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PROBLEMS SUBMIT STATUS STANDINGS CUSTOM TEST

D. Permutation Transformation

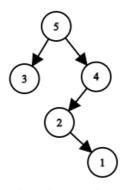
time limit per test: 2 seconds memory limit per test: 256 megabytes input: standard input output: standard output

A permutation — is a sequence of length n integers from 1 to n, in which all the numbers occur exactly once. For example, [1], [3,5,2,1,4], [1,3,2] — permutations, and [2,3,2], [4,3,1], [0] — no.

Polycarp was recently gifted a permutation $a[1\dots n]$ of length n. Polycarp likes trees more than permutations, so he wants to transform permutation a into a rooted binary tree. He transforms an array of different integers into a tree as follows:

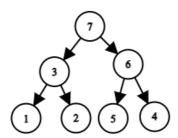
- the maximum element of the array becomes the root of the tree;
- all elements to the left of the maximum form a left subtree (which is built according to
 the same rules but applied to the left part of the array), but if there are no elements to the
 left of the maximum, then the root has no left child:
- all elements to the right of the maximum form a right subtree (which is built according to
 the same rules but applied to the right side of the array), but if there are no elements to the
 right of the maximum, then the root has no right child.

For example, if he builds a tree by permutation a=[3,5,2,1,4], then the root will be the element $a_2=5$, and the left subtree will be the tree that will be built for the subarray $a[1\dots 1]=[3]$, and the right one — for the subarray $a[3\dots 5]=[2,1,4]$. As a result, the following tree will be built:



The tree corresponding to the permutation $a=\left[3,5,2,1,4\right]$

Another example: let the permutation be a=[1,3,2,7,5,6,4] . In this case, the tree looks like this:



The tree corresponding to the permutation $a=\left[1,3,2,7,5,6,4\right]$.

Let us denote by d_v the depth of the vertex a_v , that is, the number of edges on the path from the root to the vertex numbered a_v . Note that the root depth is zero. Given the permutation a, for each vertex, find the value of d_v .

Input

The first line contains one integer t ($1 \leq t \leq 100$) — the number of test cases. Then t test cases follow.

Codeforces Round #702 (Div. 3)

Finished

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dfs and similar implementation divide and conquer *1200 No tag edit access

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The first line of each test case contains an integer n (1 $\leq n \leq$ 100) — the length of the permutation.

This is followed by n numbers a_1, a_2, \ldots, a_n — permutation a.

Output

For each test case, output n values — d_1, d_2, \ldots, d_n .

Example



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