**第11週 FFT**

Write a Decimation-in-Time的FFT function.

**function** [xn] = my\_FFT(Xk, N)

**function** [xn] = my\_IFFT(Xk, N)~用my\_FFT實現即可

之後再以此自寫的FFT/IFFT重作下面的題目，並與numpy內的FFT function比較及驗證結果是否正確。

**1.**  (use the result from 1. above)

(a) Plot FFT(x[n]) using N=64(after proper zero-padding)

(b) Plot IFFT (x[n])

先將上題結果經內建的FFT驗證沒有問題後，再重新做下面這一題

**2.**  (use the result from 1. above)

(a) Compute FFT(x[n]) using N=128(after proper zero-padding)

(b) Plot x[n], and compare it with IFFT of (a). (plot together)

(c) Downsample (decimate) the FFT of (a) by a factor of 4, and compute the IFFT (128 points), and plot it with for a comparison. Please comment on your observation.

3.(加分題)寫一個 Decimation-in-Frequency的FFT，用1.(b)驗證是否正確即可