J – Jewel Guards

Memory limit: 1024 MB
Time limit: 2 s

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We are organizing a jewel exhibition. Your task is to make sure that the jewels are safe at night.

There are k guards available. For each guard, it is known when the guard can work during the night. We assume that each night is divided into n time units. The jewels are considered *safe* if, during at least m time units of the night, they are watched by at least *two* guards.

To avoid the guards being bribed, you want to select different subsets of guards each night so that the jewels are safe during every night. Compute how many such subsets exist.

Input

The first line contains three integers n, k, and m ($1 \le n \le 10^9$, $2 \le k \le 20$, $1 \le m \le n$) that denote the number of time units of the night, the number of guards, and the number of time units of the night during which at least two guards must watch the jewels.

The next k lines describe time intervals during which each guard is available for work. Each line starts with a non-negative integer c_i ($i \in \{1, \ldots, k\}$) that denotes the number of time intervals. What follows are c_i pairs of integers $a_{i,j}$, $b_{i,j}$ ($j \in \{1, \ldots, c_i\}$) that describe intervals $[a_{i,j}, b_{i,j}]$ such that the i-th guard works from time unit $a_{i,j}$ to time unit $b_{i,j}$, inclusive. The intervals are pairwise disjoint and are listed in the order of increasing left endpoints.

You may assume that $c_1 + c_2 + \cdots + c_k \le 10^6$.

Output

The output should contain one non-negative integer, the number of subsets of guards that can be selected so that the jewels are safe during the night.

Example

For the input data:

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10 3 6
2 1 4 8 10
3 2 3 4 5 10 10
3 1 2 4 5 7 10
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the correct result is:

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2
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Explanation: The sought subsets of guards are $\{1, 3\}$ and $\{1, 2, 3\}$. The first and third guard both watch the jewels during six time units, $\{1, 2, 4, 8, 9, 10\}$. If all three guards are selected, the jewels are watched by at least two guards during eight time units $\{1, 2, 3, 4, 5, 8, 9, 10\}$.