CS 430

Project

Due Dec 1st, 2021

Instructions

CS430 project creates an application program.
This project can be done by an individual or a group basis. The number of a group SHOULD NOT exceed 3.
In expected circumstances you are fulfilling the programming on your own group with a strong relation to the contents of this course.
Given any input array, your system must show how the output with necessary explanation. Note that you must implement all relevant algorithms yourself and must not rely on any language libraries.

Outcomes

- Source code as a compressed package;
- A concise report analyzing the performance;
- An auxiliary document clarifying the running environment;
- All the above materials should be submitted in groups.

Rubrics

- Functional correctness: 8pts;
- Runnability and robust: 3pts;
- Friendly UI: 2pts;
- Report writing: 2pts.

Due Date: Due 23:59 CST, Dec 1st, 2021

Huffman coding and decoding

In few stages of JPEG, MPEG etc, Huffman Encoding is derived for its being one of the simplest algorithms to compress data. In this project you will implement huffman encoding and decoding to a file.

Encoding:

Input: a .txt file.

Functions:

- Form a huffman tree according to the frequency of each letter in the file and print it in form of a binary tree on the screen as a part of your UI design;
- Create a dictionary of codewords (letter to code) and print it to the screen;
- Print the results of encoding to an output file;

Decoding:

Input: An encoded file from you encoding part.

Functions:

- Print the results to a file.

Any libraries available to import on your programming platform to accomplish Huffman coding or binary tree are not allowed to introduce directly to your programming.