31 Keyboard

30 points

Introduction

Nowadays, being proficient in English is mandatory. You know that, and that's why you've spent the last months studying hard for an official English exam. Since you're a computer programmer, you've chosen to do the computer based exam. The first part of the exam is the writing test. You arrive at the room, you sit in front of the computer and... OMG! The keyboard is not a standard one! It has several letters in each key.

You need to do the writing test with that strange keyboard. You have a text you have to write using that keyboard and you need to minimize the number of mistakes.

The length of the text you want to write and the text you will actually write must be the same. A mistake occurs when the letter of the ith position in the ideal text is not the same as the letter in the ith position in the real text.

For example, imagine you want to write HELLO_WORLD and you have 5 different keys, with the following letters each key:

```
HEL
O_WOKLD
WOR
HE
LL
```

The best way to write HELLO WORLD is HE|LL|O_WOKLD. In that case we've used the 2nd, 4th and 5th keys and we've done 1 mistake. We've written a K instead of an R.

Input

Each case consist of the word W you want to write, then the number N of keys in the keyboard followed by N different sets of letters.

Output

Print the minimum number of mistakes you'll do when you want to write the word W using this strange keyboard. Remember that W and the word you'll actually write must have the same length. If no combination of keys gives a word of the same length as W, print -1.

Example 1

Input

```
HELLO_WORLD
5
HEL
O_WOKLD
WOR
HE
LL
```

Output

```
1
```

Example 2

Input

```
WE_ARE_THE_CHAMPIONS
9
ADKE_

__
ARE
CHAM_PIO
DDKK
WEEEE
W
KLLLE
IIWW
```

Output

```
9
```