Coding of Permutations

KRZYSZTOF DIKS

Coding of Permutations

Every permutation A = (a1, …, an) of number 1, …, n can be encoded by a sequence B = (b1, …, bn) in which bi equals the number of all aj such that j<i and aj>ai, for i = 1, … ,n,

Example

The sequence B = (0, 0, 1, 0, 2, 0, 4) is the code of the permutation A= (1, 5, 2, 6, 4, 7, 3).

Task

Write a program that

-> reads from the input the length n and the successive elements of the sequence B.

-> examines whether the sequence is a code of some permutation of the numbers 1, …, n.

-> if so, finds that permutation and writes it to the output, or otherwise writes to the output one word: NIE (Polish for no).

Examples

Input:

7

0 0 1 0 2 0 4

Output:

1 5 2 6 4 7 3

Examples

Input:

4

0 2 0 0

Output:

NIE