Problem A – Assigning company branches.

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A very popular retail company with a total of N branches have decided to sell some of their business to their competitor, and they have made very clear that this merge is taking in consideration to always bring the best for their customers. The key point in the sale process is that the branches will be distributed between the two companies, a branch will be managed only by one company, and, the company that manages branch i, will get at the end of the year the annual profit p_i the branch produces. The annual profit each company makes is the sum of the profits of all the branches the company manages. Even when both companies have been competitors, they decided that to be fair, it is best if the absolute difference between their annual profits is minimum.

The distribution of the branches is becoming a very difficult process, it is hard to find a way to assign the branch managers with the given restrictions. In a meeting that has lasted for hours, maybe days, the teams of both companies have been looking to a map to see all the branches and to determine how to assign them. This map of the city is a plane where each branch is represented as a point in the plane. Jaime just came and heard the problem they have, and, being the problem solver he is, he just propossed what is considered the best solution: insted of dividing arbitary branches to each company, to draw a line in the map of the city and assign all branches in one side of the line to a company, and all branches in the other side to the other company. As Jaime found the solution, the companies asked him to find the best assignment possible. Given the map of the city and the annual profit of each branch, find the minimum difference between the annual profits of both companies when assigning the branches using Jaime's proposed solution.

Input

The first line contains a single integer N ($2 \leq N \leq 500$). Each of the next N lines contain three integer numbers separated by a space, x_i, y_i ($0 \leq x_i, y_i \leq 1000$) and p_i ($1 \leq p_i \leq 10^6$), representing the (x, y) coordinates of branch i and the annual profit p_i the branch produces.

Output

Output a single line with an integer indicating the minimum difference between the annual profits of both companies when asigning the branches using Jaime's proposed solution.

Sample input 1	**Sample output 1**
2 1 2 10 2 3 15	5

Sample input 2	**Sample output 2**
4 5 5 1 5 6 2 6 6 4 6 5 8	1