HPC Lab Week 4

Scenario: Rahul and Narendra are two good friends. Rahul wanted to hack the password of Narendra's Insta account just for fun. Password is an English word from this dictionary.

https://raw.githubusercontent.com/dwyl/english-words/master/words.txt.

He cannot try out all the words from the dictionary as each try will take at least 30 seconds. But he knows the following clues about password.

1. Clue 1: The word has highest similarity with other words in dictionary. Similarity between two words is defined by number of common characters.
2. Clue 2: The word has large number of vowels in it.
3. Clue 3: The word has large number of characters in it.

Create 3 independent word lists ranking words based on each clue. Finally rank each word based on their position (weightage of 0.33 for each clue) in these 3 lists. Come up with top 100 potential words based on final rank.

To do:

1. First implement the serial implementation of the above solution.
2. Implement task parallelism for running tasks for each of the clues in parallel.
3. Based on the complexity of each task, allocate different number of threads/concurrent processes.
4. Within each task, the data can be further divided and performed data parallelism.
5. Compare the algorithm's running time of serial and parallel implementations.
6. Analyze the parallel algorithms with different process allocation and data parallelism and come up with a optimal parallel set up for the problem.