Homework Assignment #5: Programming Exercise #1

Note

This assignment constitutes 4% of your grade and is due 2:10PM Monday, May 23, 2011. Please write/type your answers/code on A4 (or similar size) paper. Drop your homework by the due time in Yih-Kuen Tsay's mail box on the first floor of Management College Building II. Late submission will be penalized by 20% for each working day overdue. You may discuss the problems with others, but copying answers/code is strictly forbidden.

Your work will be graded according to its correctness and presentation. Specifically, you should demonstrate evidences showing that your program is correct. You should also organize and document your program in such a way that your classmates, for example, can understand it.

Problem

Implement the algorithms necessary for data compression and uncompression using the Huffman-Encoding.

- Input Files:
  The input file to your compressing program can be in ASCII or binary format; the compressed file will then serve as the input file to your uncompressing program.

- Output Data:
  Given a file, you should use your programs and appropriate utility programs to obtain the following data:

  1. The frequency table and the code table (in a representation of your choice).

  2. The sizes (in bytes) of the original file and the compressed file.

  3. The result of comparing the uncompressed file and the original file (which should say that they are identical).

  Repeat the data-collecting process for a few more files (in both ASCII and binary formats).