American University of Beirut
Department of Electrical and Computer Engineering
EECE 350 – Computer Networks
SPRING 2015
Homework 2

Due Friday February 20 in class.

Problem 1. [10 points]

a) Using the 4B/5B and NRZI encoding schemes, and assuming the signal is initially "Low", show the waveform for the signal that gets transmitted when the message bits are *your* initials in ASCII. E.g., for Barrack Obama, the initials are BO and their binary equivalent is 0100 0010 010 01111. [5 points]
b) Show the waveform when Manchester encoding is used for your initials in part a) above. [5 points]

Problem 2. [15 points]

a) What is the capacity (in bps) of a voice channel with a 3.3 kHz bandwidth and ***X*** dB Signal-to-Noise Ratio (SNR)? [5 points]
   X = 32 + (last two digits of your ID number)/50 2014 12345 => *X* = 32+45/50=32.9
b) How many signal levels are needed to achieve such capacity? [5 points]
c) What is the noise-free capacity with so many signal levels? [5 points]

Problem 3. [25 points]

Install Python 2.7 and run the code shown in class that retrieves the Apple Inc. (symbol AAPL) share price from the YAHOO! finance server. Note that the share price is shown on line 13 of the output after the "AAPL" symbol.
Modify the code to retrieve the share price of the company whose information appears next to your ID number in the file posted on Moodle. You can verify that your share price is correct by using the nasdaq.com URL, also shown in the file.
Submit your source code and the output that shows the share price of your assigned company.

Problem 4. [50 points]

Wireshark Lab.

This exercise is available online at:

http://www-net.cs.umass.edu/wireshark-labs/Wireshark_Intro_v6.0.pdf