F - Erase between X and Y

Editorial (/contests/abc421/tasks/abc421_f/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 525 points

Problem Statement

There is a sequence A. Initially, $A = (0)$. (That is, A is a sequence of length 1 containing 0 as its only element).

You are given Q queries to process in order. The i-th query $(1 \leq i \leq Q)$ has one of the following forms:

- `1 x`: Insert i immediately after the location where x appears in A. Specifically, let A_j be the j-th element of the current A and n be the length of A. For p such that $A_p = x$, update A to $(A_1, \ldots, A_p, i, A_{p+1}, \ldots, A_n)$. It is guaranteed that A contains x immediately before processing this query.
- `2 x y`: Remove all elements between x and y in A, and output the sum of the values of the removed elements. Specifically, let A_j be the j-th element of the current A and n be the length of A. For p and q such that $A_p = x$ and $A_q = y$, output $A_{\min(p,q)+1} + \cdots + A_{\max(p,q)-1}$ and update A to $(A_1, \ldots, A_{\min(p,q)}, A_{\max(p,q)}, \ldots, A_n)$. It is guaranteed that A contains both x and y immediately before processing this query.

Note that for any sequence of queries, the same value never appears multiple times in A during the process of handling queries, and thus the position where a value appears in A is unique (if it exists).

Constraints

- $1 \leq Q \leq 5 \times 10^5$
- For the i-th query:
  - If it is a type 1 query:
    - $0 \leq x < i$
    - A contains x immediately before processing the query.
  - If it is a type 2 query:
    - $0 \leq x < y < i$
    - A contains both x and y immediately before processing the query.
- All input values are integers.

Input

The input is given from Standard Input in the following format:

$$
\begin{aligned}
&Q \\
&\mathrm{query}_1 \\
&\mathrm{query}_2 \\
&\vdots \\
&\mathrm{query}_Q
\end{aligned}
$$

Here, query_i represents the i-th query and is given in one of the following forms:

```
1 x
```

```
2 x y
```

Output

Let q be the number of type 2 queries. Output q lines. The i-th line should contain the value to be output for the i-th type 2 query.

Sample Input 1 Copy

Copy

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```
6
1 0
1 1
1 0
2 2 3
1 2
2 0 5
```

Sample Output 1 Copy

Copy

```
1
5
```

Initially, $A = (0)$.

- 1st query: Insert 1 immediately after 0. A becomes $(0, 1)$.
- 2nd query: Insert 2 immediately after 1. A becomes $(0, 1, 2)$.
- 3rd query: Insert 3 immediately after 0. A becomes $(0, 3, 1, 2)$.
- 4th query: Remove the elements between 2 and 3, namely 1, and output the sum of the removed values, which is 1. A becomes $(0, 3, 2)$.
- 5th query: Insert 5 immediately after 2. A becomes $(0, 3, 2, 5)$.
- 6th query: Remove the elements between 0 and 5, namely $3, 2$, and output the sum of the removed values, which is 5. A becomes $(0, 5)$.

Sample Input 2 Copy

Copy

```
2
1 0
2 0 1
```

Sample Output 2 Copy

Copy

```
0
```

In the 2nd query, we remove all elements between 0 and 1, but there are actually no such elements, so no elements are removed and the output value is 0.

Sample Input 3 Copy

Copy

```
10
1 0
1 1
2 0 2
2 0 2
1 0
1 5
2 0 5
2 2 6
1 6
1 9
```

Sample Output 3 Copy

Copy

```
1
0
0
0
```

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