Hacettepe University

Computer Engineering Department

BBM203 SOFTWARE LABORATORY I - 2020 Fall

ASSIGNMENT 4

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Student name:
Şevval Atmaca

Student Number:
b21827115

• *Explain your encoding algorithm and code step by step in detail*

For Encode, I first took my input_1.txt file and read this file and calculated the frequencies of the letters and saved these frequencies and letters to the "frequencies map". Then I created a struct structure and created a node for each character and also saved these characters and frequencies to the nodes using "frequencies map". I pushed these nodes to a vector that I created.

Using this vector I created, I took the smallest 2-frequency nodes by making a loop and merged them left right and removed those nodes and pushed the new node, and after each push I ordered my vector from small to large.

I created a method to calculate the codes for these letters and saved their code in "code map" . Finally to encode the given input_1.txt I read the file and save it in a string and letter by letter I did it by calling the codes of these letters in the "code map".

To save the table I saved "code map" to "table.txt".

I read "table.txt" for the "-s character" command and used the characters and their codes.

• *Explain your decoding algorithm and code step by step in detail*

For decode, I read "decode_input_1.txt" and saved "string decodeFile". I called my decode method using this string. In my method, I got the "table.txt" that I created in the encode and saved the characters and codes to a map to make this easier. Then I went to add my "decodeFile string" every index in the for loop to decode it. and when these additions were equal to a code in the map I saved it and kept doing this until the end of my string. Finally I printed them.

I run with these commands:

make

./hello.exe -i input_1.txt –encode

./hello.exe -i decode_input_1.txt –decode

./hello.exe –s character