CSCI 232 Data Structures & Algorithms
Final Programming Problem == Fall 2023

NOTE: This document is subject to change as of 11/20/2023

For the final programming problem, you will use a hash table to store dictionary words, and complete one of the two problems below. The goal of this program is to use what you know to come up with the best solution you can, within the given constraints. You will be graded on your implementation, but also on your creativity, solution design, and explanation. You are not expected to reinvent the wheel! If you find a solution to part of the problem, cite it and include it in your explanation.

Select one of the problems below:

Problem 1:

Spellchecker. Write a program that spellchecks words as you type them into the console. Each time a space is entered, the word preceding the space should be spellchecked against the word dictionary. Your program must somehow alert the user of a misspelled word; and a list of currently misspelled words, along with their positions, must be output at the end of each paragraph.

Problem 2:

Substrings. Given a phrase without any spaces, identify and output all the dictionary words that exist within the phrase. Words may be repeated in your output, and the words may be in any order.

Example:

Phrase: catsanddogs

Output: ca, cat, cats, a, at, ats, san, sand, an, and, do, dog, dogs

Program Requirements:

1. You must use the dictionary text file provided.
2. Dictionary words must be read in from a file and stored in a hash table. A hash function must be used to insert the words into the table. The goal of the hash is fast searches. You will be required to explain your hashing strategy – the size of the hash table, the hash function used, collision detection, etc.
3. A vector must be used in your program. You will be required to explain why a vector is useful in the context that you used it.
4. The program must work (i.e. if the program is a spellchecker it must accurately spellcheck.)