

Problem A. Confusion

Input file: `confusion.in`
Output file: `confusion.out`
Time limit: 4 seconds
Memory limit: 256 mebibytes

Sasha lives in a hall, and he has a lot of things. Before leaving for the summer vacation, he faced the problem of packing things. Sasha has B boxes, T types of things, N things of these types and Q operations with them. Help him to handle all transactions. There are two types of operations:

1. Find out how many things of t type are in the k -box.
2. Take all things of type t from the top n items of the k -th box and put them on the top of the m -th box.

Input

The first line contains two integers: N ($1 \leq N \leq 10^5$), T ($1 \leq T \leq 10^5$).

The next line contains an integer B ($1 \leq B \leq 10^5$).

Each of the next B lines describes one box. It starts from an integer n ($0 \leq n \leq 10^5$) - number of things in this box. Next n integers describe types of things in this box from the bottom to the top. It's guaranteed that the total number of things in all boxes equals to N .

Next line contains an integer Q ($1 \leq Q \leq 10^5$).

Each of the next Q lines contains description of an operation. First of all z - type of operation. If $z = 1$ then this line contains two integers: t ($1 \leq t \leq T$), k ($1 \leq k \leq B$). If $z = 2$ then this line contains four integers: t ($1 \leq t \leq T$), k ($1 \leq k \leq B$), n ($0 \leq n \leq 10^5$), m ($1 \leq m \leq B$, $m \neq k$). It is guaranteed that the number of things in k -th box isn't less than n .

Output

You should output answer for all operations of the first type in separate lines.

Examples

<code>confusion.in</code>	<code>confusion.out</code>
5 2	2
2	1
3 2 2 1	1
2 1 2	2
5	
1 2 1	
1 2 2	
2 2 1 2 2	
1 2 1	
1 2 2	