

...

Time complexity: $O(N)$
Space complexity: $O(H)$

where N is the number of nodes in the input tree
and H is the height of the input tree

...

```
from sys import stdin, setrecursionlimit
import queue
```

```
setrecursionlimit(10 ** 6)
```

```
MIN_VALUE = -9999999999
```

```
MAX_VALUE = 9999999999
```

#Following is the structure used to represent the Binary Tree Node

```
class BinaryTreeNode:
```

```
    def __init__(self, data):
```

```
        self.data = data
```

```
        self.left = None
```

```
        self.right = None
```

```
class Pair :
```

```
    def __init__(self, minimum, maximum) :
```

```
        self.minimum = minimum
```

```
        self.maximum = maximum
```

```
def getMinAndMax(root) :
```

```
    if root is None :
```

```
        return Pair(MAX_VALUE, MIN_VALUE)
```

```
    leftPair = getMinAndMax(root.left)
```

```
    rightPair = getMinAndMax(root.right)
```

```
    minimum = min(root.data, leftPair.minimum, rightPair.minimum)
```

```
    maximum = max(root.data, leftPair.maximum, rightPair.maximum)
```

```
    return Pair(minimum, maximum)
```

#Taking level-order input using fast I/O method

```
def takeInput():
```

```
    levelOrder = list(map(int, stdin.readline().strip().split(" ")))
```

```
    start = 0
```

```
    length = len(levelOrder)
```

```
    if length == 1 :
```

```
        return None
```

```
    root = BinaryTreeNode(levelOrder[start])
```

```

start += 1

q = queue.Queue()
q.put(root)

while not q.empty():
    currentNode = q.get()

    leftChild = levelOrder[start]
    start += 1

    if leftChild != -1:
        leftNode = BinaryTreeNode(leftChild)
        currentNode.left = leftNode
        q.put(leftNode)

    rightChild = levelOrder[start]
    start += 1

    if rightChild != -1:
        rightNode = BinaryTreeNode(rightChild)
        currentNode.right = rightNode
        q.put(rightNode)

return root

def printLevelWise(root):
    if root is None:
        return

    inputQ = queue.Queue()
    outputQ = queue.Queue()
    inputQ.put(root)

    while not inputQ.empty():

        while not inputQ.empty():

            curr = inputQ.get()
            print(curr.data, end=' ')
            if curr.left != None:
                outputQ.put(curr.left)
            if curr.right != None:
                outputQ.put(curr.right)

        print()
        inputQ, outputQ = outputQ, inputQ

# Main
root = takeInput()

pair = getMinAndMax(root)
print(str(str(pair.minimum) + " " + str(pair.maximum)))

```