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Assignment4

Dictionary Comparisons with Linked List

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The goal of this program is to compare a large text file to a given dictionary. For each word, we must count how many comparisons are required to find the word in our organized dictionary. The major goal of this assignment was to do the same project as assignment two, but with linked lists instead of a binary search. To accomplish this we created a linked list for each letter of the alphabet. The dictionary was fed in one word at a time, and the word was then assigned to its correct linked list. We then proceed to compare the large text file (oliver.txt) to our linked list dictionary. To do this we would pull in the next word in the text file, and figure out the first letter of the word. With the letter, we would compare the word to the correct linked list. The word would be compared with the first word in the list, and proceed down the list one word at a time until it was either a match, or there were no more words in the list. While this is happening a counter is keeping track of how many words we are comparing. At the end of the program the counters are displayed showing number of words in and not in the dictionary along with total and average comparisons for each.

In terms of efficiency this program is miles ahead of binary search. It took approximately one minute to run this program. The average number of comparisons of correct words was half of the average number of comparisons for incorrect words. This displays how incorrect words would proceed through full lists, and correct words would, on average, be found in the middle of the list.

Output:

run:

Number of correct words: 937492

Number of incorrect words: 54648

Total comparisons of correct words: 3336600696

Total number of incorrect word comparisons: 403377564

Average number of comparisons for correct words: 3559

Average number of comparisons for incorrect words: 7381

BUILD SUCCESSFUL (total time: 59 seconds)