

Problem C. Bubbly Triangles

Input file: *standard input*
 Output file: *standard output*
 Time limit: 5 seconds
 Memory limit: 1024 mebibytes

In the mystical realm of Bubbledonia, every year the Bubble Wizards host a grand spectacle to celebrate the formation of magical triangles. These triangles are special, as their sides must never align perfectly with the directions of magical Ox and Oy coordinate axes that divide the kingdom. This year, the Wizards have challenged you, a young apprentice, to help manage and track the creation and removal of these triangles as they appear on a grand 2D plane.

The magical plane starts off completely empty, and over time, different points on the plane will be added or removed. Whenever three points form a triangle with a positive area (the three points are not collinear), and none of its sides are parallel to the Ox or Oy axis, it is considered a magical triangle.

Your task is to handle Q updates, where you either add or remove a point on the plane. After each update, you must report how many magical triangles exist at that moment. Will you be able to assist the Wizards in keeping track of these magical triangles?

Input

The first line contains an integer Q : the number of updates ($1 \leq Q \leq 3000$).

Each of the next Q lines contains three integers T , X , and Y : the type of the update and the coordinates of the point on the plane ($1 \leq X, Y \leq 10^5$).

- $T = 1$ means adding the point (X, Y) .
- $T = 2$ means removing the point (X, Y) .
- A point will not be added if it already exists on the plane.
- A point will not be removed unless it already exists on the plane.

Output

For each update, after executing the update (either adding or removing a point), output the number of magical triangles formed by the points on the plane, as described in the legend.

Example

<i>standard input</i>	<i>standard output</i>
6	0
1 1 2	0
1 2 1	1
1 3 3	1
1 1 1	4
1 4 5	2
2 2 1	