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Exersice 2 master program

```
clear all;
close all;
```

Exercise 2.1

```
% lin to dB conversion, do not modify the input signals
A1 = 2;
A2 = linspace(1,10,10);
A3 = ones(16,16);
Exe2_1_answer1 = Exe2_1(A1,1)
Exe2_1_answer2 = Exe2_1(A2,1)
Exe2_1_answer3 = Exe2_1(A3,1)
```

```

Exe2_1_answer1 =

    6.0206


Exe2_1_answer2 =

  Columns 1 through 7

         0    6.0206    9.5424   12.0412   13.9794   15.5630   16.9020

  Columns 8 through 10

   18.0618   19.0849   20.0000


Exe2_1_answer3 =

  Columns 1 through 13

     0     0     0     0     0     0     0     0     0     0     0
 0     0
     0     0     0     0     0     0     0     0     0     0     0
 0     0
     0     0     0     0     0     0     0     0     0     0     0
 0     0
     0     0     0     0     0     0     0     0     0     0     0
 0     0
```

```
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0
    0     0     0     0     0     0     0     0     0     0     0
0     0

 Columns 14 through 16

    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
    0     0     0
```

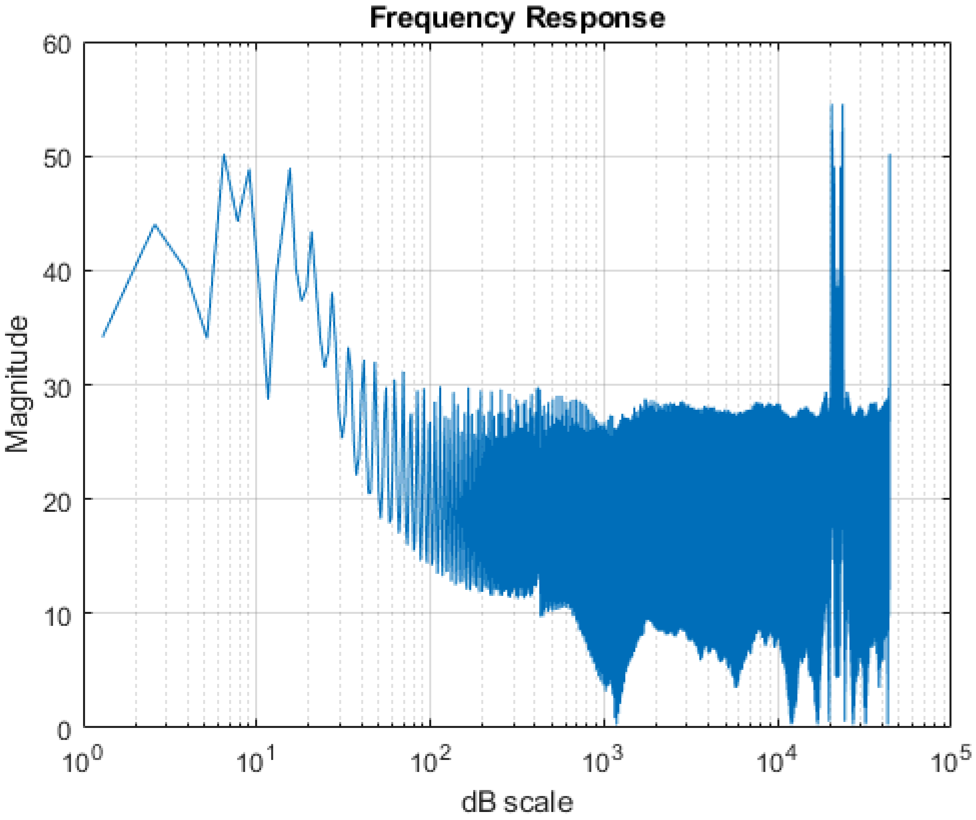
Exercise 2.2

```
% 'IR.mat' contains Impulse response vector and fs for the sample.
 Produce
% working fft function which plots the frequency response of the
 Impulse
% response of the IR in frequency scale
```

```
load('IR.mat');
Exe2_2_answer = Exe2_2(irN,fs);
Ave2_2 = mean(Exe2_2_answer)
```

```
Ave2_2 =

   16.5728
```



