
Sum of Maximums

Input file: **standard input**
Output file: **standard output**
Time limit: 5 seconds
Memory limit: 512 megabytes

You are given q pairs of integers $(l_1; r_1), (l_2; r_2), \dots, (l_k; r_k)$, such that $1 \leq l_i \leq r_i \leq n$.

Let's say that $f(b)$ is equal to the $\sum_{i=1}^q \max(b_{l_i}, b_{l_i+1}, \dots, b_{r_i})$.

For m arrays a_1, a_2, \dots, a_m of length n you need to find largest $f(b)$ among all b which are permutations of a_i .

Input

The first line of input contains two integers n, m ($1 \leq n \leq 30, 1 \leq m \leq 1000$) — the number of elements in a_i and the number of arrays for which you need to find the answer.

The second line of input contain one integer q ($1 \leq q \leq 30$) — the number of given segments.

Next q lines contain description of the given segments, i -th of them contain two integers l_i, r_i ($1 \leq l_i \leq r_i \leq n$).

Next m lines contains descriptions of a , i -th of these lines contain n integers $a_{i,1}, a_{i,2}, \dots, a_{i,n}$ ($0 \leq a_{i,j} \leq 10^9$).

Output

For each given array output one integer — the largest f among all permutations of the given array.

Examples

standard input	standard output
5 5 5 1 1 2 2 3 3 4 4 5 5 1 1 1 1 2 1 1 1 2 2 1 1 2 2 2 1 2 2 2 2 2 2 2 2 2	6 7 8 9 10
3 4 2 1 2 2 3 1 1 1 1 5 1 10 1 7 4 2 0	2 10 20 8