Day 23: BST Level-Order Traversal

Objective

Today, we're going further with Binary Search Trees. Check out the Tutorial tab for learning materials and an instructional video!

Task

A level-order traversal, also known as a breadth-first search, visits each level of a tree's nodes from left to right, top to bottom. You are given a pointer, $root$, pointing to the root of a binary search tree. Complete the *levelOrder* function provided in your editor so that it prints the level-order traversal of the binary search tree.

Hint: You'll find a queue helpful in completing this challenge.

Function Description

Complete the *levelOrder* function in the editor below.

levelOrder has the following parameter:

- *Node pointer root*: a reference to the root of the tree

Prints

- Print node.data items as space-separated line of integers. No return value is expected.

Input Format

The locked stub code in your editor reads the following inputs and assembles them into a BST:

The first line contains an integer, T (the number of test cases).

The T subsequent lines each contain an integer, $data$, denoting the value of an element that must be added to the BST.

Constraints

$1 \leq N \leq 20$

$1 \leq node.data[i] \leq 100$

Output Format

Print the $data$ value of each node in the tree's level-order traversal as a single line of N space-separated integers.

Sample Input

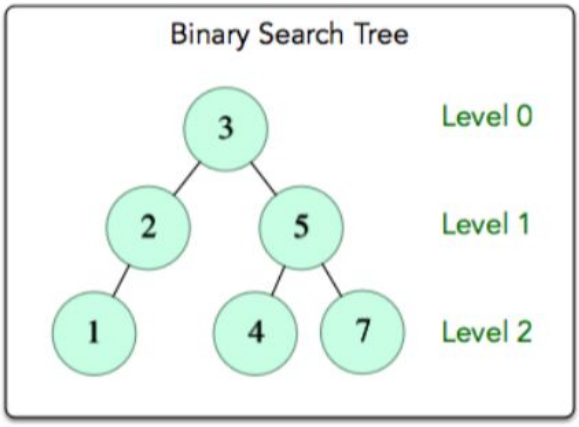
```
6
3
5
4
7
2
1
```

Sample Output

```
3 2 5 1 4 7
```

Explanation

The input forms the following binary search tree:



We traverse each level of the tree from the root downward, and we process the nodes at each level from left to right. The resulting level-order traversal is $3 \rightarrow 2 \rightarrow 5 \rightarrow 1 \rightarrow 4 \rightarrow 7$, and we print these data values as a single line of space-separated integers.