Problem K – Key Distances
Time limit: 1 second

On touchscreens it is way too easy to press the wrong letters since screen space is precious and the letters therefore are quite small buttons.
Thus, a spell checker runs after typing a word and suggests other words to select the correct spelling from. Your job is to order that list so that more likely words are on top.

The typical touchscreen keyboard looks like this:

```
qwertyuiop
asdfghjkl
zxcvbnm
```

You should use the distance between the letters to type a word: the distance is the sum of the horizontal and vertical distance between the typed and proposed letter. Assume you typed a `w`, the distance to `e` is 1, while the distance to `z` is 3.

The typed word and the list of words from the spell checker all have the same length. The distance between two words is the sum of the letter distances. So the distance between `ifpv` and `icpc` is 3.

Input

The input consists of:

- One line with a string s followed by an integer l ($0 < l \leq 10$), where the string gives the word that was typed using the touchscreen keyboard while l specifies the number of entries in the spell checker list.
- l lines, where each gives one word of the spell checker list.

You may safely assume that all words of one test case have the same length as s and no word is longer than $10\,000$ characters (only lowercase '`a`' - '`z`'). Furthermore, each word appears exactly once in the spell checker list.

Output

Output l lines each with one word of the spell checker list followed by its distance to s.
Order the output by ascending distance, sort equal distances alphabetically.

Sample Input 1	Sample Output 1

`ifpv 3`
`iopc`
`icpc`
`gcpc`
	`icpc 3`
	`gcpc 7`
	`iopc 7`

Sample Input 2	Sample Output 2
edc 5 wsx edc rfv plm qed	edc 0 rfv 3 wsx 3 qed 4 plm 17