# Problem K. Rectangle Painting

| | |
|---|---|
| Input file: | *standard input* |
| Output file: | *standard output* |
| Time limit: | 10 seconds |
| Memory limit: | 1024 mebibytes |

There is a cell grid infinite in left, right, and upwards directions (all the cells with coordinates $(x, y)$ with $x \in \mathbb{Z}$, $y \geq 0$ exist). Initially all the cells are white. You have to process $q$ queries of two types:

1. $y_i$ $l_i$ $r_i$: paint all cells $(x, y_i)$ for $l_i \leq x \leq r_i$ black. If the cell is already black, its color doesn't change.
2. $l_i$ $r_i$: consider all cells with $x$ coordinate on the segment $[l_i; r_i]$. Find the highest cell such that all cells exactly under it are black. Formally, you have to find maximal $h$ such that $\exists x \in [l_i; r_i] \forall y \in [0; h)$ cell $(x, y)$ is black.

To enforce processing the queries online they are encrypted using previous answers.

## Input

The first line contains one integer $q$ ($1 \leq q \leq 10^5$) — the number of queries to process.

The next $q$ lines will contain encrypted descriptions of queries. Let $S$ be the sum of answers to all queries of second type processed so far.

Each description is formatted as either "1 $(y_i \oplus S)$ $(l_i \oplus S)$ $(r_i \oplus S)$" or "2 $(l_i \oplus S)$ $(r_i \oplus S)$". It is guaranteed that $0 \leq y_i \leq 2 \cdot 10^5$, $0 \leq l_i \leq r_i \leq 2 \cdot 10^5$. Note that the guarantees are given on parameters after decryption, the numbers in input might not fit in 32-bit integers.

Don't forget to add the new answer to $S$ after each query of the second type.

## Output

Print the answers to all queries of the second type on separate lines.

## Example

| standard input | standard output |
|---|---|
| 10<br>1 0 1 1<br>2 0 10<br>1 1 9 9<br>1 0 0 6<br>1 0 3 9<br>2 5 5<br>1 1 5 5<br>2 5 5<br>2 0 5<br>1 7 6 3 | 1<br>0<br>2<br>2 |

## Note

| S | Encrypted | Query | Ans |
|---|---|---|---|
| 0 | 1 0 1 1 | 1 0 1 1 | – |
| 0 | 2 0 10 | 2 0 10 | 1 |
| 1 | 1 1 9 9 | 1 0 8 8 | – |
| 1 | 1 0 0 6 | 1 1 1 7 | – |
| 1 | 1 0 3 9 | 1 1 2 8 | – |
| 1 | 2 5 5 | 2 4 4 | 0 |
| 1 | 1 1 5 5 | 1 0 4 4 | – |
| 1 | 2 5 5 | 2 4 4 | 2 |
| 3 | 2 0 5 | 2 3 6 | 2 |
| 5 | 1 7 6 3 | 1 2 3 6 | – |