# F. MEX Queries

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given a set of integer numbers, initially it is empty. You should perform $n$ queries.

There are three different types of queries:

- `1` $l$ $r$ — Add all missing numbers from the interval $[l, r]$
- `2` $l$ $r$ — Remove all present numbers from the interval $[l, r]$
- `3` $l$ $r$ — Invert the interval $[l, r]$ — add all missing and remove all present numbers from the interval $[l, r]$

After each query you should output *MEX* of the set — the smallest positive (*MEX* $\geq 1$) integer number which is not presented in the set.

## Input

The first line contains one integer number $n$ ($1 \leq n \leq 10^5$).

Next $n$ lines contain three integer numbers $t, l, r$ ($1 \leq t \leq 3, 1 \leq l \leq r \leq 10^{18}$) — type of the query, left and right bounds.

## Output

Print *MEX* of the set after each query.

### Examples

| input |
| --- |
| 3<br>1 3 4<br>3 1 6<br>2 1 3 |

| output |
| --- |
| 1<br>3<br>1 |

| input |
| --- |
| 4<br>1 1 3<br>3 5 6<br>2 4 4<br>3 1 6 |

| output |
| --- |
| 4<br>4<br>4<br>1 |

## Note

Here are contents of the set after each query in the first example:

1. $\{3, 4\}$ — the interval $[3, 4]$ is added
2. $\{1, 2, 5, 6\}$ — numbers $\{3, 4\}$ from the interval $[1, 6]$ got deleted and all the others are added
3. $\{5, 6\}$ — numbers $\{1, 2\}$ got deleted