Problem Description

Given a binary tree, determine if it is a valid binary search tree (BST).
Assume a BST is defined as follows:

- The left subtree of a node contains only nodes with values less than the node's value.
- The right subtree of a node contains only nodes with values greater than the node's value.
- Both the left and right subtrees must also be binary search trees.

Input format

Line1: Number of Test cases (T)
Line2 to X: First Test Case’s binary tree structure (refer section below for the format)
LineX+1 to Y: Second Test Case’s binary tree structure and so on.

Output format

Print 'Yes' if the tree is a valid BST, else print 'No', for every Test Case on a separate line.

Constraints

1 <= T <= 1000
1<= Number of Nodes <= 10000
It is guaranteed that the sum of Number of tree nodes across all test cases will be less than 500000.

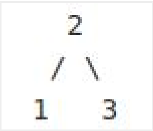
Sample Input 1

```
1
3
2 1 3
1 2 3
2 -1 -1
3 -1 -1
```

Sample Output 1

```
Yes
```

Explanation 1



```
   2
  / \
 1   3
```

The root node's value is 2 which is greater than 1 and lesser than 3. Therefore it is a valid BST.

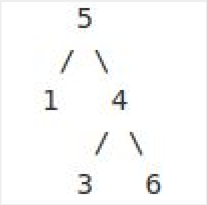
Sample Input 2

1
5
5 1 4 3 6
1 2 3
2 -1 -1
3 4 5
4 -1 -1
5 -1 -1

Sample Output 2

No

Explanation 2



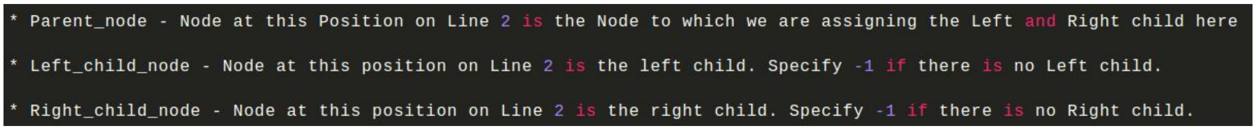
The root node's value is 5 which is greater than 4. This violates the condition of a valid BST. Therefore it is not a valid BST

Instructions to create custom input for a Binary Tree

In order to specify a binary tree that can be used as custom input to the problem, you'll need to follow this convention.

- Line 1: Number of nodes in the Binary Tree (N)
- Line 2: N space separated node values. The position of the Nodes on this line will be used to refer to them in the below lines, starting from 1.
- Line 3 to N+2: Lines specifying the child nodes for each of the N nodes

Format of each line (space separated): Parent_node Left_child_node Right_child_node

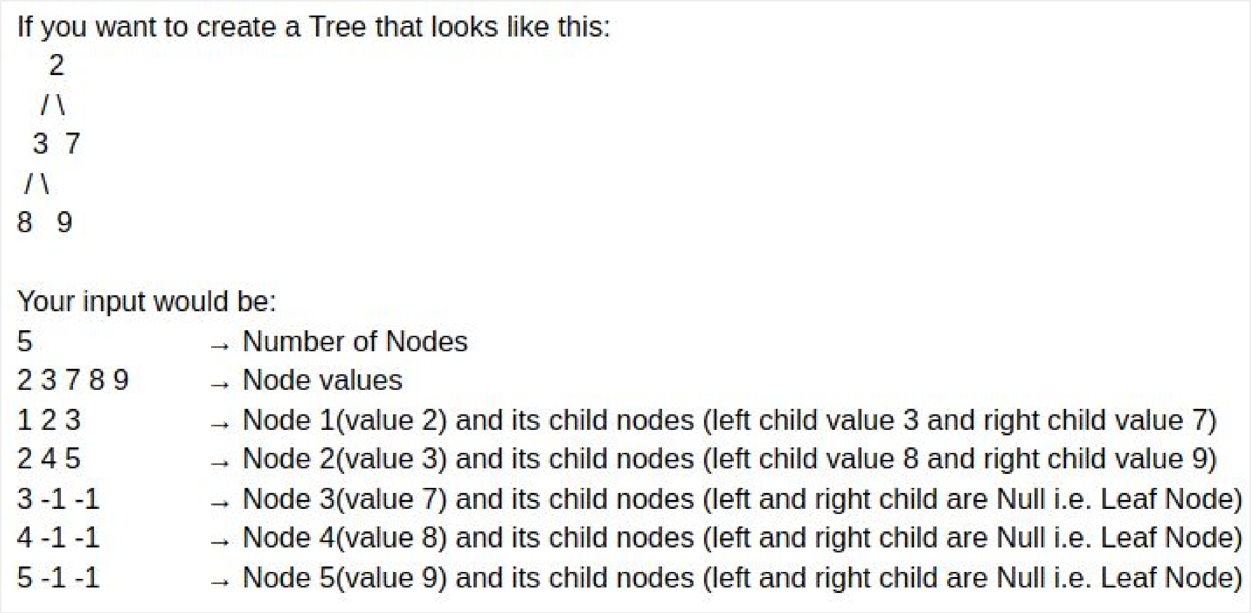


```
* Parent_node - Node at this Position on Line 2 is the Node to which we are assigning the Left and Right child here

* Left_child_node - Node at this position on Line 2 is the left child. Specify -1 if there is no Left child.

* Right_child_node - Node at this position on Line 2 is the right child. Specify -1 if there is no Right child.
```

Example1



If you want to create a Tree that looks like this:

```
   2
  / \
 3   7
/ \
8   9
```

Your input would be:

```
5           → Number of Nodes
2 3 7 8 9   → Node values
1 2 3       → Node 1(value 2) and its child nodes (left child value 3 and right child value 7)
2 4 5       → Node 2(value 3) and its child nodes (left child value 8 and right child value 9)
3 -1 -1     → Node 3(value 7) and its child nodes (left and right child are Null i.e. Leaf Node)
4 -1 -1     → Node 4(value 8) and its child nodes (left and right child are Null i.e. Leaf Node)
5 -1 -1     → Node 5(value 9) and its child nodes (left and right child are Null i.e. Leaf Node)
```