

Milky Madness!

A farmer need to transport L liters of milk to the market using N barrels. For each barrel i , There is a minimum volume m_i and a maximum volume M_i it can be filled, $m_i \leq M_i$.

But when the difference between the maximum and minimum volumes of milk poured into barrels increases, the cost of transportation also increases. So, farmer asks you to minimize the difference of minimum and maximum volumes poured into barrels while filling the L litres to N barrels.

Input Format

The first line contains two integers N and L .

Each of next N lines contains two integers m_i and M_i respectively.

Constraints

- $1 \leq N \leq 10^5$
- $1 \leq L \leq 10^{18}$
- $0 \leq m_i \leq M_i \leq 10^9$
- It is guaranteed always at least one valid solution
- In each barrel you have to pour an integer number of liters

Output Format

Print a single number representing the minimum difference between the maximum and minimum volumes of milk poured in the barrels.

Sample Input 0

```
3 9
1 5
3 4
2 4
```

Sample Output 0

```
0
```

Explanation 0

All milk barrels can be filled with 3 litres of milk