# Part 3 : Processing sound waves using Fourier Transform

Reading piano notes from Data/Piano/\*.mp3 :

cd C:\Users\saeed\Desktop\EngMath\

[y1,Fs1] = audioread('Data/Piano/piano\_A.mp3');

[y2,Fs2] = audioread('Data/Piano/piano\_A\_sharp.mp3');

[y3,Fs3] = audioread('Data/Piano/piano\_B.mp3');

[y4,Fs4] = audioread('Data/Piano/piano\_C\_sharp.mp3');

[y5,Fs5] = audioread('Data/Piano/piano\_D.mp3');

[y6,Fs6] = audioread('Data/Piano/piano\_D\_sharp.mp3');

[y7,Fs7] = audioread('Data/Piano/piano\_E.mp3');

[y8,Fs8] = audioread('Data/Piano/piano\_F.mp3');

[y9,Fs9] = audioread('Data/Piano/piano\_F\_sharp.mp3');

[y10,Fs10] = audioread('Data/Piano/piano\_G.mp3');

[y11,Fs11] = audioread('Data/Piano/piano\_G\_sharp.mp3');

[y12,Fs12] = audioread('Data/Piano/piano\_middle\_C.mp3');

# Fourier Transform of sound waves

y1\_fft = fft(y1);

y1\_fft\_shift = fftshift(y1\_fft);

plot(abs(y1\_fft\_shift));

xlim([179067 260004])

ylim([-12 527])

y12\_fft = fft(y12);

y12\_fft\_shift = fftshift(y12\_fft);

plot(abs(y12\_fft\_shift));

xlim([138360 195588])

ylim([-22 632])

sound(y1,Fs1);

sound(y12,Fs12);

# Question : Explain the differences between these two notes