EEE 536 – INTERNET ARCHITECTURE AND PROTOCOLS
HOMEWORK 2

due Nov. 17 in my mailbox as a hardcopy only before 5pm
submissions afterwards by Nov. 20 5pm will be accepted with a 20% penalty

1. Write a 802.11b DCF simulator (again using your favorite programming language) to obtain a relationship between the best possible choice of CWmin as a function of the number of users N that have traffic to send. The best CWmin is the value at which the largest throughput is attained for a given value of N. Assume all N users have a rate of 5.5 Mbps. Use the parameter set presented in the paper entitled 'Performance Anomaly of 802.11'. Assume MAC frames of 1500 Bytes and the use of long preamble. Vary N=5:5:50 and CWmin=[2,4,8,16,32,64,128,256,512]. Take CWmax=1024 in all cases.

    a. Plot the best CWmin as a function of N. Do a regression analysis to find the best linear curve that relates N and CWmin.
    b. Plot the best throughput in Mbps with the use of best CWmin as function of N as well as the throughput attained by the use of static CWmin=32.
    c. Comment on the results.

    Attach a hard copy of your code.