**Lab 1 Report**

1. **Design and Simulation**

Description of the design of a butterworth filter

Simulation details – input wave, filter and output. Provide design parameters. Provide figures corresponding to time and frequency domain (magnitude and phase response) representation and explain the figures. See the matlab code ‘triangular\_filtering.m’ in class (also posted on avenue). Provide the figure showing the magnitude response of the filter.

1. **Part I: Butterworth Filter Experiments**

Details on the testing of the filter by applying a square wave input. Plot the magnitude response of the filter by frequency sweep. Compare the output of the filter (in time and frequency domains) with simulations (Plotting the simulation and experimental results on the same figure would be helpful). Comment on any discrepancies between simulation and experiment, if any.

1. **Part II: Audio Signal Filtering**

Comment on the output of the audio filter.

1. Attach matlab codes used for simulations.