Chessboard

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	64 megabytes

Bobo had a chessboard with n rows and m columns. Rows are numbered by $1, 2, \ldots, n$ from top to bottom, and columns are numbered by $1, 2, \ldots, m$ from left to right. Cells are colored into black or white initially.

Bobo might perform q operations. The i-th operation changed the color (from black to white or vice versa) of the cell in the intersection of the x_i-th row and y_i-th column. He would like to know the number of connected components after each operation.

Note that cells s and t are in the same connected component if there exist cells $c_0 = s, c_1, \ldots, c_k = t$ for some k where cells c_{i-1} and c_i $(1 \le i \le k)$ share common edge and same color.

Input

The first line contains 3 integers n, m, q $(1 \le n, m \le 200, 1 \le q \le 2 \times 10^5)$.

The i-th of the following n lines contains m character $b_{i,1}, b_{i,2}, \ldots, b_{i,m}$. If $b_{i,j} = 1$ then the initial color of cell (i, j) is black, otherwise is white.

The i-th of the following q lines contains 2 integers x'_i, y'_i. The actual operation is $(x_i, y_i) = (x'_i \oplus o, y'_i \oplus o)$ where o is the number of connected components **before** the i-th operation $(1 \le x_i \le n, 1 \le y_i \le m)$.

Note that "$\oplus$" stands for bitwise exclusive-or.

Output

For each operation, an integer denotes the number of connected components.

Examples

standard input	standard output
2 2 2 01 10 5 5 0 0	2 1
1 1 1 0 0 0	1