Problem L
Down Right Chips

You have a board of size $N \times M$, with rows numbered from 1 to N from top to bottom, and columns numbered from 1 to M from left to right. Initially, there are $A_{i,j}$ chips on the tile at the i-th row and j-th column.

You will play a solitaire game on this board. In one move, you can do one of the following.

- Choose a tile not in the bottommost row with at least two chips on it. Discard one chip from the tile, and move another chip to the tile directly below it.
- Choose a tile not in the rightmost column with at least one chip on it. Move one chip from the tile to the tile directly to its right.

The game ends when there are no more moves you can make.

There will be Q changes to the board, and each of the changes will **add** W chips to the tile at the X-th row and Y-th column. After each change, calculate the minimum number of moves to end the game using the current board.

Input

The first line contains three integers N, M, and Q ($1 \le N \le 5$; $1 \le M, Q \le 100\,000$). The next N lines, each containing M integers, represent $A_{i,j}$ ($0 \le A_{i,j} \le 100\,000$). Each of the next Q lines contains three integers X, Y, and W ($1 \le X \le N$; $1 \le Y \le M$; $1 \le W \le 10\,000$) representing a change to the board.

Output

Output Q lines, each containing a single integer representing the minimum number of moves to end the game after each change.

Sample Input 1	Sample Output 1
2 3 2 0 2 1 0 1 1 1 2 1 2 3 5	5 5

Explanation of Sample 1: After the first change, you can play as follows for the minimum number of moves.

1. Move *right* on tile $(1, 2)$.
2. Move *down* on tile $(1, 2)$.
3. Move *right* on tile $(2, 2)$.
4. Move *right* on tile $(2, 2)$.
5. Move *down* on tile $(1, 3)$.

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Problem M
Predisposed

You are given two integers N and M. You are also given Q constraints in the form (X_j, Y_j).

A sequence $A = (A_1, \ldots, A_N)$ of length N is *predisposed* if and only if:

- For each $1 \leq i \leq N$, it holds that $0 \leq A_i < M$.
- For each $1 \leq j \leq Q$, the sum of all A_k where k is a multiple of X_j is equal to Y_j under modulo M. Formally, $\sum_{X_j | k} A_k \equiv Y_j \pmod{M}$.

Find the number of all possible predisposed sequences. As the answer can be quite large, compute it modulo $998\,244\,353$.

Input

The first line contains three integers N, M, and Q ($1 \leq N, M < 998\,244\,353$; $1 \leq Q \leq \min(N, 100\,000)$). Each of the next Q lines contains two integers X_j and Y_j ($1 \leq X_j \leq N$; $0 \leq Y_j < M$; $X_p \neq X_q$ for $p \neq q$) representing a constraint.

Output

Output an integer in a single line representing the number of predisposed sequences modulo $998\,244\,353$.

Sample Input 1	Sample Output 1
2 3 2 1 0 2 1	1

Explanation of Sample 1: The only predisposed sequence is $A = (2, 1)$.

Sample Input 2	Sample Output 2
100000 100000 1 100000 0	373304036

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