

Fair Meetings

With the air travel situation returning to relative normality,¹ N tourists (numbered from 1 to N) from all around the world wish to seek advice from the *Great Monk*.

The Great Monk can meet **at most one tourist each day**. The i -th tourist is available to meet the Great Monk on any days between day s_i and day e_i inclusive.

The Great Monk is a very helpful and fair man. He wants to spend as many days as possible with each tourist, but in the interests of fairness he wants to meet with every tourist for the same number of days. Note that the Great Monk does not need to meet with each tourist over a contiguous block of days.

Despite being infinitely fair and helpful, the Great Monk is not infinitely good at scheduling. Can you write a program for him which determines the maximum number of days he can meet with each tourist?

Subtasks and Constraints

For all subtasks:

- $1 \leq N \leq 100\,000$.
- $1 \leq s_i \leq e_i \leq 10^{12}$, for all i .

Additional constraints for each subtask are given below.

Subtask	Points	Additional constraints
1	20	$s_i = 1$ for all i .
2	25	$N \leq 1000$ and $e_i \leq 1000$ for all i .
3	45	$e_i \leq 100\,000$ for all i .
4	10	No special constraints.

Input

- The first line of input contains the integers N .
- The next N lines describe the tourists. The i -th line contains the two integers s_i and e_i .

Output

Output a single line, the maximum number of days the Great Monk can meet with each tourist.

Note: Your solution may involve integers which are large. Consider using 64-bit integers ('long long' in C++) in your solution.

¹Oops, we were a bit optimistic.

Sample Input 1

4
6 10
2 5
3 6
9 15

Sample Input 2

3
1 7
1 10
1 6

Sample Input 3

2
1 1
1 1

Sample Output 1

2

Sample Output 2

3

Sample Output 3

0

Explanation

In Sample Input 1, the Great Monk can meet each tourist 2 times:

Tourist	Meeting days
1	8, 10
2	2, 5
3	3, 4
4	13, 14

In Sample Input 2, the Great Monk can meet each tourist 3 times:

Tourist	Meeting days
1	2, 3, 6
2	1, 4, 5
3	7, 8, 9

In Sample Input 3, the only way every tourist gets the same number of meetings is if they all meet with the Great Monk 0 times.