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CS 5103  
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Formal Specification for Word Statistics Project

Structure Specification:

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| Word Frequency Counter | |
| Function | Compute the frequency of each unique word in a file. |
| Description | Attempts to read the words within a file specified by the user and then output the frequencies of each word. |
| Inputs | File name. |
| Source | Standard input. |
| Outputs | Word-frequencies printed to standard output. |
| Action | The frequency of each word can be computed by scanning each line of a file and adding the unique words as keys into a HashMap. The values of the HashMap will track the number of times each unique word has appeared. |
| Requirements | A file to be scanned must be locally available. |
| Pre-condition | None. |
| Post-condition | The file must be closed. |
| Side effects | None. |

Natural Language Specification:

1. Program shall create a HashMap with String keys and Integer values.
2. Program shall prompt the user for the name of a file to scan.
3. Program shall take in a String from standard input as the file name.
4. Program shall attempt to open a file from the file name.
5. If the file fails to open, then the program shall print an error code, close the scanner, and exit.
6. Program shall read the file one word at a time.
7. For each word, if the word is a key in the HashMap, then the program shall increment the value for that key by 1.
8. If the word is not a key in the HashMap, then the program shall add an element to the HashMap with a key matching the string and a value of 1.
9. After all words have been scanned, the program shall close the scanner.
10. The program shall finally iterate through the HashMap and print to standard output each key and value pair. Each pair will be on a new line with a single space between the two.