Mini Project Spring 2025

Design and Implementation of a Spell Checker

1. Objective

- Design and implement a spell checker

2. Problem Description

Spell checker is an application program that flags words in a document that may not be spelled correctly. If the word is not found it is considered to be an error.

Most spell checker programs are running concurrently with text editing programs, this type of spell check is called on-line spell checking. Since, in this course, we are focusing on the algorithms and corresponding data structure implementation, our goal in this project is to develop an off-line spell checker, which has the following basic functions.

a) Your program should be able to read an external dictionary text file and construct the corresponding data structures for the spell checker.

b) Your program should be able to read a regular text file and implement the spell check task on it.

c) The output of your program should be a list of unrecognized words with the line number information from the original text file.

Assume the dictionary is alphabetically ordered.

i) (20 points) use ArrayList data structure and binary search

ii) (20 points) use Ternary Search Tries(TST) and radix search

Extra credit (5 points): Compare the actual space usage and run speed of the spell checker for dictionaries and input files with different vocabulary size.

3. Miscellaneous

1. Your program should be robust.

2. Please comment your code well.

3. Test runs: It is very important that you show that your program works for all possible inputs.

4. Material to be submitted

Submit the source code for the program, comment program well.

5. Due date

April 28th
Submit on-line before midnight.

6. Demonstrate (10 points)

This mini term project requires a demonstration in order to get any points. Demonstration alone is worth 10 points. Please stop by during one of the demonstration sessions and demonstrate your code to the instructor.

7. Extra credit (5 points)

Extend your spell checker to suggest the proper spelling of a misspelled word.
The types of misspelling:

a) changing the order of letters (comptuer)
b) omitting a letter (compter)
c) adding a letter (comaputer)
d) repeating a letter (commputer)
e) changing a letter (conputer)
f) others