Love Letter

When you are alone and lonely, you feel that you want to express yourself. This is a story of a man who fell in love. His heart beats wildly every time he sees the girl he loves. He loves this girl so much, everything in the world does not matter to him anymore as long as he can be together with his one true love.

In recent months, he never sees the girl he loves. Separated by fate, somehow he did not have the chance to meet her as often as it was before. But now, his fate seems to have turned around. He now has a wonderful chance to get close to her and perhaps one day, in the future, express his true feelings for her. Delighted by this wonderful change of fate, he promises to cherish the wonderful moments when they are together.

To express his love, he wants to write a love letter. He wants to confess his feelings to her through one beautifully-crafted love letter. One day, when the time is right, he will send this letter to her, the girl of his dreams, and hope for the best. After all, waiting for the correct moment is difficult. It is not an easy task and one mistake could inflict dangerous consequences. Determining the content is also a big task. He wants to keep the letter concise, but contains the words he needs. Now, he approaches you, his best friend, to help him determine the optimal length of the letter.

In this task, you are given **N** strings (some might be duplicates), the strings that he wants to use in his love letter. Now, for conciseness, he wants all the distinct strings from the **N** strings that are given to you. However, you need to take a contiguous set of strings from the list. You do not want to make it so difficult for yourself. After all, your friend does not want to make it difficult for you. After doing much deliberation, you are now satisfied with the job given to you.

Your job is now this: report the **total minimum length of the contiguous strings** that are taken from the set of N strings that **contains all the distinct strings from the set**.

Input

The first line of the input contains an integer N (1 <= N <= 100,000), which is number of words inside the list. This is followed by N lines, each containing a single string in the list. There might be duplicates of the same string. All these strings consist only of lowercase letters (‘a’ - ‘z’). The length of each string is at most 10.

Output

Print the minimum length of consecutive strings from the list which contains all distinct strings. Your output should contain a newline character.

Sample Input	Sample Output
11 i love you from the i bottom of my bottom heart	36

Explanation

You need to pick all the strings except for the first "i". You need to take both the "bottom" strings since you need the last "heart" and can only take consecutive strings. The combined length is 36.

Skeleton

You are given the skeleton file `Love.java`

Note

1. You are advised to use hashing (and some other useful data structure(s) that can help you) to solve this problem.