CS3310: Assignment 3 Time Huffman Codes (Due: 10/24/2025 @11:59pm)

Problem Specification

PLEASE READ 7.18 Huffman Coding Trees in Canvas

This assignment requires you to write a program to implement the Huffman Codes algorithm. You must use C++ programming language. You will determine Huffman codes using the English alphabet and frequencies provided in Canvas. They are provided here:

Letter	Frequency	Letter	Frequency
A	77	*N*	67
B	17	*O*	67
C	32	*P*	20
D	42	*Q*	5
E	120	*R*	59
F	24	*S*	67
G	17	*T*	85
H	50	*U*	37
I	76	*V*	12
J	4	*W*	22
K	7	*X*	4
L	42	*Y*	22
M	24	*Z*	2

You will need to use a min heap for this assignment. PLEASE DO NOT use data structures inherent to the programming language. Develop the min heap yourself. We can discuss the code for min heaps in class. You will construct the Huffman tree, first. And, then use the tree to produce the codes using 0s and 1s. Your program output should look like this:

Letter	Frequency	Code	Length	Freq X Len
A	77	1101	4	308
B	17	111000	6	102
C	32	10110	5	160

. .

The last line of output should be the sum of the last column as below:

The weighted minimum path length is: ????

CS 3310 Fall 2025 Assignment 3 Huffman Codes

The only requirements for this assignment are:

1) The program works
2) The min heap was developed instead of using built-in data structures
3) Good programming practices and techniques are used
4) The output is sorted in alphabetical order

Also, please document your code to earn all possible points.

Please submit your code in a .zip file to the Assignment 3 dropbox in elearning.