

# Minimum Average Waiting Time

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  $i^{\text{th}}$  line contains two space separated numbers  $T_i$  and  $L_i$ .  $T_i$  is the time when  $i^{\text{th}}$  customer order a pizza, and  $L_i$  is the time required to cook that pizza.
- The  $i^{\text{th}}$  customer is not the customer arriving at the  $i^{\text{th}}$  arrival time.

## Output Format

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

## Constraints

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

## 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.