

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	1
1 0 1 1	0
2 0 10	2
1 1 9 9	2
1 0 0 6	
1 0 3 9	
2 5 5	
1 1 5 5	
2 5 5	
2 0 5	
1 7 6 3	

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	—

