CST246 **Data Structures** **Text Editor Project**

30% of the Final Grade

Due Date: Monday 11/14 before class for the Monday and Wednesday class. Tuesday 11/15 before class for the Tuesday and Thursday class.

1. Build a Text Editor using JavaFX. You at minimum should have a menu bar at the top, a status bar at the bottom, and a text area in the middle.
2. The menu bar may ultimately have a few menus but a File menu and an Edit menu should suffice at this time. The File menu should have menu items such as New(clear the text area for typing), Open(open a text file for analysis), Save Counts (save the word, syllable, and sentence counts, and Flesch score), Save Text(save the text in the text area), and Exit (quit the program). The Edit menu should have menu items such as Word Count, Sentence Count, Syllable Count and Flesch Score, each of which displays the corresponding value on the status bar. The Open and Save menu items should have a file chooser, respectively, to allow the user to choose files. You need to implement a text file filter (.txt) so the file choosers will only display folders and text files with the extension of .txt.
3. The original text file provided (WarAndPeace.txt) needs to be first truncated into ten files in 10% increments of the total number of the words in the original file. You need to write a method to do the truncation. The ten truncated files should be stored in the inputData subfolder in the project folder. These ten files will later be imported in sequence for analysis. Each file contains a single string of words and sentences rather than multiple individual strings. They will be used to assess the efficiencies of the two different algorithms to be implemented, as mentioned below.
4. The two algorithms: Modify the code we wrote in class so that you can compare the time it takes to calculate the numbers of sentences, words, and syllables in the same while-loop and in three separate while-loops for each of the ten text files.
5. The Status bar will display the Syllable Count, Word Count, and Sentence Count and the Flesch score as each of the ten text files is individually loaded into the central text area for analysis. These values will be shown as corresponding menu items in the Edit menu is clicked. All these counts should also be saved into a text file when the Save Counts menu item under the File menu is clicked. The text file should be called results.txt, which is in turn saved in the outputData subfolder in the project folder ---- ultimately, ten sets of counts all in the same text file.
6. Plot the amounts of time used for all the ten cases for both one while-loop and three while-loop scenarios using JavaFX graphing classes with data retrieved from the results.txt file. The graph should be displayed on a separate stage rather than on the primary stage with the menu bar and text area. Discuss the Big O notation for each scenario based on the graphs. The discussion should be carried out in a text file called BigODiscussion.txt. Store the file in a subfolder called discussion in the project folder.
7. Future directions: In future weeks after you submit the part above, we will be implementing spell check using hashing. We will also be incorporating Markov Text Generator, by first using linked lists and then using hash maps. Train the generator with 100, 000 words from WarAndPeace.txt. Then use the trained generator to automatically produce a text of 1,000 words.