



Problem J Joining Strings

Given a string f_0 with at most 1000 characters, you need to proceed q queries, each query is one of the following:

- 1 u c: Create a new string f_i by appending character c to string f_u . In other words, let $f_i = f_u + c$.
- 2 u c: Create a new string f_i by prepending character c to string f_u . In other words, let $f_i = c + f_u$.
- 3 u v: Create a new string f_i by concatenating two strings f_u and f_v . In other words, let $f_i = f_u + f_v$.
- 4 u: Create a new string f_i as a reversion of string f_u . In other words, let $f_i = reverse(f_u)$.
- 5 u v: Let $f_i = f_{i-1}$. Consider all strings of the form $prefix(f_u) + suffix(f_v)$, count the number of unique strings.

Please note that during the *i*th query, we always create a new string f_i , while all previously created strings remain unchanged.

Input

The first line contains the non-empty string f_0 with at most 1000 lowercase English characters.

The second line contains a single integer q $(1 \le q \le 10^5)$ — the number of queries.

q lines follow, the *i*-th one describes a query in one of the 5 types presented above. All parameters of the *i*th query satisfy $0 \le u, v < i$ and c is a lowercase English characters.

Output

For each query of type 5, output a single line containing the answer. Since the number of unique strings can be rather large, you need to output it modulo $10^9 + 7$.

Explanation of the sample input

Below are the strings created after each query:

- $f_0 = ab$
- $f_1 = abz$
- $f_2 = yab$
- $f_3 = abzab$
- $f_4 = \text{bay}$

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• $f_5 = bay$

In the 5-th query, all prefixes of f_2 are:

- у
- ya
- yab

All suffixes of f_4 are:

- у
- ay
- bay

All the strings of the form $prefix(f_2) + suffix(f_4)$ are:

- уу
- yay
- ybay
- yay
- yaay
- yabay
- yaby
- yabay
- yabbay

Amongst these 9 strings, there are 7 different strings.

Sample Input 1	Sample Output 1
ab	7
5	
1 0 z	
2 0 y	
3 1 0	
4 2	
5 2 4	