

TLE '17 Contest 7 P4 - Database

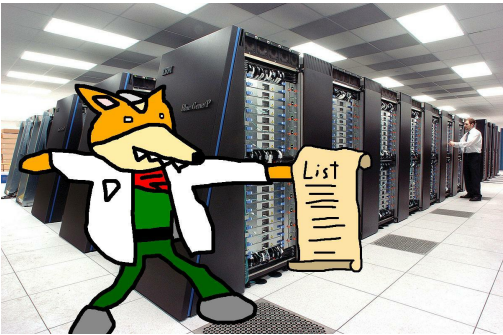
Fax McClad, Croneria's most skillful bounty hunter, has recently found a list filled with identification strings of various members of the Dankey Kang Gang!

There are N strings on this list. Fax notices that the i^{th} and $i + 1^{th}$ string differ by at most 1 character. The first string of this list will be denoted with S .

Fax manually inputs all of the strings into a Cronerian government database, which sorts all of the strings by lexicographical order.

Now, Fax needs to make sure that he inputted the strings correctly. He will perform the following query Q times: what is the j^{th} character of the i^{th} string in the database?

Can you help Fax to determine what the expected output should be?



Fax is about to enter his list into the Cronerian government database.

Constraints

$$1 \leq N, Q, |S| \leq 2 \times 10^5$$

All characters are lowercase characters in the English alphabet.

$$1 \leq x \leq |S|$$

In each query, $1 \leq i \leq N$ and $1 \leq j \leq |S|$.

Subtask	Points	Additional constraints
1	15	$1 \leq S \leq 20$
2	15	$1 \leq N, Q, S \leq 500$
3	50	$1 \leq N, Q, S \leq 10^5$
4	20	No additional constraints.

Input Specification

The first line of input will contain S , the first string of the list.

The next line of input will contain N , the number of identification strings on the list.

$N - 1$ lines of input follow. The k^{th} line will contain an integer x and a character c . This denotes that string $k + 1$ is obtained by changing the x^{th} character of string k to c .

The next line of input will contain Q , the number of queries.

Q lines of input follow. Each line will be a query in the form `i j`.

Output Specification

Output on separate lines the answer to each query.

Sample Input

```
bbbbb
4
4 c
3 a
2 b
4
3 5
2 3
4 4
3 4
```

Sample Output

```
b
a
c
b
```

Explanation for Sample Output

The strings in the list are initially in the order `bbbbb`, `bbbc b`, `bbacb`, `bbacb`.

After putting all the strings into the database, their order is `bbacb`, `bbacb`, `bbbbb`, `bbbc b`.