PA1 - 1002 Discussion Thread

CET-6 Words

Description

Ge Ziwang is preparing for the upcoming College English Test - Band 6 (CET6) exam and has a long word list to recite. He happened to find that a lot of words share a common affix (prefix or suffix), which is very helpful in memorizing words. For example, the prefix of "abandon" and "abnormal" is "ab-", while many words like "attitude", "latitude" and "gratitude" share a common suffix "-titude". Ge Ziwang gets curious about what the longest prefix and suffix is in his word list. However, he has too many new words to remember, so Ge Ziwang turns to you for help. Please help Ge Ziwang find out the longest prefix and suffix, and count how many times they appear in different words.

Note:

- A string is called an affix if it is a prefix or suffix; a string is called a prefix only if it appears at the beginning of no less than 2 words in the word list; similarly a string is called a suffix only if it appears at the end of words multiple times .
- If there are more than one target affixes of the same length, output the affix that appears most frequently; If there are still two or more target affixes, output the one with the smallest dictionary order.
- Words in the word list are all made of lowercase characters from 'a' to 'z'.
- There are no identical words in the given word list.

Input

In the first line there is a positive integer n, representing the number of words in the word list.

For the next n lines, each line is a string s_i , representing the i-th word in the word list.

The length of every word will be no larger than 10 and each testcase ensures there is at least one prefix and one suffix.

- For 20% cases, $2 \le n \le 10$.
- For 60% cases, $2 \le n \le 500$.
- For 100% cases, $2 \le n \le 50000, length(s_i) \le 10$, all letters are in lower case.

Output

For the first line, output the longest prefix in lowercase and the number of words it appears as a prefix.

For the second line, output the longest suffix in lowercase and the number of words it appears as a suffix.

`programming`

Updated 2 months ago by Yining She (佘以宁)

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followup discussions *for lingering questions and comments*

⦿ Resolved　◯ Unresolved

连奕航 2 months ago
Using C++ STL `string` to store input is recommended but other libraries like `map` or `algorithm` are forbidden. Try to implement one data structure or algorithm yourself!

good comment ┃ 0

⦿ Resolved　◯ Unresolved

连奕航 2 months ago
The following explanation for sample input & output may be helpful if you get confused about how to count the affix.

Sample 1

Sample Input 1

```
6
abandon
abnormal
algorithm
attitude
latitude
altitude
```

Sample Output 1

```
ab 2
titude 3
```

Explanation

Although "abandon" and "abnormal" share the prefix "ab" while "algorithm" and "altitude" share the prefix "al", "ab" has a smaller dictionary order than "al". Obvious for suffix "titude".

Sample 2

Sample Input 2

```
7
into
hint
mint
point
paint
internet
intuition
```

Sample Output 2

```
int 3
int 4
```

Explanation

"int" is the prefix of "into", "internet" and "intuition", and meanwhile the suffix of "hint", "mint", "point" and "paint".

good comment   0

◉ Resolved   ○ Unresolved

Ziang Li 2 months ago I wonder if a word can be the affix of itself?

helpful!   0

> **连奕航** 2 months ago
> This extreme case will not occur in our testcases and you can take the answer as **Yes**.
>
> good comment   0

> **Ziang Li** 2 months ago It is seems that the extreme case happened, that' s why I asked this question. :(
>
> helpful!   0

> **连奕航** 2 months ago
> Sorry for confusion. You can consider a word itself as an affix of it.
>
> good comment   0

> **Ziang Li** 2 months ago Ok, it took me quite a long time to find this problem. I think the question should describe this clearly because generally, a word can not be the affix of itself. Thanks a lot for your help! :)
> helpful!   0

> **龚 可** 2 months ago
> Well, generally a string can be the affix of itself. You should think of things in a "string" way, rather than in "English" way.
>
> helpful!   0

◉ Resolved   ○ Unresolved

Anonymous Helix 2 months ago

Can the prefix be empty?If so, how to output?

helpful!   0

> **连奕航** 2 months ago
>
> No. Each testcase ensures there is at least one prefix and one suffix of length > 1.
>
> good comment   0

Anonymous Helix 2 months ago

helpful!   0

> **连奕航** 2 months ago
>
> good comment   0