Ashley Hoffman
Matthew Wipfler

Project Extra Credit

We included the –i option without any required arguments. When –i is included in the run configuration, the extra credit portion of the project will be active. First, everything else included in the run configuration (-k command, -s command, etc) will run and then the code with run across an if-statement that checks for the –i command. If –i is included, the if-statement will be entered. Upon entering the if-statement, a Boolean variable called exitProgram is initialized as false; this will indicate if the user has chosen to quit the program. Also, a string that keeps track of the active similarity algorithm is created and set as "cosine" as a default. Then the program will enter a while loop that will continue to loop as long as exitProgram is false. Every time the while loop loops, the following menu is printed:

```
Command options:
topj [word] [integer for j]
kmeans [integer for k] [integer for number of iterations]
similarity [word 1] [word 2]
setfunction [cosine OR euc OR eucnorm]
quit
Please enter a command:
```

The program will then wait for the user to enter a command. If the command is not recognized or is entered incorrectly, an error message will appear and the user will be asked to try again to enter a command. The command goes through a switch-statement and the case that matches the command will be entered. After completing the operations associated with the command, the menu will print again until the user enters the quit command.

Case "topj":
The topj case will check the input to make sure it is valid. Then, it will calculate the top-j words for the word in question. The results are then printed.

Case "kmeans":
The kmeans case will check the input to make sure it is valid. Then the program will run through the k-means clustering calculations. Once the calculations are complete, the values for each iteration and the clusters will be printed.

Case "similarity":
The similarity case will check the input to make sure it is valid and that each input word exists as a unique word from the file being read. Then the similarity will be calculated using the active similarity algorithm. The similarity between the two words and the name of the algorithm used will be printed.

Case "setfunction":
The setfunction case will check the input to make sure it is valid. If it is not valid then the user will be sent back to the command option menu. If it is valid, the active similarity algorithm will be set to the new indicated one as entered by the user. Confirmation of the change in active function is then printed to the console.

Case "quit":
The exitProgram variable changes to true, a good-bye message is printed, then the program is able to exit the –i command while loop and finish the program run.

Default:
This is only used if the program did not recognize the first word of the command. An error message is printed.