Practical Assignment #1 Report

Soroosh Baselizadeh
95105408

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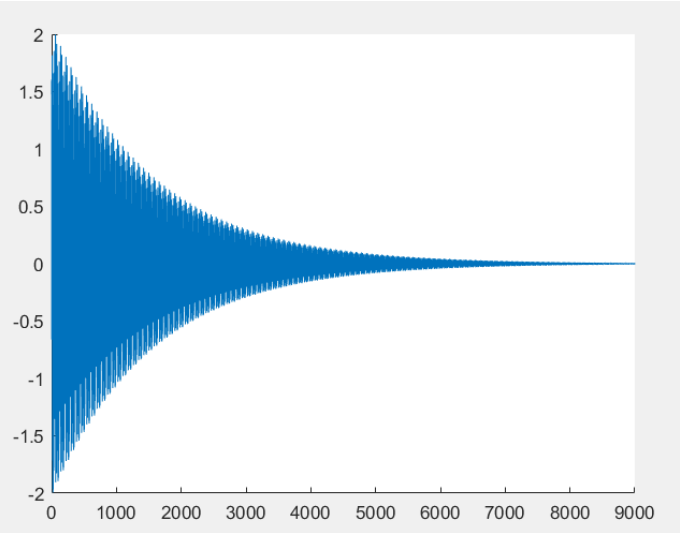
The function 'code' found in file 'code.m' is simulating the system by input arguments M, alpha, x and n. Main code is in file 'main.m' answering the question parts.

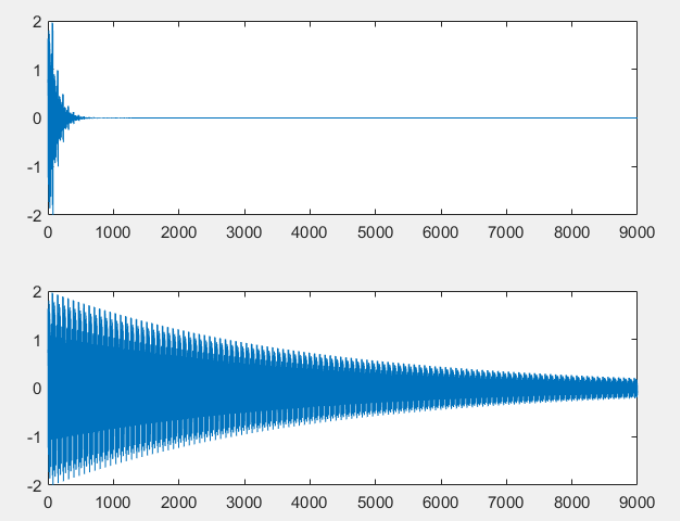
1 a

The requested signal would be like this:



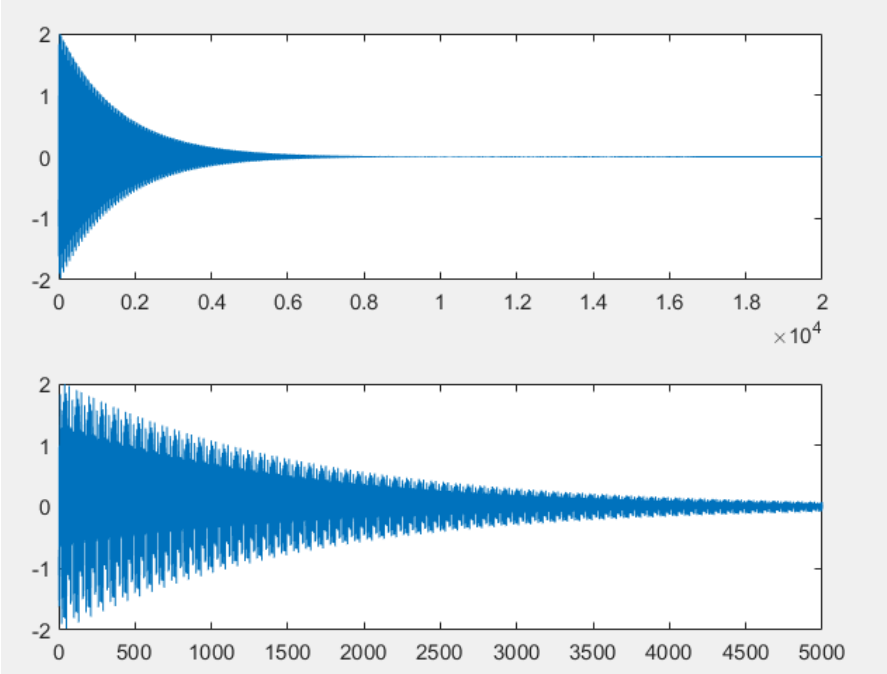
2 b

By increasing α from 0.5 (the upper plot) to 0.95 (the previous section) and to 0.98 (the downer plot) we can have a signal which converges to zero with more delay.



