

Problem D. Card Game

Time limit 5000 ms

Memory limit 256MB

Problem Description

One day, Bill, Ian, and Benson were playing a computer game together:

At the start of the game, two numbers, X and Y , are set to 0, and the players can see the values of X and Y . The game proceeds for N rounds ($1 \leq N \leq 10^5$). In each round, the computer deals two cards to each player. Each card has a point value C ($1 \leq C \leq 10^8$), representing the card's point. The players then need to discuss and choose one player to act as their representative for that round. For instance, if Bill is chosen as the representative for the i -th round and receives two cards with point values $Bill_{i1}$ and $Bill_{i2}$, he can choose to add the point value of one card to X and the point value of the other card to Y .

The objective of the game is to maximize the ratio $\frac{X}{Y}$ after N rounds.

However, after playing the game several times, Bill, Ian, and Benson realized that no matter how they chose their representative, they couldn't win. Frustrated, Bill hacked into the game and gained knowledge of all the card point values for all N rounds in advance. Unfortunately, due to exhaustion from socializing, Bill lost the ability to think clearly after obtaining this information and couldn't decide who should be chosen as the representative to help poor Benson and Ian.

Since Benson and Ian, even with the knowledge of the cards they will receive, still don't know how to choose the right representative, they desperately need your help. Please assist them!

Input format

The first line contains an integer N ($1 \leq N \leq 10^5$) representing the total number of rounds.

In the next N lines, each line contains 6 integers $Bill_{i1}$, $Bill_{i2}$, Ian_{i1} , Ian_{i2} , $Benson_{i1}$, $Benson_{i2}$, representing the point values of the cards that each player received in the i -th round. The point values C are guaranteed to satisfy $1 \leq C \leq 10^8$.

Output format

Output the value of $\frac{X}{Y}$ at the end of the game under the optimal strategy.

If the correct answer is a , and the contestant's output is b , the answer is considered correct if $\frac{|a-b|}{\max(|a|, 1)} < 10^{-4}$.

Subtask score

Subtask	Score	Additional Constraints
1	20	$N \leq 10, C \leq 10$
2	40	$N \leq 100, C \leq 100$
3	40	No constraints

Sample

Sample Input 1

```
3
1 1 1 1 1 1
2 2 2 2 2 2
3 3 3 3 3 3
```

Sample Output 1

```
1.0000000000
```

Sample Input 2

```
3
2 1 1 1 3 1
2 2 2 2 2 2
3 3 3 3 3 3
```

Sample Output 2

```
1.3333333333
```

Sample Input 3

```
10
2 1 3 1 1 1
4 3 2 2 4 2
4 2 3 2 1 1
2 1 1 1 4 2
3 3 1 1 4 3
4 2 5 3 3 3
1 1 5 3 2 2
2 1 4 2 1 1
4 3 3 2 3 3
3 2 3 1 5 3
```

Sample Output 3

```
1.9444444444
```

Notes

For sample 1, if your output is 1.000000123, it will be treated as correct.