

**Notice:** 1:由于本OJ建立在Linux平台下，而许多题的数据在Windows下制作，请注意输入、输出语句及数据类型及范围，避免无谓的RE出现。 2:本站即将推出针对初学者的试题系统(与目前OJ是分开的，互不影响)，内容覆盖从语法入门到NOI的所有知识点，敬请关注。

## 2787: Spoj 11482. Count on a trie

Time Limit: 6 Sec Memory Limit: 256 MB

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### Description

Maintain two sets of strings S and T. Initially, each set contains an empty string with id 1. Your program are to perform the following four operations:

1. Add a char c to the end of an existed string  $S_i$  in S, then insert the new string into S. Since there has been n strings in S already, the new string will hold the id  $n+1$ .
2. Add a char c to the beginning or to the end of an existed string  $T_i$  in T, then insert the new string into T.
3. Choose two existed strings  $T_i$  and  $T_j$  from T, next combine them into a new one  $T_iT_j$ , then insert the new string into T.
4. Print the time that an existed string  $T_i$  in T appears in an string  $S_i$  in S. Your program should print 0 if  $T_i$  is an empty string.

维护两个字符串集合S, T，一开始S和T都只有一个空串，编号都为1，要求支持操作：

1. 在S的某一个串 $S_i$ 后添加一个字符c，加入S
2. 在T的某一个串 $T_i$ 的前面或后面添加一个字符c，加入T
3. 将T的两个串 $T_i, T_j$ 首尾相接形成一个新串 $T_iT_j$ ，加入T
4. 询问T中的某个串 $T_i$ 在S中某个串 $S_i$ 中的出现次数。（如果 $T_i$ 是空串，输出0）

### Input

In the first line, there is an integer Q, which means the number of operations to perform. In the next Q lines, the i-th line describes the i-th operation containing some integers. Such a

line may look like this:

1 Si c

2 0 Ti c =>add c to the beginning of Ti

2 1 Ti c =>add c to the end of Ti

3 Ti Tj

4 Ti Si

$Q \leq 300000, 'a' \leq c \leq 'z'$

The number of the first operation will not exceed 100000.

The number of the third operation will not exceed 30000.

The number of fourth operation will not exceed 100000.

## Output

For each "4 Ti Si" operation, print its result;

## Sample Input

18

1 1 a

1 2 a

1 3 b

1 2 b

1 5 a

1 5 b

2 1 1 a

3 2 2

2 0 3 b

2 1 2 b

3 2 5

3 5 2

4 7 6

4 5 6

4 3 4

4 2 4

4 2 7

4 2 6

## Sample Output

1

1

1

2

1

2

## HINT

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