Data Structures - Heap - Part 001

Solved Challenges   **4/5**

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Bank Average Waiting Time

ID:9684   Solved By 6 Users

A queue is maintained in a bank to deposit or withdraw the amount. Normally, the customers are served in FCFS (First Come First Served). The bank manager wants to reduce the average waiting time of the customers and hence he comes up with a new technique where the customers are served in any order.

Each customer needs a different amount of time to deposit or withdraw their amount. The program must accept **N** pairs of integers as input. Each pair contains the arrival time followed by the time taken to deposit or withdraw the amount of a customer. The program must print the minimum average waiting time T of all the N customers based on the new serving technique introduced by the bank manager.

Boundary Condition(s):
1 <= N <= 10^4
0 <= Arrival time of each customer <= 10^9
1 <= Waiting time of each customer <= 10^9

Input Format:
The first line contains N.
The next N lines each contain two integers separated by a space.

Output Format:
The first line contains T.

Example Input/Output 1:
Input:
3
0 4
1 7
2 5

Output:
8

Explanation:
In the First Come First Served technique,
The waiting time of the first customer who arrives at 0th second is **4** seconds (0th sec to 4th sec).
The waiting time of the second customer who arrives at 1st second is **10** seconds (1st sec to 11th sec).
The waiting time of the third customer who arrives at 2nd second is **14** seconds (2nd sec to 16th sec).
Here the total waiting time is 28 seconds (4 + 10 + 14).
The average waiting time is 9 seconds (28/3).

In the new serving technique introduced by the bank manager,
The waiting time of the customer who arrives at 0th second is **4** seconds (0th sec to 4th sec).

The waiting time of the customer who arrives at 2nd second is **7** seconds (2nd sec to 9th sec).
The waiting time of the customer who arrives at 1st second is **15** seconds (1st sec to 16th sec).
Here the total waiting time is 26 seconds (4 + 7 + 15).
The average waiting time is 8 seconds (26/3).

So 8 is printed as the output.

Example Input/Output 2:
Input:
4
0 5
4 8
3 3
1 6

Output:
10

Max Execution Time Limit: 500 millisecs

Ambiance

Java (12.0)

Reset

Great! Your code has passed.

SUCCESS

Next Program

☐ Run with a custom test case (Input/Output)