Swap Nodes [Algo] ☆

A binary tree is a tree which is characterized by one of the following properties:

- It can be empty (null).
- It contains a root node only.
- It contains a root node with a left subtree, a right subtree, or both. These subtrees are also binary trees.

In-order traversal is performed as

1. Traverse the left subtree.
2. Visit root.
3. Traverse the right subtree.

For this in-order traversal, start from the left child of the root node and keep exploring the left subtree until you reach a leaf. When you reach a leaf, back up to its parent, check for a right child and visit it if there is one. If there is not a child, you've explored its left and right subtrees fully. If there is a right child, traverse its left subtree then its right in the same manner. Keep doing this until you have traversed the entire tree. You will only store the values of a node as you visit when one of the following is true:

- it is the first node visited, the first time visited
- it is a leaf, should only be visited once
- all of its subtrees have been explored, should only be visited once while this is true
- it is the root of the tree, the first time visited

Swapping: Swapping subtrees of a node means that if initially node has left subtree L and right subtree R, then after swapping, the left subtree will be R and the right subtree, L.

For example, in the following tree, we swap children of node 1.

```
                    Depth
    1           1       [1]
   / \         / \
  2   3   ->  3   2      [2]
   \   \       \   \
    4   5       5   4    [3]
```
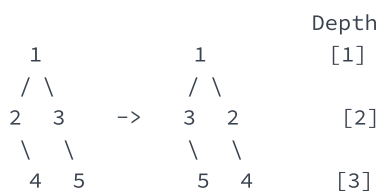
In-order traversal of left tree is 2 4 1 3 5 and of right tree is 3 5 1 2 4.

Swap operation:

We define depth of a node as follows:

- The root node is at depth 1.
- If the depth of the parent node is d, then the depth of current node will be d+1.

Given a tree and an integer, k, in one operation, we need to swap the subtrees of all the nodes at each depth h, where h ∈ [k, 2k, 3k,...]. In other words, if h is a multiple of k, swap the left and right subtrees of that level.

You are given a tree of n nodes where nodes are indexed from [1..n] and it is rooted at 1. You have to perform t swap operations on it, and after each swap operation print the in-order traversal of the current state of the tree.

Function Description

Complete the swapNodes function in the editor below. It should return a two-dimensional array where each element is an array of

```
ERROR: typecheck
OFFENDING COMMAND: setlinecap

STACK:

2
-savelevel-
-savelevel-
```