

# LAB 04 POST-LAB

Electrical Engineering 20N  
Department of Electrical Engineering and Computer Sciences  
University of California, Berkeley

Name:  
Lab Section:  
Lab TA:

## Creating the Low-Pass Filter

1. Replace this sentence with your observations for the effect of the Low-Pass Filter on each of the three inputs, and which frequencies the filter does not attenuate. Supplement your answer with the necessary screenshots.
2. Replace this sentence with your explanation for why the two-point moving average filter is called a discrete-time low-pass filter. Be sure to support your explanation with your observations.

## Creating the High-Pass Filter

1. Replace this sentence with your observations for the effect of the High-Pass Filter on each of the three inputs, and which frequencies the filter does not attenuate. Supplement your answer with the necessary screenshots.
2. Replace this sentence with your explanation for why the two-point moving difference filter is called a discrete-time high-pass filter. Be sure to support your explanation with your observations.

## Cascading Filters

1. Replace this sentence with the relationship that you have obtained between the impulse responses  $a$ ,  $b$ , and  $c$ .
2. Replace this sentence with the impulse response of the cascaded system.
3. Replace this sentence with your explanation of whether or not the order in which you convolve the impulse responses in a cascaded system matters.
4. Replace this sentence with your observations for the effect of the cascaded system on each of the three inputs, and which frequencies the system does not attenuate. Supplement your answer with the necessary screenshots.
5. Replace this sentence with your explanation for why the cascaded system is called a discrete-time mid-pass filter or a discrete-time band-pass filter. Does this make sense intuitively, given the two systems that you have combined to create the cascaded system?

Be sure to also attach the following VIs: Convolution Data Flow LPF, Convolution Data Flow MPF, and Convolution Data Flow HPF.