B. Spoilt Permutation

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

Vasya collects coins: he has exactly one coin for every year from 1 to n. Naturally, Vasya keeps all the coins in his collection in the order in which they were released. Once Vasya's younger brother made a change — he took all the coins whose release year dated from l to r inclusively and put them in the reverse order. That is, he took a certain segment $[l, r]$ and reversed it. At that the segment's endpoints did not coincide. For example, if $n = 8$, then initially Vasya's coins were kept in the order `1 2 3 4 5 6 7 8`. If Vasya's younger brother chose the segment $[2, 6]$, then after the reversal the coin order will change to `1 6 5 4 3 2 7 8`. Vasya suspects that someone else could have spoilt the permutation after his brother. Help him to find that out. Check if the given permutation can be obtained from the permutation `1 2 ...` n using exactly one segment reversal. If it is possible, find the segment itself.

Input

The first line contains an integer n ($1 \le n \le 1000$) which is the number of coins in Vasya's collection.
The second line contains space-separated n integers which are the spoilt sequence of coins. It is guaranteed that the given sequence is a permutation, i.e. it contains only integers from 1 to n, and every number is used exactly 1 time.

Output

If it is impossible to obtain the given permutation from the original one in exactly one action, print `0 0`. Otherwise, print two numbers l r ($1 \le l < r \le n$) which are the endpoints of the segment that needs to be reversed to obtain from permutation `1 2 ...` n the given one.

Examples

input
8 1 6 5 4 3 2 7 8
output
2 6

input
4 2 3 4 1
output
0 0

input
4 1 2 3 4
output
0 0