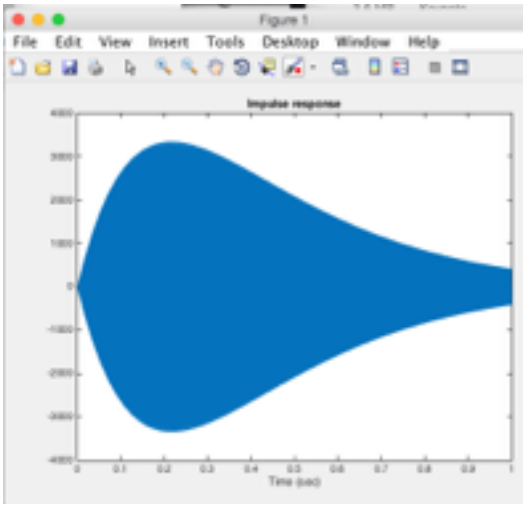
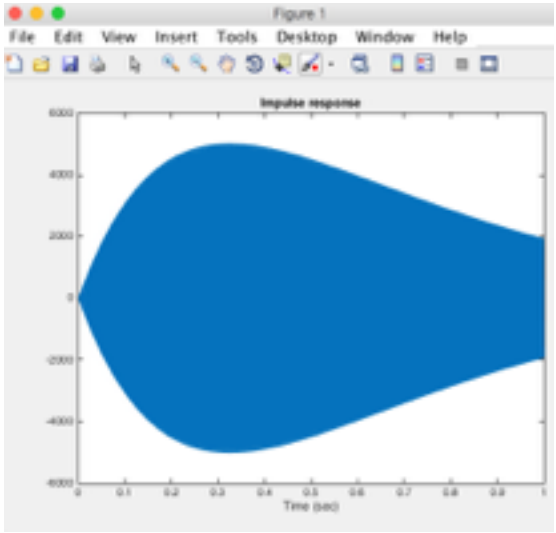
Kang-Wei Chang
kwc305
N17515255
Lab 2 Sep. 22

Assignment

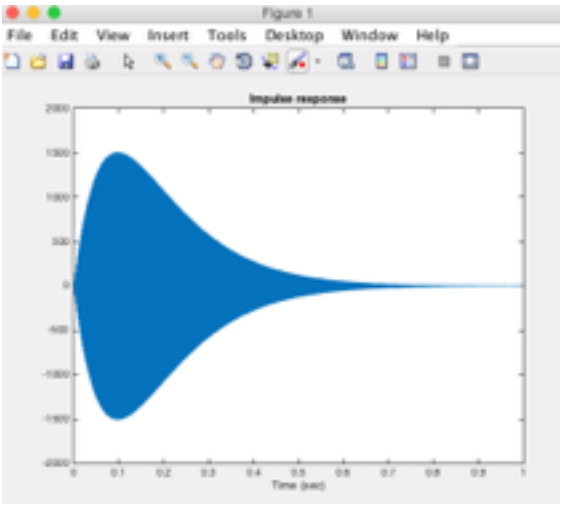
4-10:
In this question, we first try to design 2 different second order filter and then do the convolution and cascade it.
On the differential equation,we found that log((r1-1)/(r2-1))/log(r2/r1). So, r2 needs to larger than r1.
For the rising/falling time, first I focus on the falling time. I found if I change the value of Ta, the falling time will change. To be more specific, if I larger the Ta, the falling time will become larger. On the other hand, if I decrease the Ta value, the falling time will decrease.



original plot

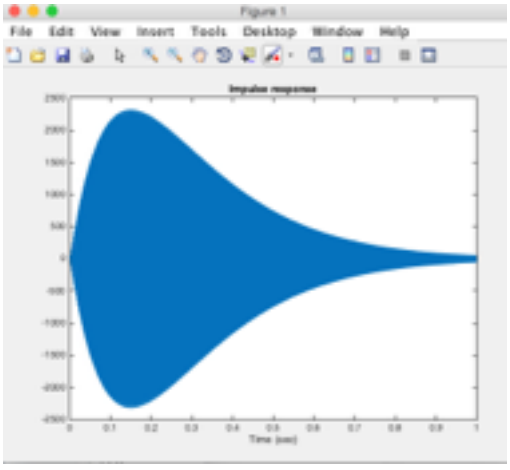


Ta = 1.5, falling time decrease

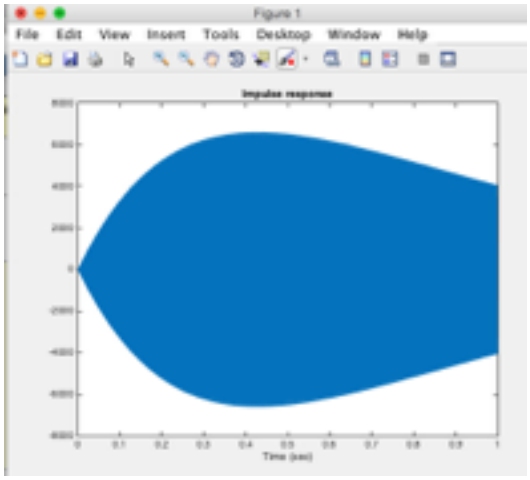


Ta = 0.5

For the rising time, I do use 2 different second order filter. I specify two different r: r1 and r2 with different radios. I found that with fixed r2, if I decrease the value of r1, the rising timing will decrease. If we increase the r1 and r2 both, the rising time will increase.



original plot r1=r2=0.01



with r1 = 0.01, r2 = 0.35