CS211 ALGORITHMS & DATA STRUCTURES II

LAB 2

Dr. Phil Maguire

HUFFMAN COMPRESSION

Pen & Paper Exercise

Take the following string and generate Huffman codes for it (don't forget the spaces):

Forever and ever

If we assume that each character requires 7 bits to be encoded in ASCII, then what level of compression will be achieved by using Huffman encoding? (i.e. what percentage reduction in size does Huffman encoding achieve relative to ASCII?)

Programming Exercise

This programming exercise is the first part of creating a Huffman encoding program. You will continue it next week. Write a Java program which takes in a line from the user (using Scanner) and then outputs the characters in the line in order of their frequency. If two characters have the same frequency then output them in alphabetical order.

For example,

Input: *Forever and ever*

Output: *er vFadno*

Advanced Programming Exercise

Start preparing for next week by implementing the Huffman coding algorithm. Create a forest of trees for each character, with frequency weightings.