

F. Nagini

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Nagini, being a horcrux You-know-who created with the murder of Bertha Jorkins, has accumulated its army of snakes and is launching an attack on Hogwarts school.

Hogwarts' entrance can be imagined as a straight line (x-axis) from 1 to 10^5 . Nagini is launching various snakes at the Hogwarts entrance. Each snake lands parallel to the entrance, covering a segment at a distance k from $x = l$ to $x = r$. Formally, each snake can be imagined as being a line segment between points (l, k) and (r, k) . Note that k can be both positive and negative, but not 0.

Let, at some x -coordinate $x = i$, there be snakes at point (i, y_1) and point (i, y_2) , such that $y_1 > 0$ and $y_2 < 0$. Then, if for any point (i, y_3) containing a snake such that $y_3 > 0$, $y_1 \leq y_3$ holds and for any point (i, y_4) containing a snake such that $y_4 < 0$, $|y_2| \leq |y_4|$ holds, then the danger value at coordinate $x = i$ is $y_1 + |y_2|$. If no such y_1 and y_2 exist, danger value is 0.

Harry wants to calculate the danger value of various segments of the Hogwarts entrance. Danger value for a segment $[l, r]$ of the entrance can be calculated by taking the sum of danger values for each integer x -coordinate present in the segment.

Formally, you have to implement two types of queries:

- 1 l r k : a snake is added parallel to entrance from $x = l$ to $x = r$ at y -coordinate $y = k$ (l inclusive, r exclusive).
- 2 l r : you have to calculate the danger value of segment l to r (l inclusive, r exclusive).

Input

First line of input contains a single integer q ($1 \leq q \leq 5 \cdot 10^4$) denoting the number of queries.

Next q lines each describe a query. Each query description first contains the query type $type_i$ ($1 \leq type_i \leq 2$). This is followed by further description of the query. In case of the type being 1, it is followed by integers l_i, r_i and k_i ($-10^9 \leq k_i \leq 10^9$, $k \neq 0$). Otherwise, it just contains two integers, l_i and r_i ($1 \leq l_i < r_i \leq 10^5$).

Output

Output the answer for each query of type 2 in a separate line.

Examples

input
3 1 1 10 10 1 2 4 -7 2 1 10
output
34

input
7 1 2 3 5 1 1 10 10 1 4 5 -5 2 4 8 1 1 10 -10 2 4 8 2 1 10

output
15 75 170

Note

In the first sample case, the danger value for x -coordinates 1 is 0 as there is no y_2 satisfying the above condition for $x = 1$.

Danger values for x -coordinates 2 and 3 is $10 + |-7| = 17$.

Danger values for x -coordinates 4 to 9 is again 0 as there is no y_2 satisfying the above condition for these coordinates.

Thus, total danger value is $17 + 17 = 34$.