Before attempting the problem, you are **required** to thoroughly read the reference material - https://www.hackerearth.com/practice/data-structures/trees/binary-search-tree/tutorial/.

Statement

Create a binary search tree from list A containing N elements, inserting elements in the same order as the input. Print the pre-order traversal of the sub-tree with root node data equal to Q (inclusive of Q), separating each element by a space.

Input

The first line contains a single integer N, the number of elements. The second line contains N space-separated integers. The third line contains a single integer Q, the element whose sub-tree is to be printed in pre-order form.

Output

Print K integers (each on a new line), where K is the number of elements in the subtree of Q (Q inclusive).

Constraints

- $1 \leq N \leq 10^3$
- $-10^9 \leq value of nodes \leq 10^9$

Sample

Sample Input	Sample Output
4	3
2 1 3 4	4
3	