

The Problem:

In this problem, we need to be able to create a dictionary with a file given to us. After this, we will need to parse another file and check word by word to count the amount of correctly and incorrectly spelled words.

Algorithms:

There will be two algorithms used in this program:

1. createDictionary{
 create an array of MyLinkedList;
 read dictionary file word for word and remove special characters;
 add each word to the corresponding List in the array based on first character;}
2. parser{
 read oliver file word for word using a while loop;
 remove special characters from words in the oliver.txt file to compare to dictionary;
 check to see if the list with the corresponding first character contains the word;
 add up the counts based on the findings above;}

Program Design:

First, we will need to set up the global variables that will be used throughout the program. These variables will keep track of the found words, not found words, found comparisons, and not found comparisons. Also, we need to initialize an array to keep track of the count for comparisons. The MyLinkedList array dictionary will be created as well. Second, we will need to make the createDictionary method. This method will be used to create the dictionary we reference when doing the spell checking. This will bring in a file name from args[0] and loop through it until there are no words left to be added to the dictionary. Then, we will need to make the parser method. This method will check our oliver.txt document that it will retrieve from args[1]. We do this by using a while loop to go through every word in the document. After we will remove all special characters and compare it to the dictionary. This method will also contain the counts that we need for the end results. After we will make an output method that will print out all of the data that we have obtained. This will also calculate the average comparisons found and average comparisons not found and print them out formatted to two decimal points. Finally, we will create a main class to execute the program called SPClient. This will call the three above mentioned methods as well as find the time it takes to execute the code.

Results:

```
Words found: 939667
Words not found: 52473
Comparisons for words found: 3295346285
Comparisons for words not found: 388328596
Average Comparisons per word found: 3506.93
Average Comparisons per word not found: 7400.54
Total time: 28.991 seconds
```

Observations:

I observed that I tend to make extremely small unnoticeable mistakes that are very hard to find, but I eventually after hours of searching do find the mistakes.