Assignment 3 (Programming Assignment)

1. Record your own voice, for different sampling rate (6000, 8000, 10000, 16000, 20000 and 44100 Hz). Decide a sampling rate for your voice. Name that sampled voice as *sampled_voice*.

2. Plot your *sampled_voice* in time domain.

3. Take the Fourier transform of your *sampled_voice* and plot it in frequency domain. (Write your own function for Fourier transform and Inverse Fourier transform) $sampled\_voice\_freq$

4. Report the bandwidth of your *sampled_voice* (B_w)

5. Take the inverse Fourier transform of $sampled\_voice\_freq$. Plot this signal, play the voice of this signal.

6. Remove the higher frequency components from your voice, i.e remove the frequency component more than $0.8B_w$. Plot the time domain signal corresponding to this, play this signal, report the difference corresponding to the original signal.

7. Set the phase response of the *sampled_voice* as 0. Plot the time domain signal corresponding to this, play this signal, report the difference corresponding to the original signal.