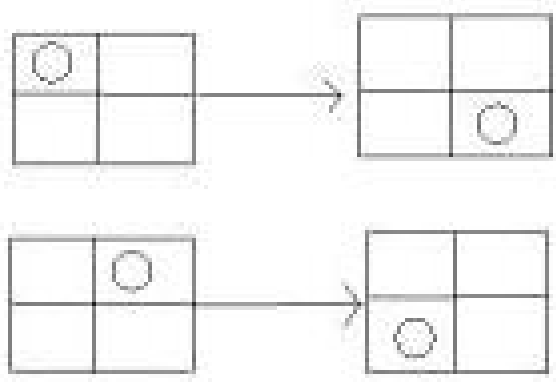
Well, in this problem you are given an $R \times C$ grid ($1 \leq R \leq 10^9$ and $1 \leq C \leq 10$). There will be B blocks ($1 \leq B \leq 100$) in the grid. Each block will be placed in a cell of the grid. There can be more than one blocks in a cell.

Now you are given M identical tokens and you can place them in the first row as you like. A cell cannot contain more than one token and you also cannot place a token in a cell occupied by blocks. Now you can move a token but you have to follow following rules:

1. If there is a token in a cell (r, c) then you can move it to either $(r + 1, c - 1)$ or $(r + 1, c + 1)$.
2. You cannot move a token to a cell occupied by blocks.
3. You cannot move a token outside of the grid.
4. You cannot move two or more tokens to the same cell.
5. All the tokens should be moved to i-th row before any token can be moved $(i + 1)$-th row.

Now let $S = \{(1, c_1), (1, c_2), \ldots, (1, c_M)\}$ be the set of cells of where you placed M identical tokens and $W(S)$ = number of ways you can move these tokens to last row. You have to find the sum of W for every possible S.

For $R = 2$, $C = 2$, $M = 1$ and $B = 0$ the answer is 2.



Input

First line contains number of test cases $1 \leq T \leq 500$. For each test case, the first line contains $1 \leq R \leq 10^9$, $1 \leq C \leq 10$ and $0 \leq M \leq C$ respectively. The second line contains $0 \leq B \leq 100$, followed by B lines and each of those B lines contains two integers r and c, ($1 \leq r \leq R$ and $1 \leq c \leq C$) indicating the cell position of each block.

Output

For each test cases you have to output the answer in a single line as shown in the sample output. As the answer can be very large you have to mod the output with 12345.

Sample Input

```
3
1000000000 10 0
0
1000000000 10 2
0
10202 10 2
4
10 3
11 2
20 3
20 5
```

Sample Output

```
Case 1: 1
Case 2: 4973
Case 3: 3205
```