Next Largest In a Range

Given an array A(A0, A1…. An) of n integers. Your task is to find the smallest number larger than a given no. X in the range [l,r] inclusive. Indexing is 0 based. If there is no greater no. than X in the specified range output -1.

For example: A=[1 2 3 8 15 6 7 1 8 7], l=1 and r=5

For X=1 answer should be 2
For X=2, answer should be 3
For X=5, answer should be 6
For X=20, answer should be -1.

Input

First line contains for integers n, l, r and Q, Q denotes no. of queries. Next line contains n integers denoting array A. In the next line, Q space separated integers are given each integer represents the value X for a query.

Output

Print the just largest no. for each query.

Constraints

1<=n<=1000
1<=A[i]<=10^5
1<=X<=10^5
1<=Q<=1000
0<=l, r<n

Example

Input:

10 1 5 4

1 2 3 8 15 6 7 1 8 7
1 2 5 20

Output:
2
3
6
-1