

Problem F. Búsqueda Binaria 2

Time Limit	1000 ms
Mem Limit	1572864 kB
Code Length Limit	50000 B
OS	Linux

Given an array of N integers in non-decreasing order, you're going to receive Q queries. Each of them contains a single integer. For each query use binary search to respond with the index of the last occurrence of the given integer in the array.

Input

In the first line there is an integer N ($1 \leq N \leq 10^5$) and an integer Q ($1 \leq Q \leq 10^5$).

In the second line, N integers separated by a single space. Each integer takes a values between 1 and 10^9 .

Then Q lines follows, each one with an integer between 1 and 10^9 , representing a query.

Output

For each query (in the same order they were given) print a line with a single integer, the index of the last occurrence of the corresponding element, or -1 if it is not in the given array.

Example

Input	Output
10 4 1 3 4 5 5 6 7 8 8 17 3 5 9 1	1 4 -1 0