Seat Arrangement

Description

HH is the TA of ACM 2016. The most tiring thing for him is to arrange the seat for everyone.

HH has known that there will be N students for ACM 2016 this year. However, due to some technical issue, there is only one round table remained. Fortunately, this round table has exactly N seats. Then, for convenience, HH numbers the seats from 1 to N in clockwise order. Also, HH numbers each student from 1 to N.

For some personal reason, HH hopes that for each student, he/she will sit on the seat which has close number. Formally, HH hopes that student numbered i will sit at seat numbered i or $i + 1$. Specially, for student numbered N, HH hopes he/she will sit at seat numbered N or 1.

However, at first day, K diligent students have come to the round table and find a seat to sit. Thus, HH can't arrange arbitrarily. Turning to another plan, HH hopes that at least M students can satisfy his hope(sit on the seat with close number). Thus, HH is wondering how many way to arrange rest of the students such that there are at least M students satisfying his hope.

Input Format

The first line contains an integer T indicating the number of test cases. For each test case, first line contains three integer N, M, K. Following K lines, each line contains two integer A_i, B_i indicating that student numbered A_i has taken the seat numbered B_i.

- $1 \leq N \leq 10^3$
- $0 \leq M \leq N$
- $0 \leq K \leq N$
- $1 \leq A_i \leq N$
- $1 \leq B_i \leq N$
- $\sum N \leq 5 \times 10^3$
- In a test case, all A_i will be distinct
- In a test case, all B_i will be distinct

Output Format

For each test case, output one line indicating the number of way to arrange rest of the students such that there are at least M students satisfying his hope. Since the answer may be large, output it modules $10^9 + 7$.

Sample Input

```
3
4 2 1
1 2
4 2 0
4 2 2
1 3
3 4
```

Sample Output

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5
14
1
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