Bull Farm

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	1024 megabytes

Arthur owns a bull farm. His business is doing so well that he has recently started to struggle to provide an adequate number of cattle stalls. There are n stalls on his farm. He also has $(n-1)$ bulls. It is important that no two bulls share a stall (otherwise they could hurt each other). Arthur has a remote control which allows him to move the bulls between stalls. Pressing a button results in moving all the bulls simultaneously. In particular, if a bull was in the j-th stall before pressing the i-th button, it moves to the $t_{i,j}$-th stall.

Arthur has to make repairs in some of the boxes, so he prepared a list of q queries. Each query asks if it is possible to manoeuvre the bulls in such a way that at the end there is no bull in the b-th stall, if at the beginning only the a-th stall was empty and one can use only the first c buttons. Remember that no two bulls can share a stall at any moment!

Input

The input consists of multiple test cases. The first line contains a single integer t ($1 \leq t \leq 2000$) denoting the number of test cases. The description of test cases follows.

Each test case begins with a line containing three integers n, ℓ, q ($1 \leq n, \ell \leq 2000$, $1 \leq q \leq 10^6$), the number of stalls, the number of buttons of the remote control and the number of queries.

In the i-th of the following ℓ lines there are n numbers $t_{i_1}, t_{i_2}, \ldots, t_{i_n}$, where t_{i_j} is the number of the stall to which the j-th bull will move after pressing the i-th button.

The i-th of the following q lines contains three numbers a_i, b_i, c_i, the parameters of the i-th query.

The numbers t_{i_j} and a_i, b_i, c_i are encoded to decrease the input size. The code of a number x is a two letter word consisting of ASCII characters $48 + \lfloor x/50 \rfloor$ and $48 + (x \bmod 50)$. The code of the three numbers is the concatenation of their codes. E.g. the word ?;;=EL encodes three numbers 761 563 1078.

It is guaranteed that the sum of n over all test cases does not exceed 2000, the sum of ℓ over all test cases does not exceed 2000 and the sum of q over all test cases does not exceed 10^6.

It is guaranteed that $1 \leq t_{i_j}, a, b \leq n, 0 \leq c \leq \ell$.

Output

For each test case, print a sequence of q characters in a new line. The i-th character should be equal to 1 if it is possible to safely move the bulls in the i-th query. It should be equal to 0 otherwise.

Examples

standard input	standard output
2 5 2 4 0305040201 0404040404 030300 020500 050102 020501 6 2 4 030603010601 010203060504 030202 060402 050602 060401	1011 0100
1 3 3 6 020202 030301 030201 020102 030203 010201 010303 020303 010202	010101