Binary Search Near

Time limit: 1 sec

Given a sorted array of **N** elements of ***distinct*** positive integers, our task is to process **M** queries. Each query is a number **Xi** and we have to find a largest member of A not exceeding **Xi**.

Input

- The first line of input contains two integers **N**and **M** $(1 \le N, M \le 100\,000)$ that give the number of element in the array and the number of queries.
- The second line contains **N** positive integer not more than 1,000,000 in strictly increasing order representing the elements in the array.
- The third line contains **M** real numbers representing the queries.

Output

There must be exactly **M** lines. Each line must contain the answer of each query where it is either the largest element of the array not exceeding **Xi** or a value of -1 indicating that no such element can be found.

Remark

You shall not use the standard library of the languages that provides binary search, hashing or sorting, either directly or indirectly.

Example

Input	**Output**
4 7 14 15 20 30 10 11 14 15 16 21 68	-1 -1 14 15 15 20 30