

Crayon

Background



Mary love painting so much, but as we know she can't draw very well. There is no one appreciate her works, so she come up with a puzzle with herself....

Description

There are only one case in each input file, the first line is a integer N ($N \leq 1,000,00$) denoted the total operations executed by Mary. Then following N lines, each line is one of the folling operations.

- D L R: draw a segment $[L, R]$, $1 \leq L \leq R \leq 1,000,000,000$
- C I: clear the i th added segment. It's guaranteed that the every added segment will be cleared only once.
- Q L R: query the number of segment sharing at least a common point with interval $[L, R]$. $1 \leq L \leq R \leq 1,000,000,000$.

Input

n

(then following n operations ...)

Output

(for each query, print the result on a single line ...)

Example

Input:

6

D 1 3

D 2 4

Q 2 3

D 2 4

C 2

Q 2 3

Output:

2

2