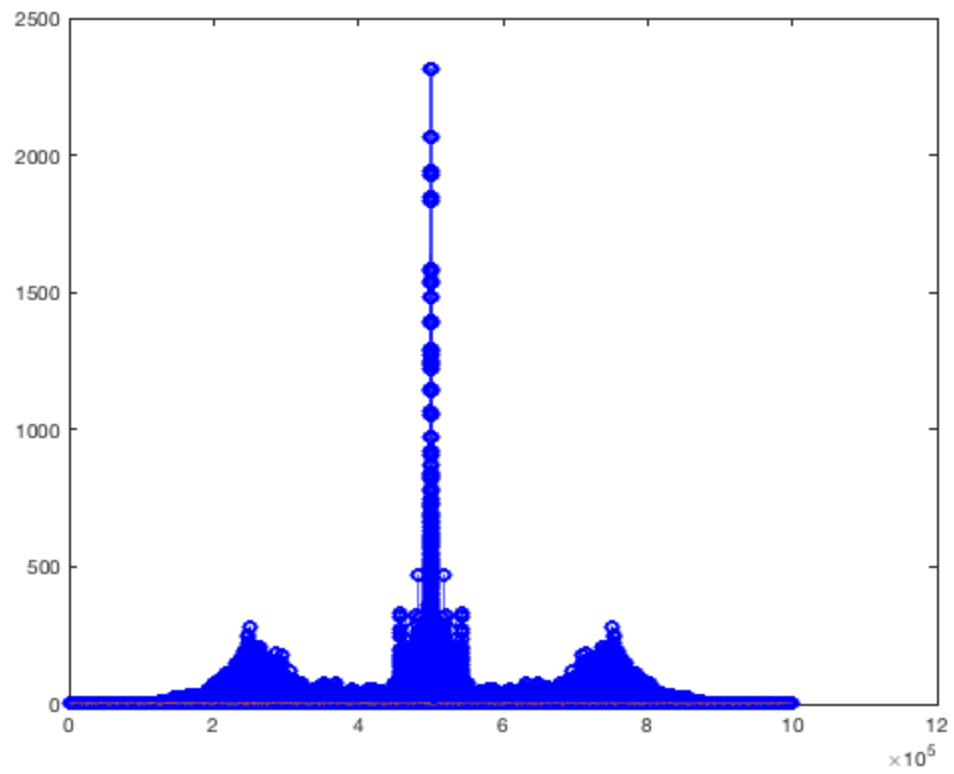
d)

```
a2 = -0.9+0.1*j;  
c2 = -0.02;  
H2(n) = c2/(1-(conj(a2)/a2))*a2.^n+c2/(1-(a2/conj(a2)))*conj(a2).^n;  
Y1_2 = conv(audio_sample(:,1),H2);  
Y2_2 = conv(audio_sample(:,2),H2);  
Y2 = [Y1_2 Y2_2];  
yf_2= fft(Y2);  
figure  
plot(fftshift(abs(yf_2)), 'b-o');  
hold on  
plot(fftshift(abs(audio_sample)));
```



e)

```
a3 = 0.9*j;
c3 = 0.19;
H3(n) = c3/(1-(conj(a3)/a3))*a3.^n+c3/(1-(a3/conj(a3)))*conj(a3).^n;
Y1_3 = conv(audio_sample(:,1),H3);
Y2_3 = conv(audio_sample(:,2),H3);
Y3 = [Y1_3 Y2_3];
yf_3= fft(Y3);
figure
plot(fftshift(abs(yf_3)), 'b-o');
hold on
plot(fftshift(abs(audio_sample)));
```



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