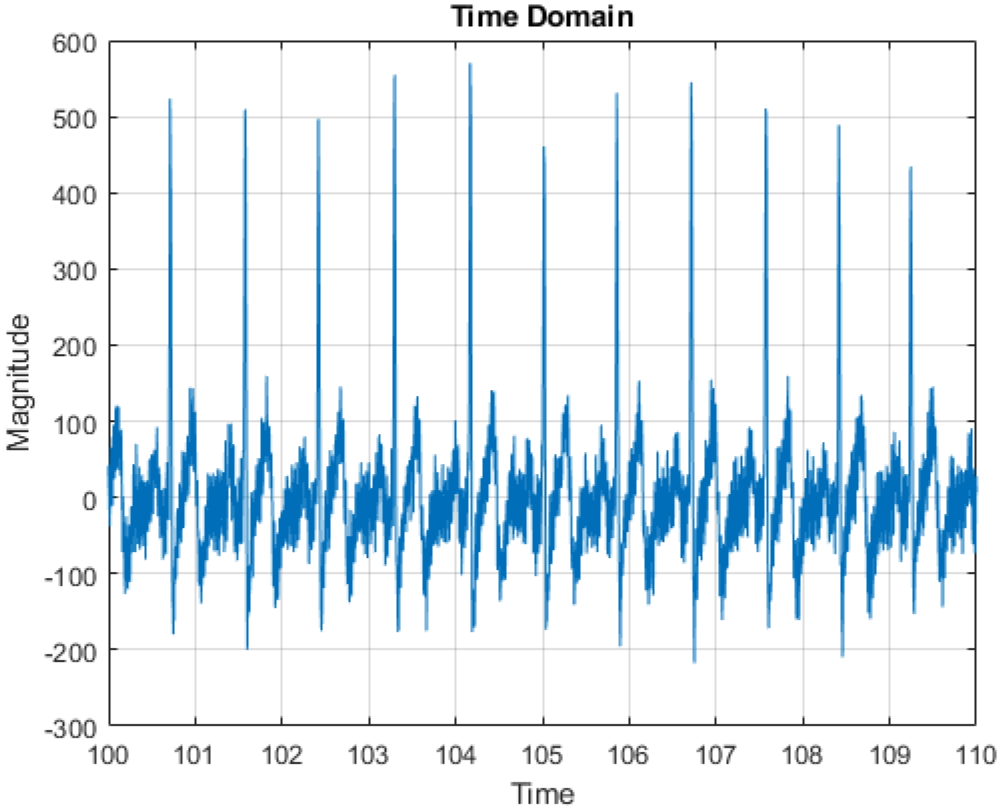
Exercise 2.3

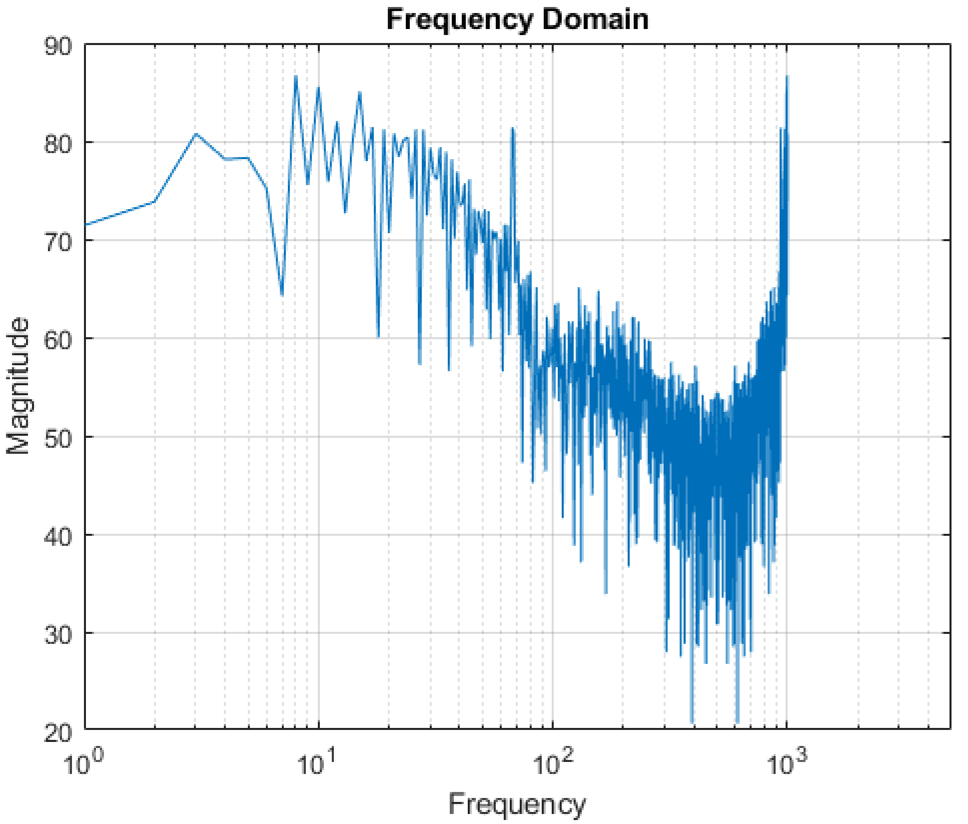
This time you have to load all the data in your function. Produce one sided fft function. with dB scaling. (reference = 1). Plot the resulting fft with frequency axle. The data includes some noisy transients, so pick the data from "clean" part of the signal. Pick at least 8 heart beats from the signal.

```
filename = 'data.mat';
Exe2_3_answer = Exe2_3(filename);
Ave2_3= mean(Exe2_3_answer)
```

```
Ave2_3 =

   76.8600
```


Time Domain
600
500
400
300
200
100
0
-100
-200
-300
Magnitude
100
101
102
103
104
105
106
107
108
109
110
Time


Frequency Domain
90
80
70
60
50
40
30
20
Magnitude
10^0
10^1
10^2
10^3
Frequency

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