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Assignment 4 lab report:

Methods O-notation and explanation:

Hash method: O(1) because processes only the char input.

IsEmpty(): O(1) only checks one private field, added to make sure the delete method deleted all inputs.

Add(char c): hashes and adds characters to the table the best case runtime is O(1) because either creates a new node and adds or adds it to the front of the method. Space complexity is bigger because it creates a temp node. The worse case runtime is O(n) because it might need to rehash the table and the rehash method is O(n)(justification below)

Rehash(): the rehash method is at best O(n) and it is also the average scenario because the method runs through the whole table and adds all the elements to it. It also leaves a unuseful table in the memory. The imbedded loop only runs through the chained nodes which still makes the complexity O(n) in the worst case scenario because the size of the table n also takes into account the chained nodes of characters.

Remove(char c): the method searches for the characters using hashing so the best case scenario is O(1) however the worst case is O(k), k is the size of the node the hash function points to.

Input (String s): this method was added to simplify the main method and to lower the case and delete spaces it runs O(n) (2n because we remove spaces first and then we lower the case) n being the length of the string.

Compare(String s1, String s2): this method runs O(n) in the average case. It runs through the size of the first string and adds it to the hash table, and then runs through the chars of the second string removing all the chars from the table n+n ➔ O(n).

Tests:

Program arguments are changed in the config:

And the method prints the result with the input strings

```
the fact that poiuytrewq and qwertyuiop are anagrams is: true
the fact that poiuytrewq and qwertyuiopa are anagrams is: false
the fact that omar and ramo are anagrams is: true
the fact that elisa and olisa are anagrams is: false
the fact that QWERTYUIOPASDFGHJKL and LKJHGFDSAPOIUYTREWQ are anagrams is: true
```

It works with all kinds of string lengths and detects all my tries.