Minimum Average Waiting Time

by tuananhnb93

Tieu owns a pizza restaurant and he manages it in his own way. While in a normal restaurant, a customer is served by following the first-come, first-served rule, Tieu simply minimizes the average waiting time of his customers. So he gets to decide who is served first, regardless of how sooner or later a person comes.

Different kinds of pizzas take different amounts of time to cook. Also, once he starts cooking a pizza, he cannot cook another pizza until the first pizza is completely cooked. Let's say we have three customers who come at time t=0, t=1, & t=2 respectively, and the time needed to cook their pizzas is 3, 9, & 6 respectively. If Tieu applies first-come, first-served rule, then the waiting time of three customers is 3, 11, & 16 respectively. The average waiting time in this case is (3 + 11 + 16) / 3 = 10. This is not an optimized solution. After serving the first customer at time t=3, Tieu can choose to serve the third customer. In that case, the waiting time will be 3, 7, & 17 respectively. Hence the average waiting time is (3 + 7 + 17) / 3 = 9.

Help Tieu achieve the minimum average waiting time. For the sake of simplicity, just find the integer part of the minimum average waiting time.

Input Format

- The first line contains an integer N, which is the number of customers.
- In the next N lines, the i^{th} line contains two space separated numbers T_i and L_i. T_i is the time when i^{th} customer order a pizza, and L_i is the time required to cook that pizza.
- The i^{th} customer is not the customer arriving at the i^{th} arrival time.

Output Format

- Display the integer part of the minimum average waiting time.

Constraints

- $1 \le N \le 10^5$
- $0 \le T_i \le 10^9$
- $1 \le L_i \le 10^9$

Note

- The waiting time is calculated as the difference between the time a customer orders pizza (the time at which they enter the shop) and the time she is served.
- Cook does not know about the future orders.

Sample Input #00

```
3
0 3
1 9
2 6
```

Sample Output #00

```
9
```

Sample Input #01

```
3
0 3
1 9
2 5
```

Sample Output #01

```
8
```

Explanation #01

Let's call the person ordering at time = 0 as *A*, time = 1 as *B* and time = 2 as *C*. By delivering pizza for *A*, *C* and *B* we get the minimum average wait time to be

```
(3 + 6 + 16)/3 = 25/3 = 8.33
```

the integer part is `8` and hence the answer.

Submissions:4057

Max Score:80

Difficulty: Hard

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```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
    }
}
```

Line: 1 Col: 1

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