ACTIVITY #8

FAST FOURIER TRANSFORM

MATLAB Function:

audioread - Read audio files in MATLAB.

[Y, FS]=audioread(FILENAME) reads an audio file specified by the string FILE, returning the sampled data in Y and the sample rate FS, in Hertz.

fft(X) is the discrete Fourier transform (DFT) of vector X. For matrices, the fft operation is applied to each column. For N-D arrays, the fft operation operates on the first non-singleton dimension.

SCILAB Function:

wavread – reads sound data or queries data info from a .wav audio file.

y = wavread(wavfile)

fft(X) – function for Fast Fourier Transform in SCILAB.

Exercise:

1. Use your own voice in stating your complete name to generate a wav file signal. Perform the Fast Fourier Transform (FFT) of the signal. (If the number of samples does not satisfy to 2^N, then you can add zeros). Create a function for
   a. Radix-2 DIT FFT (First 8 alphabetical order)
   b. Radix-2 DIF FFT (Last 8 alphabetical order)

   Compare your output with the default **fft** function in MATLAB.

   Upload the wav file and submit in pdf file the graph of the signal and the transformed signal (magnitude[**abs**] and phase[**phase**]).
2. Discussion on the assigned Radix-2 FFT Algorithm.