V22.0102 Written Homework 2
Due: Monday, April 15, 2002

1. (a) Build the Huffman tree and determine the codes for the following set of letters and weights:

Q	Z	F	M	T	S	O	E
2	3	10	10	10	15	20	30

   (b) For this alphabet, what is the worst case number of bits required by the Huffman code for a string of n letters? What string(s) have the worst case performance?

   (c) What is the best case number of bits required for a string of n letters? What string(s) have the best case performance?

   (d) What is the average number of bits required by a character using the Huffman code for this alphabet?

2. What are the minimum and maximum number of elements in a heap of height h?

3. Where in a min-heap could the largest element be found?

4. Draw the **MAX**-heap resulting from a BuildHeap opertion on the following array of numbers:

10	5	12	3	2	1	8	7	9	4