

Contest Duration: 2025-12-06(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251206T2100&p1=248>) - 2025-12-07(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251206T2240&p1=248>) (local time) (100 minutes)

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G - Domino Arrangement

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 600 points

Problem Statement

There are N cells numbered from 1 to N . Initially, no cell is painted with any color.

There are M types of colors, and with the i -th color, you can paint any number of cells you like among cells $L_i, L_i + 1, \dots, R_i$.

Find the number, modulo 998244353, of ways to paint the cells that satisfy the following condition:

- For every cell i , if that cell is painted with a color, then exactly one of cells $i - 1$ and $i + 1$ is painted with the same color as cell i .
 - Here, cells 0 and $N + 1$ are considered to be not painted with any color.

Constraints

- $1 \leq N, M \leq 5 \times 10^5$
- $1 \leq L_i \leq R_i \leq N$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

N M
 L_1 R_1
 \vdots
 L_M R_M

Output

Output the answer.

Sample Input 1

Copy

5 2
1 3
1 5

Copy

Sample Output 1

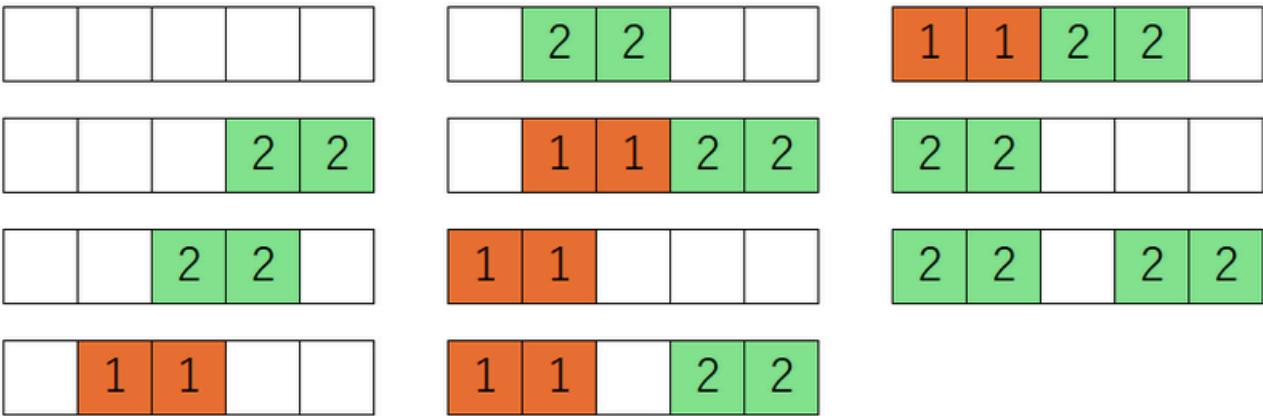
Copy

11

Copy

The first color can paint cells 1, 2, 3, and the second color can paint cells 1, 2, 3, 4, 5.

There are 11 ways to paint that satisfy the condition, as follows:



Sample Input 2

Copy

Copy

```
3 3
1 1
2 2
3 3
```

Sample Output 2

[Copy](#)

```
1
```

[Copy](#)

The one way of not painting any cell satisfies the condition.

Sample Input 3

[Copy](#)

```
500000 10
1 499999
2 499998
3 499997
4 499996
5 499995
6 499994
7 499993
8 499992
9 499991
10 499990
```

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Sample Output 3

[Copy](#)

```
775503999
```

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Find the count modulo 998244353.

'#telegram)

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