

F. MEX Queries

time limit per test: 2 seconds
memory limit per test: 256 megabytes

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	Copy
3 1 3 4 3 1 6 2 1 3	
output	Copy
1 3 1	

input	Copy
4 1 1 3 3 5 6 2 4 4 3 1 6	
output	Copy
4 4 4 1	

Note

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

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

Educational Codeforces Round 23

Finished

Practice



→ Virtual participation

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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
311466591	Mar/20/2025 03:55	Accepted
311465785	Mar/20/2025 03:35	Accepted
311459471	Mar/20/2025 00:52	Wrong answer on test 5
311426377	Mar/19/2025 18:37	Wrong answer on test 7
311425023	Mar/19/2025 18:25	Wrong answer on test 7
311420802	Mar/19/2025 17:48	Wrong answer on test 7
311419666	Mar/19/2025 17:39	Wrong answer on test 7
311419401	Mar/19/2025 17:37	Wrong answer on test 1
311416341	Mar/19/2025 17:13	Wrong answer on test 7
311415618	Mar/19/2025 17:08	Wrong answer on test 7

→ Problem tags

binary search data structures trees

*2300

No tag edit access

→ Contest materials

- Announcement
- Tutorial