Lab 3: FIR filtering in MATLAB
Instructor Verification

Name: _______________________________________________
Date of Lab: __________________

1.1.1 Frequency response of the three point averaging filter

Implement the frequency response in (3) directly in Matlab. Use a vector that includes 400 samples between -\pi and \pi for \omega. Since the frequency response is a complex-valued quantity, use \text{abs()} and \text{angle()} to extract the magnitude and phase of the frequency response for plotting.

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1.1.2 First difference filtering of cosine waves

Characterize the filter performance at the input frequency by computing the relative amplitude and phase, i.e., the ratio of output to input amplitudes and the difference of output and input phases.

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1.1.3 Filtering speech waveforms

What do you expect to hear when you execute the following statement? Why?

\text{sound([x2; (y1+y2)], 8000)}

Was your expectation confirmed? If you added the two frequency responses together $H_1(e^{j\omega}) + H_2(e^{j\omega})$, what would you expect the answer to be?

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