**Report**

**Q1)**

Basically , I'm processing the sound file and counting the claps occured in the file in a reasonable way. How I do is following:

First of all, I read file with audioread(hfile). I found the mean of the matrix of sound file. By doing that , I'm aiming to determine a reasonable threshoold. Then I'm just iterating every indexes to see that if it exceeds the threshold. And of course there is also a timeout restriction so that it will skip the noise and not be accepting them as a clap. I deduce this idea from a java implementation of a clap counter. The guy wrote the class use some value as timeout.

Example output:
What is the M value? 2
The number of claps counted for the file "1-1.wav" is 1
The number of claps counted for the file "1-2.wav" is 2
The number of claps counted for the file "2-1.wav" is 1
The number of claps counted for the file "2-2.wav" is 5

**Q2)**

In this question we are asked to manipulate existing codes so that given exercises are satisfied with new variables. Rearranging the data means that we play the sound at some indexes. For instance to quadraple the frequency we can play the sound only at the indexes which can be written as 4*k+1 where k >=0 and k<=(length(y)-1)/4. The other ones are easy since we just write Fs/2 or Fs*2 instead of writing Fs.

Exercise 4 and exercise 2 plays the same sound. Since we are actually halving the frequencies of them. However, there is also a subtle difference that exercise 4 has more quality than exercie 2 does.

**Q3)**

In this question , I'm implementing Quadratic Spline Interpolation ona given dataset. I observe that the concave parts are very similar to the original function parts. However, by doing interpolation, we are just concatenating several piece-wise functions and that's why the aggregate function does not fit with the original one.

How I do is following:
First of all , I took a paper and started to write 16 functions that are in form of $aX^2+bX+c$.
Then by taking first derivatives of them which contains intersection points , I get 7 more equations. Then by setting a1=0 , I finisihed my work of creating equations. Then the rest is for Matlab. However, there is some redundancy I've made that is, I wrote the matrix by hand. However , I used my pencil and paper then I should be considered to make my hand dirty ☺.

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