The Fall of the Dark

**[ MED ][ TFD ]**

**Problem:**

Harry is preparing to fight with Voldemort and finish it all. He has **N** trusted friends, who he wants to have alongside him with the fight against the Death Eaters. Now, each friend can do damage between and inclusive.

Harry wants to select the K best fighters to fight the major threats including Voldemort, Bellatrix Lestrange, Fenrir Greyback, the Trolls, Arachnids etc. The K best fighters must be such that the intersection of damage range between all K of them must be as large as possible.

Can you help Harry select the K best fighters?

**Input:**

* The first line contains two integers **N** and **K** - the number of friends Harry has, and the number of friends he wants to choose.
* Each of the next **N** lines contains two integers and - the description of the i-th friend.

**Output:**

In the first line print a single integer, the length of maximum intersection possible if Harry chooses K optimal friends.

**Constraints:**

* 1 ≤ K ≤ N ≤ 3·10^5

**Example:**

**Sample Input 1:**

5 2

1 10

5 15

14 50

30 70

99 100

**Sample Output 1:**

21

**Explanation:**

He can select friend with range (14,50) and (30,70) to get intersection of length 21 (30 to 50).

**Sample Input 2:**

7 6

-8 6

7 9

-10 -5

-6 10

-7 -3

5 8

4 10

**Sample Output 2:**

0

**Problem Setter:**

Shivam Rana