Experiment No: 6. FIR Filter Design Using Windows

1) Explore the Matlab functions for generating the following windows
   (i) Rectangular, (ii) Hamming, and (iii) Hanning

2) Perform frequency analysis by taking a dense DFT (for example, 1000-point) and see the gain $\left|W\left(e^{j\omega}\right)\right|$ of the window for different window lengths (say $M = 25, 50\ 100$).

3) Design digital low pass FIR filter using rectangular and Hamming windowing function (use *fir1*() function of matlab/octave) for a cut-off frequency of $\omega_c = \frac{\pi}{4}$ rad/sample. Select the window length for all the window functions to be 21.
   a. Plot the impulse response of the two filters.
   b. Perform a bode analysis on the two filters (you can use "freqz" command) and comment on them.