EC4910: Computer Project 1

**Problem.**

The file DATA.WAV contains two channels of music. The signal  is in channel 1 (the lower half of the spectrum () while the signal  is Single Side Band modulated at the higher half of the spectrum (), with  the sampling frequency (CD quality 44.1kHz).



Q1: using Matlab, take the FFT of the signal and determine the bandwidths of the two signals.

Q2: using Simulink, design and implement the system shown below, where you can switch between the two channels. Design all filters in Matlab using firpm and implement them in Simulink using *Digital Filter.*



Q3: design the filters using *FDATool.*

Notes on Simulink:

* *Digital Filter* in the blockset *Signal Processing>Filtering>Filter Implementations*
* *FDATool*  for digital filtering in the blockset *Signal Processing > Filtering > Filter Design*
* *From Multimedia File*  in the blockset *Signal Processing > Sources*
* *To Audio Device*  in the blockset *Signal Processing>Sinks*
* *Sine Wave* in *Signal Processing> Sources*
* *Product* in *Simulink > Math Operations*
* *Manual Switch* in *Simulink > Signal Routing*