

Put a Point in a Hyperspace

Input

Multiple test cases, the number of them is given in the very first line.

For each test case:

The first line contains 3 space-separated integers K ($2 \leq K \leq 30$), S ($2 \leq S \leq 10000$), M ($0 \leq M \leq 20$). M lines follow, each contains K non-negative integers a_{ij} ($1 \leq i \leq M$, $1 \leq j \leq K$), which shows that there is one point $(a_{i1}, a_{i2}, \dots, a_{iK})$ in the K -D hyperspace. No two point will be the same, and none of them lies on any (coordinate) axis.

Output

For each test case:

Output a single integer which shows the number of the points $B(b_1, b_2, \dots, b_K)$ in the hyperspace satiesfied the following constraints:

- B is not on any (coordinate) axis.
- For each $1 \leq i \leq M$, there exist j , $1 \leq j \leq k$, such that $b_j < a_{ij}$.
- For each $1 \leq j \leq k$, b_j is a non-negative integer.
- The sum of b_j doesn't exceed S .

Example

Input:

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

Output:

```
2
```

Hint

The two points are (1,1) and (1,2).