Statement Submissions Questions

Monokeros

Time limit: *2500 ms*
Memory limit: *256 MB*

The true tyrant, mr. W has given Tiranca a new problem: you are given an initially empty binary search tree and a sequence of numbers $(x_1, x_2, ..., x_N)$. A binary search tree is a **binary tree**, that stores a value in each node and respects the following rules:

- the value stored in its left child is smaller or equal to the value of the node
- the value stored in its right child is strictly greater than the value of the node

Your task is to insert these numbers in the binary search tree (in the given order) and output the depth (edge-distance from the node to the root) of the newly added node after each insertion. An insertion goes like this:

```
1  insert_value(current_node,
       new_value):
2      if new_value <= value
           (current_node):
3          if the left child of
               current_node exists:
4              insert_value
                   (left_child
                   (current_node),
                   new_value)
5          else:
6              // create a new node
                   with the
                   new_value and
                   place it as
                   current_node's
                   left child
7      else:
8          if the right child of
               current_node exists:
9              insert_value
                   (right_child
                   (current_node),
                   new_value)
10         else:
11             // create a new node
                   with the
                   new_value and
                   place it as
                   current_node's
                   right child
12
```

Standard input

The first line will contain N, the number of elements in the sequence.

The second line will contain N numbers: $x_1, x_2, ..., x_N$.

Standard output

WORKSPACE / SUBMIT