Fall 2016
Due 12/05/2016

CSCI 58000
Program 3

In order to use Huffman encoding on a cleartext file, you first need a frequency count of the distinct characters in the file. Assume that this has been done with the results stored in a file called *freq.txt*. Then the first step in the Huffman encoding process is to build the Huffman codes from the *freq.txt* file.

Write a C++ program to create Huffman codes. Program input is a file called *freq.txt* (make up your own file for testing) that contains data on the characters in some cleartext file in the form of each character's non-zero frequency of occurrence in the cleartext file. (Note that these are frequency counts, not percentages, and it doesn't matter if the values do not sum to 100.) You can assume that *freq.txt* contains only characters from the standard ASCII 128 character set and that the results are ordered by the ASCII integer for each character. The end-of-line character in a text file is a non-printable line feed character, with ASCII code 10, and will be written in the *freq.txt* file as LF. Thus the *freq.txt* file might look like

```
LF 2
. 1
M 7
c 3
d 5
e 14
f 2
```

etc.

Your program should create a "code table" that gives each character and its binary Huffman code. Save this information in an external file called *codetable.txt* where each line of the file is a character and its code, ordered by the ASCII value of the character. Thus an entry in the *codetable.txt* file might look like

```
c 1001
```

Turn in your Huffman.cpp file (and any other files you may have used) via Canvas.