1. Write a program that inputs a square wave into a L-point averaging filter and determine the output. Use the FIR difference equation to achieve this. Plot both the signal and their spectrum for 2 frequencies with 2 values of L for each frequency. Make sure you calculate the cutoff frequency=2pi/L in Hz.

Input Signal freq = 10 Hz Input Spectrum 1 0.6 0.5 0.4 0 0.2 -0.5 -1 L 0 0 0 50 100 1 2 seconds Hz Output Signal 7 Point Aver Filter Output Spectrum Cutoff =142.8571 Hz 1 0.6 0.5 0.4 0 0.2 -0.5 -1 0 Ō 50 100 2 1 0 seconds Hz

Here is an example of the output you should provide.

2. Write a program that inputs a square wave into a L-point averaging filter and determine the output. Use the frequency response to achieve this. Plot both the signal and the frequency response for the filter for 2 frequencies with 2 values of L for each frequency. Make sure you calculate the cutoff frequency=2pi/L and digitized frequency of the signal.



Here is an example of the output you should provide.