**Luke Bettendorf CSCN 215**

**4/9/2024**

Project 4: Self-Organizing Lists Approach Document

Assignment Objectives:

This assignment aims to create 3 types of self-organizing lists: Count, Move-To-Front, and Transpose, and implement each using character and string data types.

Assignment Requirements:

(This is paraphrased/copied from the assignment instructions)

3 self-organizing list heuristics to implement:

1. **Count:** keep track of the number of accesses for each item. When an item’s number of accesses exceeds that of the record in front of it, move **toward the front of the list.** When adding a record, search the list to see if it already exists. If it does exist, access it. If not, add it to the back of the list. The initial access count when adding a new record to the list is 0.
2. **Move-To-Front:** Move a record to the front every time it is accessed. Use a linked list for this, NOT an array.
3. **Transpose:** if a record is already in the list and it is accessed, swap it with the record in front of it, and if it does not already exist, put it in the back.

Test Requirements:

**Test #1: Use Each Heuristic**

**Data Type**: char

Inputted list order using the add() function: A B C D E F G H

Characters to search for: F D F G E G F A D F G E H I

**Output:** List Order w/ number of comparisons

**Test #2: Test File (use each heuristic again):**

**Input:** Test File with find() function

**Output:**

1. Total number of words
2. Total number of comparisons
3. The first 10 words in the list w/ their frequencies

See the instructions for specific formatting and example screenshots.

Approach:

1. Read the assignment instructions (again) download all files, and create a GitHub repository.
2. Create the first heuristic and perform both tests on it. Carefully test one function at a time.
3. Create the other two heuristics and perform both tests again.
4. Ensure the output is properly formatted and submit the .zip file.

Build Log:

**4/9/24**

Today I will read the assignment instructions and construct an approach document. If I have time, I want to start building and testing the first heuristic.

**4/10/24**

My approach document is fully constructed.

4/11/24