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 ith 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 ith 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`
- $f_4 =$ `bay`

- $f_5 = \texttt{bay}$

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

- y
- ya
- yab

All suffixes of f_4 are:

- y
- ay
- bay

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

- yy
- yay
- ybay
- yay
- yaay
- yabay
- yaby
- yabay
- yabbay

Amongst these 9 strings, there are 7 different strings.

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