

Gebze Technical University
Computer Engineering

CSE 222
2017 Spring

HOMEWORK 6 REPORT

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3. Class Diagrams

Can be found in diagram folder

5. Problem Solutions Approach

Couldn't solved first question. I was aiming to build a binary heap class to store passengers inside in a desired priority. But I couldn't found out how that priority should work.

On second question the HuffmanTree class implementation taken from course book. The problem on only addition, encode method, was to find given character in Huffman tree and return its path. A recursive helper used to search every branch of the tree until desired character has found. Each search on left branch adds 0 to path string, search on right branch adds 1 to path string. When a leaf node has found, if node carries the desired data (character) it returns the path, else It returns null. Upper calls returns the non-null value, if exists, or null, if doesn't exists. This sequence repeats for each character on given string to decode given sentence. A space on given sentence would evaluate to a new line on result string due to space delimiters between characters.

Third part was to implement a level order traversal iterator for family tree. To achieve it a queue has used to order left and right nodes of root. Each node (root for its childs) prints its data and puts its left and right child in queue for next element access. After a level has completely traversed, queue holds next level from left to right in order. That way tree can be traversed with level order.

6. Test Cases

For second part tests made for both encode and decode methods and no errors has received. Only way to crush the program is bad input provided from the input frequency file. Each line on file must have a character, space as delimiter and an integer number to represent its frequency. Error cases are string (more than one character) at symbol column, non integer value at frequency column, more or less than two items on a line. If an error has occurred program prints appropriate error message and quits program.

Only change on third part from the previous homework was the level order traversal iterator. An iterator has created on test main to traverse family tree that constructed from the family.txt input file. Same error conditions as previous homework handled, caused from input file, with appropriate error message.