

## 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 $\left(f_{u}\right)$.
- 5 u v: Let $f_{i}=f_{i-1}$. Consider all strings of the form $\operatorname{prefix}\left(f_{u}\right)+\operatorname{suffix}\left(f_{v}\right)$, 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 $q\left(1 \leq q \leq 10^{5}\right)$ - 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 $0 \leq u, v<i$ 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:

- $f_{0}=\mathrm{ab}$
- $f_{1}=\mathrm{abz}$
- $f_{2}=$ yab
- $f_{3}=\mathrm{abzab}$
- $f_{4}=$ bay

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- $f_{5}=$ 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 $\operatorname{prefix}\left(f_{2}\right)+\operatorname{suffix}\left(f_{4}\right)$ are:

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

Amongst these 9 strings, there are 7 different strings.

|  | Samp | Sample Output 1 |
| :---: | :---: | :---: |
|  | ab | 7 |
|  | 5 |  |
|  | 10 z |  |
|  | 20 y |  |
|  | 310 |  |
|  | 42 |  |
|  | 524 |  |

