Digital Signal Processing
Lab 3 report
Rozaliya Amirova

Convolution Reverb

In this task I Used 2 audio samples:
1) High quality recordings of a symphony orchestra (by Helsinki University)
2) Harvard female voice recording.

I also used 3 impulse response samples:
1) LargeHall.wav
2)SmallVoxRoom.wav
3)StudioK.wav

```
[IR1, fsIR1] = audioread('LargeHall.wav');
[IR2, fsIR2] = audioread('SmallVoxRoom.wav');
[IR3, fsIR3] = audioread('StudioK.wav');

[Fem, fsFem] = audioread('HarvardFemale.wav');
[M, fsM] = audioread('mo_all.wav');
IR1 = IR1(:, 1);
IR2 = IR2(:, 1);
IR3 = IR3(:, 1);
Fem = Fem(:, 1);
% player = audioplayer(M, fsM);
% play(player);

%reverbed = conv(IR1, Fem(1:300000));
%reverbed = conv(IR2, Fem(1:300000));
% reverbed = conv(IR3, Fem(1:300000));

% reverbed = conv(IR1, M(1:1000000));
% reverbed = conv(IR2, M(1:1000000));
% reverbed = conv(IR3, M(1:1000000));

player = audioplayer(reverbed, fsFem, 24);
play(player);
```

Experiment with Impulse Response recording

In this experiment I used bang sound and recorded it in dorm's corridor. To compute Impulse response of the corridor I applied convolution to the reversed original sound and my recording. Then I applied Impulse response to the original signal.
Result is blurred but reminds an original signal.

```
[rec, fsC] = audioread('record.wav');
[original, fsO] = audioread('bang.wav');

rec = rec(:, 1);
original = original(:, 1);
o_reversed = fliplr(original);

IR = conv(rec(1:100000), o_reversed(1:100000));

result = conv(IR, original(1:100000));

player = audioplayer(result, fsC, 24);
play(player);
```