CS 410/510 Introduction to Multimedia Networking, Fall 2015
Homework #2
Assigned: Wednesday Sept. 30, 2015
Due: BEGINNING OF CLASS Wednesday. October 7, 2015.

1. Suppose we are using Huffman Compression on the following symbols and their probabilities. What is the expected compression ratio (for a randomly generated sequence with the same probabilities), assuming that the original symbols are 8-bits in length.

A	0.20
B	0.10
C	0.15
D	0.10
E	0.30
F	0.15

2. USB1 bandwidth is approximately 11 megabits per second. Suppose we have a camera that we have attached to our computer that is capable of capturing 640x480 pixel video at 30 fps.
   (a) What is the maximum frame rate that we can achieve over this channel?

   (b) What compression ratio would we need to achieve 30fps?

   (c) What is the maximum sized 4:3 aspect ratio video that can be captured over the USB channel?

3. Compress the following sequence using LZW Compression. Assume an encoding similar to that provided in the LZW discussion in class.
   A B C A C A B C B A B
   Show your dictionary entries. There are just three symbols (A, B, C).

4. Decompress the following sequence using LZW decompression. Assume an encoding similar to that provided in the LZW discussion.
   F A B _ L <257> _ C <261> <264> T <257>
   Show your dictionary entries.