**Full Name:** _____

**EEL 3135 (Spring 2021) – Lab #04** **Due: Feb. 16 - Feb. 22 (On Lab Day)**

## Group Question

- This group problem is extra credit on your lab assignment.
- Work as a group to complete this problem. It is designed to take an hour or less.
- You may get help from your TA (but he or she will not give you direct answers).
- Have fun!

**Question #1:** This exercise emulates audio in a specific environment. The acoustic properties of a concert hall or a room can be approximately modeled by an LTI system / filter. As shown in the supplemental videos, you can capture the impulse response of a concert hall experimentally. To emulate the concert hall, you filter the audio signal using the hall's impulse response.

(a) Download an .mp3 file from anywhere. There are many ways to do this; the easiest way may be to use a YouTube video to .mp3 converter. After downloading the .mp3 file, run it through the provided `convertMp3` function.

(b) Load in the `hall.mat` file. This places `hh` into your workspace. The matrix `hh` has two columns; each column gives the impulse response of the concert hall captured for a stereo channel: one each for the left and right speaker. Use to skeleton code and `hh` to emulate audio in the hall environment. Create two vectors: one for each channel. Then concatenate both channels into one two-column matrix `y`. **As a caveat, do not use the `conv2` function.**

(c) Use `soundsc` to listen to the emulated stereo sound. Save and submit your original audio and your modified audio.

(d) Answer the question at the bottom of the `eel3135_lab04_finale.m` file and also submit the published MATLAB PDF.