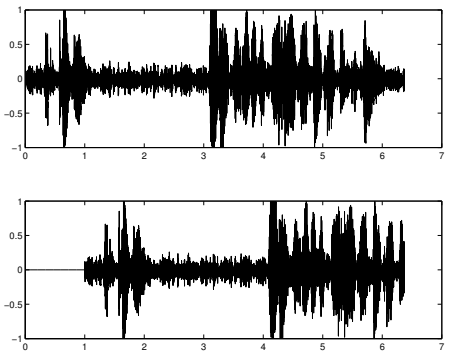
1 Sound Effects **(55 points)**

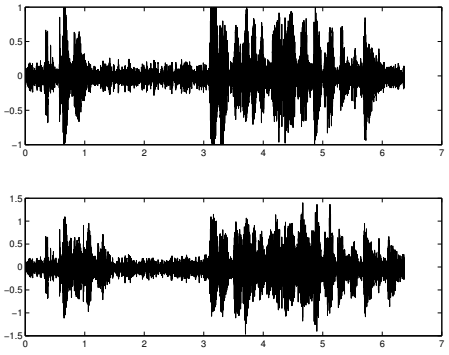
1.1 Delay

Write a function which will delay the sound by a given amount of time in seconds. The time at the beginning due to delay should be silent. (15 points).



1.2 Echo

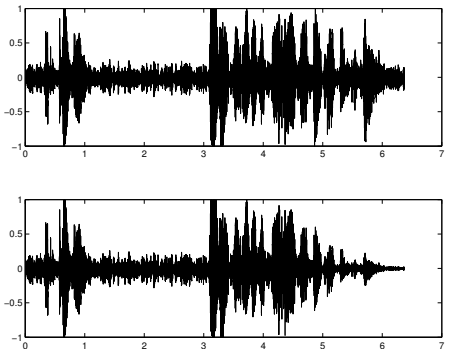
Write a function which creates an echo of effect. It should take three inputs: the number of echos, the time delay between them and the damping coefficient. The sound level of the next echo should be multiplied with the damping coefficient $\in [0, 1)$. (20 points).



1.3 Fade-out

A fade-out effect can be produced by a multiplying the level of sound by a monotonically decreasing function of time. Write a function which creates the fade-out effect. It should take one or more inputs. The first one should be the time in seconds when the fade-out begins. Depending on the parameters of the damping function you can have more parameters. A natural choice is using an

exponentail decay after $t > \Delta$, which is given in the form $e^{-k(t-\Delta)}$ where $k > 0$ adjusts the damping. (20 points).



All functions should work for both mono an stereo recordings. Example recordings and processed sound files are available in Hw4.zip.

You should upload three files `delay.m`, `echo_effect.m` and `fade_out.m` to the CMS.

2 Chess **(45 points + ♡ 25 points)**

In this exercise, you will create a chessboard as an image. You are also provided with a set of chess pieces. The representation of the pieces and notation for the moves are the same as in Hw3.

(a) Write a function which constructs image data of a chessboard. The function should take two inputs, a filename to write the image, and the side length of a square in pixels. (15 points).

(b) Write a function which takes the current state of the board and puts the pieces on the board. (15 points).

(c) Write a function which displays the state of the board on a figure window after each move. It should wait for a given amount of time between the moves. You can use the `pause` function. The moves should be read from a textfile in coordinate notation. (15 points)

(d) Write a function which creates an animation of the game, showing motion of pieces to their target locations. It should save the animation as a movie. (This part is bonus, ♡ 25 points).

You should upload files `draw_board.m`, `show_pieces.m`, `display_game.m` and `animate_game.m`.