**User Manual**

**Tree ADT / Huffman Code Program**

This program compresses a file using a Huffman code and decompresses a file generated using this code. The program will first read through the file and determine the number of occurrences of each character in the file and the total number of characters in the file. The weight of each character will be the frequency count for that character. The program will then use these weights to construct the Huffman codes for the characters in the file. It will then read the file again and encode it using these Huffman codes and generate a file containing this encoded data. The program will also provide the option of decompressing a file that was encoded using this Huffman code, as well as the “Huffman tree”.

1. **Executing the Program**

Turn on and boot your computer.

Open the executable graph.exe file.

If selecting option one: Locate the filename containing the pre-existing properly formatted graph, enter it into the program. Then, follow the input requirements.

If selecting any other option: Follow on screen instruction at this point. Several options will be made available to be chosen at any time during the program.

1. **Input**

**2.1 Input Requirements**

A valid file-path must be entered. For example, C:\Desktop\examplefile.txt is a valid filename. Note that a filename must be entered to both encode and decode a message.

Remember to confirm that the correct file path was entered into the console screen. When a valid file-path is input, press enter.

**2.2 Input Restrictions**

The file must be formatted properly.

The file must have a valid path for the program to process it.

The file must have the correct data formatted inside it.

There must be a “\*” symbol (no quotes) to symbolize the end of a message (encoded or decoded).

1. **Output**

A user input will decide when the Huffman table is to be printed to the console. The user will provide two filenames that will be used as the output file to send the data to display the Huffman table, and an encoded message.