Game and Queries

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

Alice and Bob are going to play a game. The rule of the game is as follows:

- There are some monsters, each of which has a specified HP.
- Alice and Bob take turns alternately, with Alice going first.
- In Alice's turn, she chooses one of the monsters and increases its HP by 1.
- In Bob's turn, he chooses one of the monsters and decreases its HP by 2. If the monster's HP becomes 0 or less, the monster disappears.
- The game ends when k monsters disappear.

Alice's objective is to finish the game as late as possible, while Bob's is as soon as possible.

Initially, there are no monsters. You have to process Q queries of the following types:

- Type 1: You are given two integers X_i and Y_i. After this query, the number of monsters whose HPs are X_i becomes Y_i.
- Type 2: Given an integer K_i, calculate how many turns would Bob take if the game started with current monsters and $k = K_i$, assuming both players play optimally.

Note that the game doesn't happen in reality, and the monsters don't disappear.

Input

Input is given from Standard Input in the following format:

Q

Description of the 1-st query

Description of the 2-nd query

$\vdots$

Description of the Q-th query

The description of each query is in one of the following formats:

Type 1

1 X_i Y_i

Type 2

2 K_i

Constraints:

- $1 \leq Q \leq 3 \times 10^5$
- $1 \leq T_i \leq 2$
- $1 \leq X_i \leq 10^6$

- $0 \leq Y_i \leq 10^6$
- $1 \leq K_i \leq$ (the number of current monsters)
- There is at least one query of the type 2
- All values in input are integers.

Output

For each query of the type 2, print the answer in a line.

Examples

standard input	standard output
6 1 1 4 2 3 1 2 3 2 6 1 2 2 2 6	3 7 8
20 1 1 12 2 12 1 2 15 2 12 2 3 1 12 10 2 27 1 14 6 2 7 2 43 2 22 1 8 7 1 1 11 2 49 1 5 19 2 38 2 8 1 12 14 1 16 1 2 24	12 12 3 42 7 246 25 301 91 8 32

Note

In the example 1, after the 5-th query, there are 4 monsters whose HPs are 1 and 2 monsters whose HPs are 2.