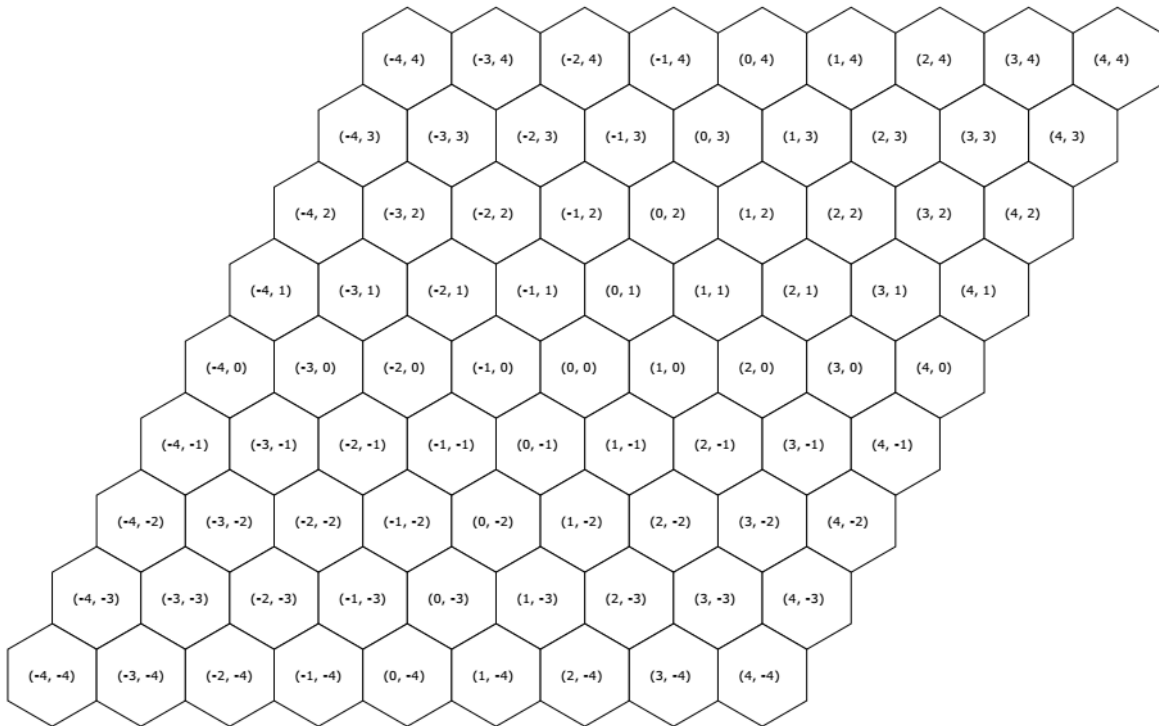


# Wall Game

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            4 seconds  
Memory limit:         512 megabytes

Recently, Grammy is playing a boring game called Wall Game.



There is a plane in the game, which is tiled with regular hexagons. There are honeycombs on this plane, which are oriented in such a manner that there are hexagon nodes below and above, and there are edges to the left and right which the honeycomb shares with its adjacent honeycombs in the row. Every consequent row is shifted relative to the previous row by half a honeycomb. The  $Ox$  axis goes from left to right along the horizontal row of honeycombs. The  $Oy$  axis is inclined 60 degrees relative to the  $Ox$  axis. The axes intersect at the honeycomb with coordinates  $(0, 0)$ .

There are 2 operations attack and query. Grammy can conquer a honeycomb located at  $(x_i, y_i)$  by an attack operation. For a query operation, Grammy wonders if she builds walls between the honeycombs she has conquered and the honeycombs she hasn't conquered, how many walls she can touch if she set out from honeycomb  $(x_i, y_i)$  **in her territory** without crossing any walls.

Note: A person in honeycomb  $A$  can go to honeycomb  $B$  if and only if  $A$  and  $B$  share a common edge or there exists a honeycomb  $C$  that  $A$  can go to  $C$  and  $C$  can also go to  $B$ .

At the beginning of the game, no honeycombs are conquered. Please write a program to handle  $n$  operations.

## Input

The input contains only a single case.

The first line contains a single integer  $n$  ( $1 \leq n \leq 500\,000$ ), representing the number of operations.

The following  $n$  lines describe  $n$  operations. Each line contains 3 integers  $op_i, x_i$  and  $y_i$  ( $1 \leq op_i \leq 2$ ,  $-10^9 \leq x_i, y_i \leq 10^9$ ), representing the type of operation and the coordinate of the honeycomb.

- $op_i = 1$  means an attack operation. Grammy will conquer honeycomb  $(x_i, y_i)$ .
- $op_i = 2$  means a query operation. In this operation, Grammy asks you how many walls she can touch if she transfers from honeycomb  $(x_i, y_i)$  without crossing any walls.

It is guaranteed that  $(x_i, y_i)$  has not been conquered if  $op_i = 1$ , and  $(x_i, y_i)$  has been conquered if  $op_i = 2$ .

## Output

For each query operation, you should output an integer in a line representing the answer to Grammy's query.

## Example

standard input	standard output
8	6
1 0 0	12
2 0 0	20
1 0 2	
1 1 2	
1 0 3	
2 0 3	
1 0 1	
2 0 0	