Relay

There are N members in the track club of JOI High School, numbered from 1 to N. For the member i ($1 \le i \le N$), the time of the 100 m sprint is A_i msec, and the ability of controlling the baton is B_i.

The track club will participate in a national contest for the 300 m relay. Three members will run in the 300 m relay. Each member will run for 100 m. A runner will pass the baton to the next runner. Precisely, if the first runner is the member i ($1 \le i \le N$), the second runner is the member j ($1 \le j \le N$), and the third runner is the member k ($1 \le k \le N$), then the three members will run the relay in the following steps.

1. The member i runs for 100 m with a baton. It takes A_i msec.
2. The member i gives a baton to the member j. It takes $\max(B_i, B_j)$ msec.
3. The member j runs for 100 m with a baton. It takes A_j msec.
4. The member j gives a baton to the member k. It takes $\max(B_j, B_k)$ msec.
5. The member k runs for 100 m with a baton. It takes A_k msec.

Therefore, the record for the 300 m relay is $A_i + \max(B_i, B_j) + A_j + \max(B_j, B_k) + A_k$ msec. Here $\max(x, y)$ is the largest value of x and y. Since you are the coach of the track club, you want to choose three **distinct** members for the relay and decide the order of the runners so that the record becomes minimum.

Write a program which, given information of the N members of the track club, calculates the minimum possible record of the 300 m relay.

Input

Read the following data from the standard input. Given values are all integers.

N
A_1 B_1
A_2 B_2
$\vdots$
A_N B_N

Output

Write one line to the standard output. The output should contain an integer which is the minimum possible record of the 300 m relay counted by msec.

Constraints

- $3 \leq N \leq 200\,000$.
- $1 \leq A_i \leq 100\,000\,000 \ (= 10^8) \ (1 \leq i \leq N)$.
- $1 \leq B_i \leq 100\,000\,000 \ (= 10^8) \ (1 \leq i \leq N)$.

Subtasks

1. (25 points) $N \leq 100$.
2. (33 points) $N \leq 3\,000$.
3. (10 points) $A_1 = A_2 = \cdots = A_N$.
4. (32 points) No additional constraints.

Sample Input and Output

Sample Input 1	Sample Output 1
4 1070 90 1080 70 1050 60 1020 100	3320

If the first runner is the member 4, the second runner is the member 3, and the third runner is the member 2, then the time for the steps $1, 2, 3, 4, 5$ of the relay will be $1020, 100, 1050, 70, 1080$ msec, respectively. Thus, the record for the 300 m relay will be $1020 + 100 + 1050 + 70 + 1080 = 3320$ msec. Since it is the minimum possible record, output 3320.

This sample input satisfies the constraints of Subtasks $1, 2, 4$.

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Sample Input 2	Sample Output 2
5 1000 28 1000 14 1000 21 1000 20 1000 14	3034

If the first runner is the member 2, the second runner is the member 5, and the third runner is the member 4, then the time for the steps $1, 2, 3, 4, 5$ of the relay will be $1000, 14, 1000, 20, 1000$ msec, respectively. Thus, the record for the 300 m relay will be $1000 + 14 + 1000 + 20 + 1000 = 3034$ msec. Since it is the minimum possible record, output 3034.

This sample input satisfies the constraints of all the subtasks.

Sample Input 3	Sample Output 3
9 3 1 4 1 5 9 2 6 5 3 5 8 9 7 9 3 2 3	13

If the first runner is the member 1, the second runner is the member 2, and the third runner is the member 9, then the time for the steps $1, 2, 3, 4, 5$ of the relay will be $3, 1, 4, 3, 2$ msec, respectively. Thus, the record for the 300 m relay will be $3 + 1 + 4 + 3 + 2 = 13$ msec. Since it is the minimum possible record, output 13.

This sample input satisfies the constraints of Subtasks $1, 2, 4$.