CODEFORCES β
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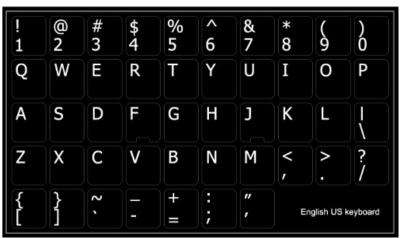
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yaqizhang | Logout

D. Dancing Keyboard

time limit per test: 1.0 s
memory limit per test: 256 MB
input: standard input
output: standard output

This Thanksgiving, Memorial Union has decided to install a dance floor and has developed a game around it.

The dance floor is in the form of a keyboard as shown in the figure below, where each letter is associated with a music note. The game allows two players. Before the game starts, a sequence of notes is displayed on the screen as a challenge. Their goal is to hit the keys to generate the sequence. At the start of the game, each of the players can decide their initial positions on the dance floor. When the game starts, they can jump to hit a key at a time and the note of that key is played. One can only jump onto the key they are standing on, as well as any one of the 8 neighboring keys around them (if such key exists), so there are at most 9 possible jump movements.

Your task is to determine if they together can finish the challenge, that is, smartly decide who should jump at each time!

Input

Input contains one line-the string displayed on the screen. The input only consists of **lowercase** letters.

For 50% of the input, the length of the string is at most 20. For 80% of the input, the length of the string is at most 100. For 100% of the input, the length of the string at most 10000.

Output

If the displayed string can be generated, output n numbers (n is the length of the string), where the i-th of the number indicates which person typed i-th character (1 indicates the first person, 2 the second). If there are more than one solution, print any of them.
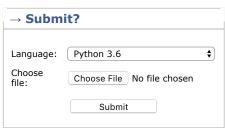
If the string cannot be generated, output -1.

Examples

input	Copy
wisc	

output	Copy

```
2 1 2 2
```

input	Copy

```
wisconsin
```

output	Copy

```
-1
```

Note

The generated string is still valid if one of two people doesn't type anything.