

Problem K. King of Luck

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 1024 mebibytes

The lottery “King of Luck” awards at most one winner in each round. For each round, $K!$ tickets are produced: each ticket contains K different numbers from 1 to K , and no two tickets are identical. Among the tickets produced in each round, M tickets are sold. After each round, the draw is conducted as follows. A total of N distinct numbers ($N \geq K$) are generated randomly, one by one. If, after generation of a number, the relative order of the last K consecutive generated numbers matches the numbers on any of the sold tickets, the draw ends immediately, and the corresponding ticket wins. Note that, since the draw considers only tickets that are sold, some rounds may have no winning ticket.

For instance, consider a round where 6 tickets are produced ($K = 3$). The sequences on the tickets are (1, 2, 3), (1, 3, 2), (2, 1, 3), (2, 3, 1), (3, 1, 2), and (3, 2, 1). Among them, let us say (1, 2, 3) and (1, 3, 2) are sold ($M = 2$). Assume that the following $N = 10$ distinct random numbers are scheduled to be generated: (20, 35, 10, 7, 99, 53, 72, 33, 88, 16). Then the relative order of (7, 99, 53), which is (1, 3, 2), matches the sold ticket (1, 3, 2), so this ticket wins the round.

In another scenario, consider a round where 24 tickets are produced ($K = 4$). The ticket sequences produced are (1, 2, 3, 4), (1, 2, 4, 3), (1, 3, 2, 4), ..., and (4, 3, 2, 1). Among them, let us say (1, 2, 3, 4), (1, 2, 4, 3), (3, 4, 1, 2), (4, 1, 2, 3), and (4, 2, 3, 1) are sold ($M = 5$). Assume that the following $N = 10$ distinct random numbers are scheduled to be generated: (19, 31, 9, 1, 89, 48, 63, 30, 78, 12). Then the relative order of (89, 48, 63, 30), which is (4, 2, 3, 1), matches the sold ticket (4, 2, 3, 1), so this ticket wins the round.

Given the information about a round of the lottery, including the number of produced tickets, the number sequences of the sold tickets, and the sequence scheduled to be randomly generated for the winning ticket, write a program to find the number sequence of the winning ticket.

Input

The input starts with a line containing three integers, K , M , and N ($3 \leq K \leq 10\,000$, $1 \leq M \leq \min(K!, 1000)$, $K \leq N \leq 1\,000\,000$, $3 \leq K \cdot M \leq 100\,000$), where K is the number of numbers on each ticket, M is the number of tickets sold, and N is the length of the randomly generated sequence for the round. Each of the following M lines contains K integers describing a ticket sold in the round. The final line contains N different positive integers N_i ($1 \leq N_i \leq 100\,000\,000$, $1 \leq i \leq N$) which is the number sequence for determining a winner.

Output

Print exactly one line. The line should contain the number sequence of the winning ticket. If there is no winning ticket, print 0 instead.

Examples

standard input	standard output
3 2 10 1 2 3 1 3 2 20 35 10 7 99 53 72 33 88 16	1 3 2
4 5 10 1 2 3 4 1 2 4 3 3 4 1 2 4 1 2 3 4 2 3 1 19 31 9 1 89 48 63 30 78 12	4 2 3 1
3 3 7 1 3 2 2 3 1 2 1 3 11 22 33 44 55 66 77	0