SE309/SE323 2023-2024 FALL
Lab Work 1   4 Oct 2023
Goal: Practice on Coding Pt. 1: C++

A multiset, also known as a bag, is a collection similar to a map, but it can contain duplicate elements. Unlike lists or arrays in Java, multisets do not maintain a specific order for their elements.

Your task for this lab is to create a data structure in C++ that will act as a “multiset”. With the help of your data structure, you will calculate the differences between two text files. As a hint, you may read the files and store each word with its count into your multisets to calculate differences. You can download the “.txt” files from BlackBoard under LAB 1 folder.

Your main objectives are creating multiset data structure, use the data structure to store file information and lastly compare the texts.

Multiset Operations to implement:

add(element): Adds an element (word) to the multiset. If the element already exists, it increments its count.

remove(element): Removes one instance of an element from the multiset.

count(element): Returns the number of instances of the given element in the multiset.

distinctElements(): Returns the number of distinct elements in the multiset.

difference(anotherMultiset): Returns a new multiset that contains the elements which are present in the current multiset but not in the other. For each element, the difference in counts should be considered. For instance, if "apple" appears 3 times in one multiset and 1 time in another, the resulting multiset should have "apple" 2 times.

printMS(): Shows each word with its count on the screen line by line.

Important: Do not forget to handle symbols in the text files. You will only use words.