Cannons

SEASON 8 – SIXTH ROUND

The castle of Balton is being attacked!

For simplicity, we will assume that the castle is a one dimensional line of length **M**. The enemy has **N** cannons and **i**-th if of them is shooting cannon balls to all point in the interval **(L[i], R[i])** of the castle. The cannon is **not** firing at borders of the interval.

Marti is the best wizard in the kingdom and he was assigned with the task to create a wall that will save a part of the castle. Unfortunately, his wall can withstand being shot by at most **K** cannons in each of its points. Also the wall cannot have holes in it – **it must form an interval**.

Write a program that helps Marti by calculating the **longest wall** that he will be able to create so that it will **withstand the attack**.

Input

The first line of the file cannons`.in` contains the integers **N, M** and **K**. The next **N** lines contain the intervals of firing of the cannons – **L[1], R[1], L[2], R[2], ..., L[N], R[N]**.

Output

The output file cannons`.out` must contain one line with the maximal length of a wall that Marti can create.

Constraints

1 ≤ K ≤ N ≤ 200 000

0 ≤ L[i] < R[i] ≤ M ≤ 10^9

Time limit: 1 sec

Memory limit: 256 MB

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Example tests:

Input (cannons.in)	Output (cannons.out)
5 10 3 1 2 1 7 1 2 4 9 7 8	10
3 10 1 0 5 5 7 6 10	6