

Keyboard Shift (keyboard)

Alessandro is training his speed typing skills with his brand new mechanical keyboard.



Figure 1: Alessandro's mechanical keyboard (for real).

The layout is the standard QWERTY, the three main rows are:

```
qwertyuiop  
asdfghjkl  
zxcvbnm
```

Unfortunately, he should train a bit more since he continuously makes the same mistake! Every time he wants to press a key, he presses the one immediately to the left of it. For example, if he wants to type the letter 'g', he presses the key 'f'. Every time he wants to type 'q', 'a' or 'z' the character is simply lost.

He already wrote quite a lot of text, all with the same mistake. Can you help him fix the original text by shifting each character to the right?

Among the attachments of this task you may find a template file `keyboardshift.*` with a sample incomplete implementation.

Input

The first line contains the only integer N , the number of characters he typed. The second line contains a string S of N .

Output

Write in a single line the fixed string of N characters.

Constraints

- $1 \leq N \leq 1\,000\,000$.
- The characters are taken from "abcdefghijklmnopqrstuvwxyz" (alphabet without "plm").

Examples

input	output
11 qiqayxgfiis	wowsuchgood
6 qwerty	wertyu
6 ababbb	snsnnn

Explanation

In the **first sample case** the mapping of the letters is the following:

q → w
i → o
q → w
a → s
y → u
x → c
g → h
f → g
i → o
i → o
s → d