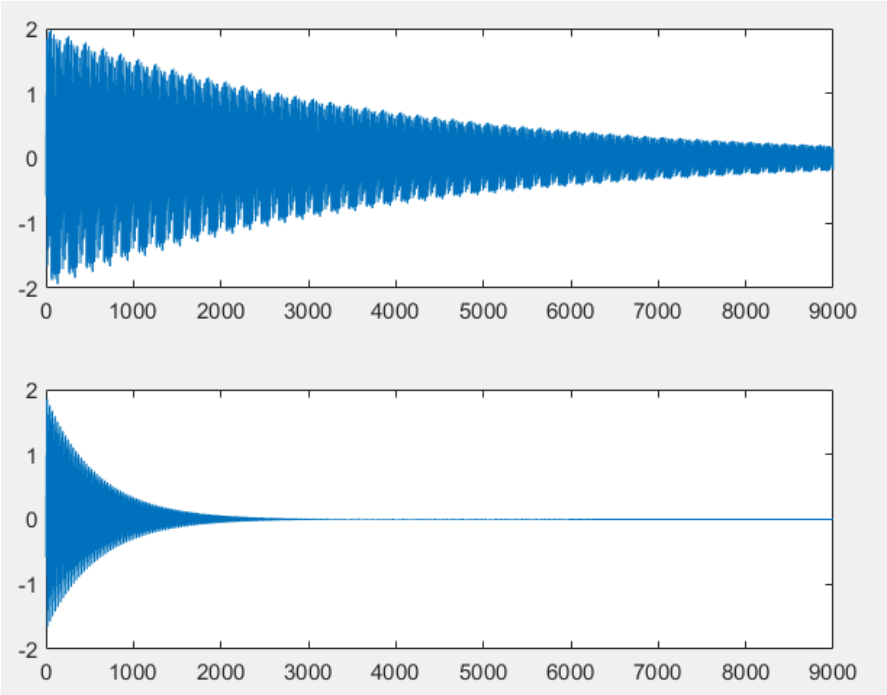
3 c

By increasing N from 5000 (the downer plot) to 9000 (section a) and to 20000 (the upper plot) the signal with bigger N converges to zero faster and also the values are less at the ending of signals with bigger N.



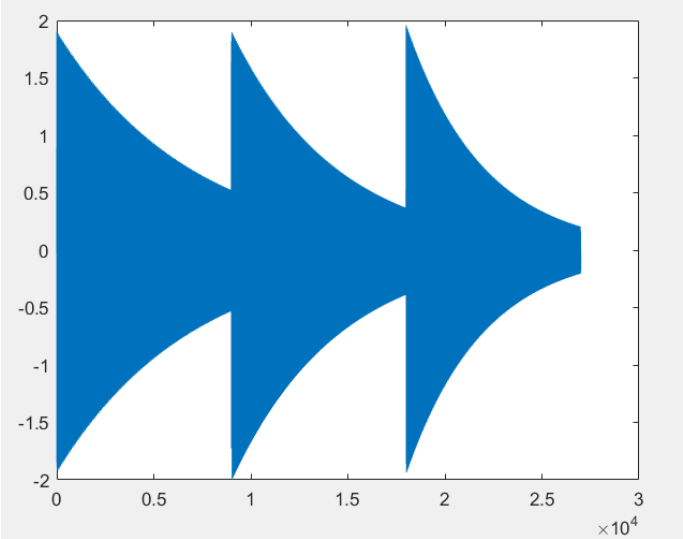
4 d

By decreasing M from 200 (the upper plot) to 80 (section a) and to 30 (the downer plot) one can see the smaller M values result in faster converging signals. Also as we know M relates to the period of the signal (according to the Karplus-Strong formula) so the smaller M means higher frequency.



5 e

The requested signal is shown below:



6 d

According to the function $y(i) = x(i) + x(i + D + Rsin(\frac{2\pi fi}{f_s}))$ it combines two same signals one delayed by changing period which results in producing peaks and nothces in the outcome signal.