Problem E. Many Replacement

Time Limit   2000 ms

Mem Limit   1048576 kB

Problem Statement

You are given a string S of length N consisting of lowercase English letters.

You will perform an operation Q times on the string S. The i-th operation $(1 \leq i \leq Q)$ is represented by a pair of characters (c_i, d_i), which corresponds to the following operation:

- Replace all occurrences of the character c_i in S with the character d_i.

Print the string S after all operations are completed.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- S is a string of length N consisting of lowercase English letters.
- $1 \leq Q \leq 2 \times 10^5$
- c_i and d_i are lowercase English letters $(1 \leq i \leq Q)$.
- N and Q are integers.

Input

The input is given from Standard Input in the following format:

```
N
S
Q
c_1  d_1
c_2  d_2
⋮
c_Q  d_Q
```

Output

Print the string S after all operations are completed.

Sample 1

Input	Output
7 atcoder 4 r a t e d v a r	recover

S changes as follows: `atcoder` → `atcodea` → `aecodea` → `aecovea` → `recover`. For example, in the fourth operation, all occurrences of `a` in $S = $ `aecovea` (the first and seventh characters) are replaced with `r`, resulting in $S = $ `recover`.

After all operations are completed, $S = $ `recover`, so print `recover`.

Sample 2

Input	Output
3 abc 4 a a s k n n z b	abc

There may be operations where $c_i = d_i$ or S does not contain c_i.

Sample 3

Input	Output
34 supercalifragilisticexpialidocious 20 g c l g g m c m r o s e a a o f f s e t t l d v p k v h x i h n n j i r s i u a	laklimamriiamrmrllrmlrkramrjimrial