

Problem H

Hallway Tiling

Last year, the campus of FPT University was used as an isolation facility for COVID-19 patients. Now, the daily new cases have dropped significantly and the campus has been transformed back to a normal university environment. The university decided to re-tile their hallway.

The hallway of FPT university is a rectangle shape of size $r \cdot n$, this hallway will be re-tiled using $1 \cdot 2$ ceramic tiles. In this hallway, there are k positions which are pillars so we will not re-tile these positions.

Your task is to count the number of possible ways to re-tile the hallway.

Input

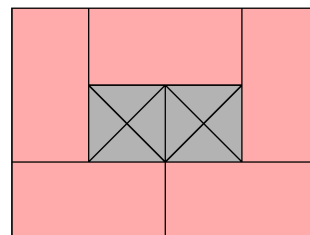
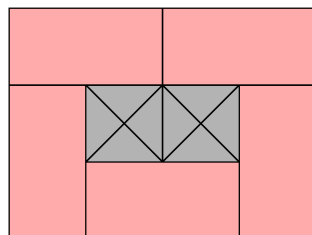
- The first line of the input consists of 3 integers r , n and k ($1 \leq r \leq 6$, $1 \leq n \leq 10^{12}$, $0 \leq k \leq 10$).
- Then k lines follows. Each contains 2 integers x and y describing the position of a pillar ($1 \leq x \leq r$, $1 \leq y \leq n$). No 2 pillars are in the same position.

Output

Print a single integer denoting the number of possible ways to re-tile this hallway. Since this number could be large, you should print it modulo $10^9 + 7$.

Explanation of the sample

There are 2 ways to re-tile the hallway:



Sample Input 1

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3 4 2
2 2
2 3
```

Sample Output 1

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2
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