

# Changing the product name.

The name of one product of a Corporation consists only in lowercase English letters. The Corporation has decided to try change the name of this product.

For this purpose the corporation has consecutively hired  $n$  designers. Once a company hires the  $i$ -th designer, he immediately contributes to the creation of a new product name as follows: he takes the newest version of the name and replaces all the letters  $x_i$  by  $y_i$ , and all the letters  $y_i$  by  $x_i$ . This results in the new version. It is possible that some of these letters do not occur in the string. It may also happen that  $x_i$  coincides with  $y_i$ . The version of the name received after the work of the last designer becomes the new name of the product.

Show the final version of the name of the product

## Input

The first line of the input contains one integer  $n$  ( $1 \leq n \leq 200\,000$ ) —the number of designers hired.

The second line consists of a group of lowercase English letters that represents the original product name.

Next  $n$  lines contain the descriptions of the designers' actions: the  $i$ -th of them contains two space-separated lowercase English letters  $x_i$  and  $y_i$ .

## Output

One line with the new name of the product.

## Sample Input

```
6
abacabadaba
a b
b c
a d
e g
f a
b b
```

## Sample Output

```
cdcbcdcfcdc
```