Problem G. Many Common Segment Problems

Time limit:	8 seconds
Memory limit:	1024 megabytes

PCT has created the following problem.

Common Segment
You are given N segments $[L_1, R_1], [L_2, R_2], \ldots, [L_N, R_N]$. Here, $[L, R]$ represents the set of all integers from L to R inclusive.
There are $2^N - 1$ ways to choose one or more segments, among these, find the number of ways where the intersection of all chosen segments is non-empty. Output the result modulo 998244353.

PCT accidentally lost some of the L_i and R_i values in the test cases. To help him out, solve the following problem.

Many Common Segment Testcases
You are given test cases for **Common Segment**. However, the missing L_i, R_i values are replaced with '-1'.
It is known that the original test cases satisfied $1 \leq L_i \leq R_i \leq M$ $(1 \leq i \leq N)$. For all possible original test cases, solve **Common Segment** and find the sum of all answers modulo 998244353.

Constraints

- $1 \leq N, M \leq 10^5$
- $L_i = -1$ or $1 \leq L_i \leq M$
- $R_i = -1$ or $1 \leq R_i \leq M$
- If $L_i, R_i \geq 1$, then $L_i \leq R_i$

Input

The input is given in the following format from standard input:

N M
L_1 R_1
L_2 R_2
$\vdots$
L_N R_N

Output

Output the answer.

Examples

standard input	standard output
3 3 1 -1 2 2 2 3	18
5 8 1 7 2 3 4 8 6 8 1 5	15
10 13 4 -1 -1 -1 7 11 -1 -1 -1 -1 -1 -1 11 -1 3 8 -1 9 -1 -1	841024210

Note

For the first sample case:

All possible test cases and their corresponding answers for **Common Segment** are as follows:

- When $(L_i, R_i) = (1, 1), (2, 2), (2, 3)$, the answer is 4.
- When $(L_i, R_i) = (1, 2), (2, 2), (2, 3)$, the answer is 7.
- When $(L_i, R_i) = (1, 3), (2, 2), (2, 3)$, the answer is 7.

Therefore, the total answer is $4 + 7 + 7 = 18$.