List Observation Report

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Huffman Tree Proposal

* Data Structures

For this project I would use a couple of different data structures. First a simple array to collect the number of times each character appears in a document. Second, I would use a linked list to hold nodes that contain the character, its frequency, and references to two different nodes.

* General Approach

As stated above to start I would use the program we created in class to count the frequency of each character and store the values in an array. Those values would be added to a node and ordered from least to greatest in a linked list. Going down the list, new nodes will be created that contain references to single character nodes. The frequency values of the character nodes will be added together and that becomes the frequency value of the created node. With the given frequency value, the node is added back into the linked list in the appropriate position based on the value. The program will continue up the list adding nodes to the tree until the list is empty. When combining two nodes that contain more than one branch the program will add them so that the one with the smaller number of branches is on the left. The number of branches is a separate value stored in the node to ne called when deciding which branch goes on which side. Each time a node is created all affective branches are given a value that increases the number on nodes it takes to get to that branch. These values are used to create a lookup table for each of the characters.