I Wanna Maker

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Redcrown the Bear is a gamer who likes playing hardcore games such as *I Wanna* series. As an experienced player, he has also made many *I Wanna* levels by himself.

Redcrown is making a new level with a puzzle: given $\tilde{k}, \tilde{x}$ and several consecutive positive integers from l to r, the player needs to determine whether there exist $\tilde{k}$ different integers such that their sum is $\tilde{x}$. Now Redcrown needs to decide the range of the given integers in this level, denoted by the interval $[l, r]$. In addition to $0 < l \leq r$, he wants to make the interval satisfy n conditions, each of which is of one of the following two types:

- `1 k x`: there exist k different integers within the interval $[l, r]$ such that their sum is x.
- `2 k x`: there do not exist k different integers within the interval $[l, r]$ such that their sum is x. (There are two possible cases: there are less than k integers in this interval; or, there are k or more integers in this interval, but there are no k integers whose sum is x.)

Redcrown wants to know the number of different intervals $[l, r]$ that satisfy the conditions.

Input

The first line contains an integer T ($1 \leq T \leq 10^5$), indicating the number of test cases.

The first line of each test case contains an integer n ($1 \leq n \leq 10^5$), indicating the number of conditions.

Each of the following n lines contains three integers t, k, x ($1 \leq t \leq 2$, $1 \leq k \leq 10^9$, $1 \leq x \leq 10^9$), indicating a condition.

It is guaranteed that $\sum n \leq 10^5$ over all test cases.

Output

For each test case, output an integer in a single line indicating the number of different intervals that satisfy the conditions. If there are an infinite number of intervals, output -1 in a single line.

Example

standard input	standard output
4 2 1 1 2 2 1 4 2 1 1 4 2 1 2 2 1 1 1 2 1 1 4 2 1 15 1 5 20 1 3 8 2 2 25	4 -1 0 7

Note

For the first test case of the sample, there are two conditions:

1. There exists an integer 2 within the interval.
2. There does not exist an integer 4 within the interval.

There are four intervals that satisfy the conditions: $[1, 2]$, $[1, 3]$, $[2, 2]$ and $[2, 3]$.

For the second test case of the sample, there are two conditions:

1. There exists an integer 4 within the interval.
2. There does not exist an integer 2 within the interval.

All intervals with $3 \leq l \leq 4$ and $r \geq 4$ satisfy the conditions, so there are an infinite number of intervals.

Here is a reference picture of the *I Wanna* level: