Course: EC 627 Assignment-2 Due: 2nd week of September

1) Write a SCILAB program for computing short term energy of a given speech signal. This program should have provision to take speech signal, frame size and frame shift as inputs from the user and display the speech signal and its energy contour.
2) Write a SCILAB program for computing short term zero cross rate (ZCR) of a given speech signal. This program should have provision to take speech signal, frame size and frame shift as inputs from the user and display the speech signal and its ZCR contour.
3) Write a SCILAB program for computing short term autocorrelation of a given speech signal. This program should have provision to take speech signal, frame size and frame shift as inputs from the user and displays the speech signal and its autocorrelation segments.
4) Write a SCLIAB program for finding the pitch of voiced speech segments using short term autocorrelation. The display should consist of speech signal and its pitch contour. (*)
5) Write a SCLIAB program for voiced/unvoiced/silence classification of speech using short term energy, ZCR and pitch from short term autocorrelation. The display should consist of speech signal and combined evidence of three level contour that marks silence, unvoiced and voiced regions. (**)
6) Write a SCILAB program to compute the STFT of a given speech signal. The program should take speech signal, frame size and frame shift as input and display the speech signal and its STFT. (**)
7) Write a SCILAB program to demonstrate the effect of windowing functions (rectangular, hamming, hanning) on the short term spectrum.
8) Write a SCILAB program to compute and plot the spectrogram of a given speech signal. The program should take speech signal and frame size as input and display the speech signal and its spectrogram. (***)