

Given a binary tree, return the node values grouped by their alignment along vertical lines.

Each node is assigned coordinates in a grid:

- A node at position  $(X, Y)$  has its left child at  $(X - 1, Y - 1)$  and its right child at  $(X + 1, Y - 1)$ .

To determine the output:

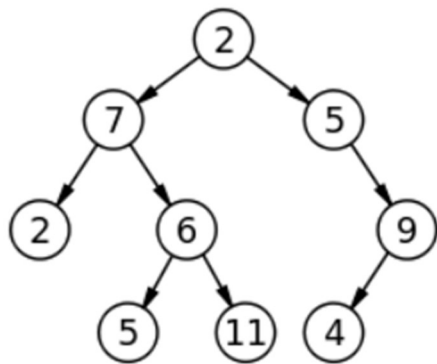
- Imagine drawing vertical lines across the grid from  $X = -\infty$  to  $X = +\infty$ .
- For each line at a specific  $X$  value, collect the node values it intersects, ordered from top to bottom by decreasing  $Y$  coordinates.

**Note:**

If two nodes share the same position, the node that appears first in the traversal will be considered to be on the left.

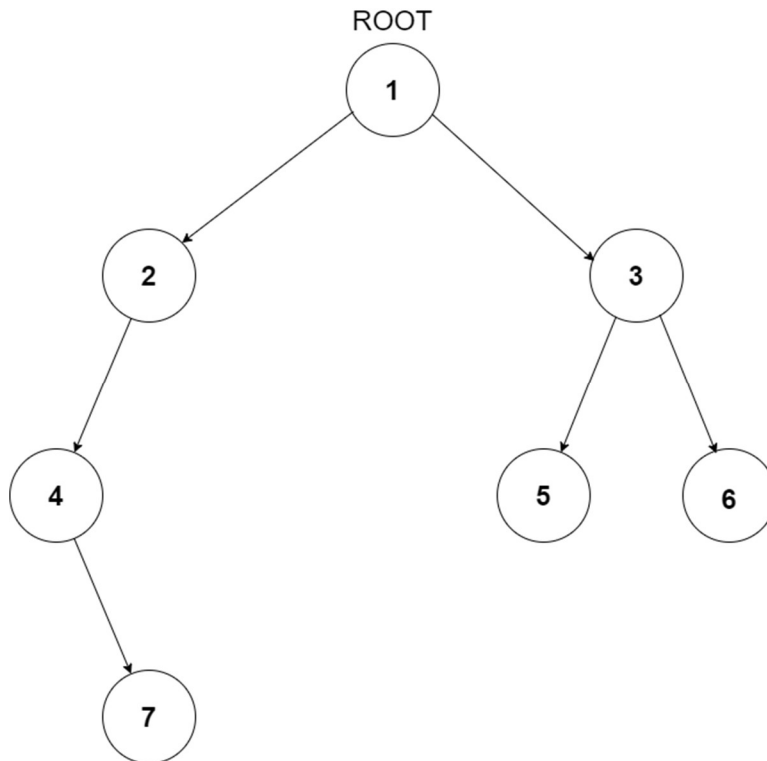
**Example:**

Consider the binary tree shown in the image below.



The traversal will be {2, 7, 5, 2, 6, 5, 11, 4, 9}.

For example, taking a tree:



```
1
2 3
4 -1 5 6
-1 7 -1 -1 -1 -1
-1 -1
```

The above format is provided to clarify how the input is structured for a given binary tree. The actual sequence, however, will be represented as a single line of values separated by a single space. For the tree depicted above, the input will be formatted as follows:

```
1 2 3 4 -1 5 6 -1 7 -1 -1 -1 -1 -1
```

### Output Format:

Print the output of each test case in a separate line.

**Constraints:**

$0 \leq N \leq 3000$

$0 \leq VAL \leq 10^5$

Where 'VAL' is the value of any binary tree node.

Time Limit: 1 sec

**Sample input**

2 1 -1 -1 -1

**Sample output**

1 2