Can you search?

Shimlin loves to play with array. One day she was playing a game of finding the smallest number in an array but soon she got bored as the game was too easy for her. She asked her ghost friend to make the game more interesting. After thinking for a while the ghost came up with an idea. The ghost will give her some queries. In each query the ghost will tell her a number b_i (less than the given array size) and Shimlin will have to answer the smallest number among first b_i elements of the given array.

The ghost gave you the responsibility to find the correct answer of each query so that he can match the answer with Shimlin's answer.

Input

Input starts with **T(1<=T<=100)**, denoting the number of test case.

Each of the test case contains 3 line.

In the first line there are two positive integer numbers **n** and **q** $(1 \le n \le 10\text{^}5, 1 \le q \le 10\text{^}5)$ — size of the array and number of queries.

The second line contains **n** integers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10\text{^}5)$ — elements of the array.

The third line contains **q** integers $b_1, b_2, ..., b_q$ $(1 \le b_i \le n)$ — range of query.

Output

For each query print one integer in a line— the minimum number in that range.

Example

Input:
1
4 2
2 2 3 1
3 4

Output:
2
1