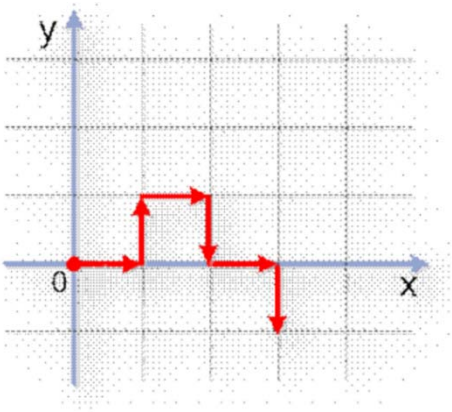
Problem D. Robot

Given the integer grid Oxy (all points of the grid have integer coordinates), two integer points (x_1, y_1) and (x_2, y_2) are adjacent to each other if $|x_1 - x_2| + |y_1 - y_2| = 1$. At the beginning, a robot is put at the origin $O(0,0)$. In the first move, the robot can move to one of the adjacent points. From the second move, it can turn left, turn right, go forward or go back to the previous position. For example, as shown in the figure, the robot moves from point $(0,0)$ to point $(1,0)$ at the first step. It then turns left to point$(1,1)$, turns right to point $(2,1)$, turns right to point $(2,0)$, turns left to point $(3,0)$ and finally turns right to point $(3,-1)$.



Task: Given a set of points that the robot has passed, count how many times the robot turns right.

Input

The first line is the number of points n ($2 \le n \le 10000$) that the robot has passed (include the origin O)

The next n lines are the coordinate (x, y) of n points respectively (x and y are separated by a space and |x|, |y| ≤ 10000).

Output

Output the number of times the robot turns right.

Examples

Standard Input	Standard Output
7 0 0 1 0 1 1 2 1 2 0 3 0 3 -1	3