# Help Out the Scientist

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## 1. Topic

Tree Traversal

## 2. Description

**Plot**: A scientist called Liu Ma Ma is doing a research on a special kind of insect called "Arvin". Arvin is special since it is autogamous(自體受精), and bear a lot of child that has different characteristics. The scientist had built a family tree and had marked each node with a number based on their characteristics. The scientist had also done a lot of other interesting stuffs, such as found out the preorder, postorder, and layer order of the tree. One day, after watching porn, the scientist's computer was attacked by ransomware (勒索病毒). Suddenly, all of his files were encrypted and the scientist was asked to pay US$9487 to decrypt the files. That was a huge amount of money, so the scientist cannot afford it. However, there was a silver lining in the clouds. The criminals offered decrypting 3MB of files for free! The scientist had used the offer and had gained the number he marked and the child count of each node in the sequence of preorder traversal.

**Task:** Now given the number the scientist had marked and the child count of each node in the sequence of preorder traversal, please print the number the scientist had marked in the sequence of postorder traversal and layer order (BFS).

## 3. Input and output format

Input:
T N

$a_{11}$ $a_{12}$ $a_{13}$ ……

$b_{11}$ $b_{12}$ $b_{13}$ …….

$a_{21}$ $a_{22}$ $a_{23}$ ……

$b_{21}$ $b_{22}$ $b_{23}$ …….

……..

Output:(note that each $P_i$, $Q_i$ indicates a line.)

$P_1$
$Q_1$
$P_2$
$Q_2$

…….

Input format:
T: Number of test cases
N: Number of nodes of trees in this file (note that all trees in the same file have the same number of nodes)

10%: $N=1, 1\le T\le 10$

60%: $1\le N\le 1000, 1\le T\le 10$

30%: $1\le N\le 100000, 1\le T\le 10$

For the next 2T lines, the (2k-1)-th line is the preorder traversal of the tree, and the (2k)-th line is the child count of each node. ( $1\le k\le T$ )

$1\le a_{\vec{y}}, b_{\vec{y}} \le 10^9$

(Note: All inputs are valid.)

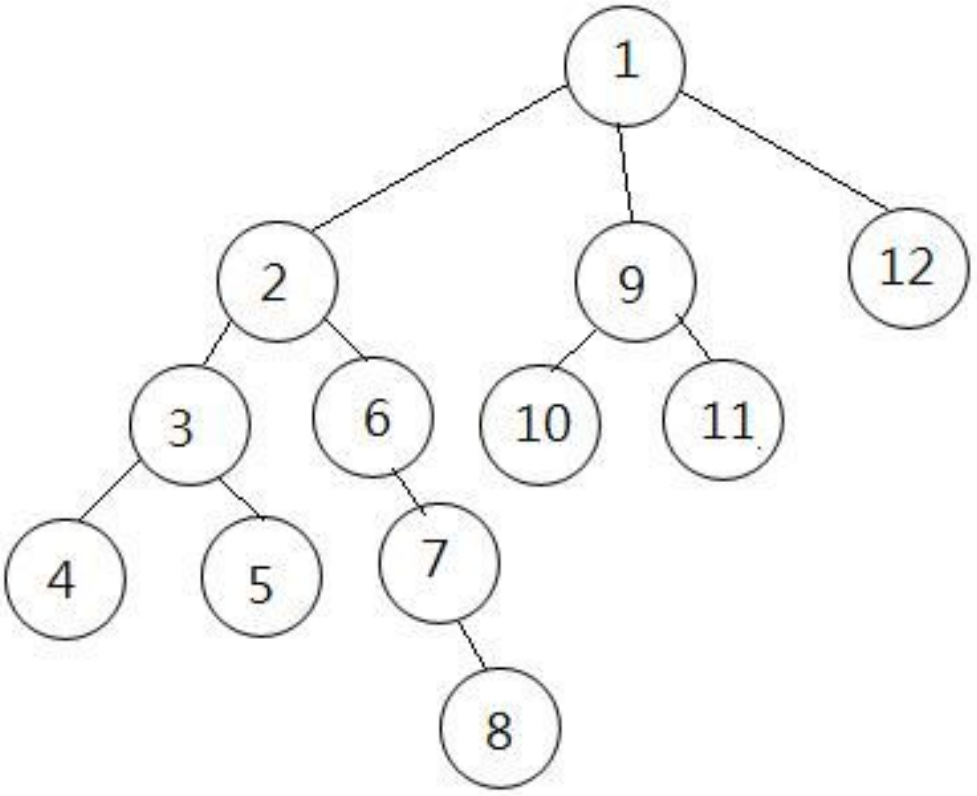
Output Format:
You have to print 2T lines, with the (2k-1)-th line indicating the postorder traversal of the a-th test case, and the (2k)-th line indicating the layer order of the a-th test case. ( $1\le k\le T$ )

## 4. Sample input and output

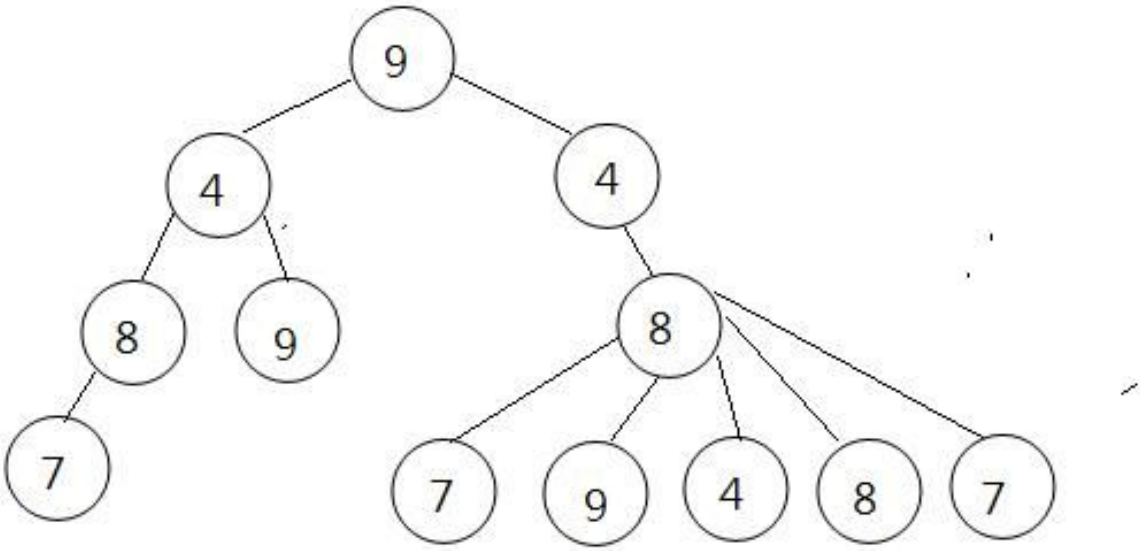
Input:
2 12
1 2 3 4 5 6 7 8 9 10 11 12
3 2 2 0 0 1 1 0 2 0 0 0
9 4 8 7 9 4 8 7 9 4 8 7
2 2 1 0 0 1 5 0 0 0 0 0

Output:(Note that there is no space at the end of each line.)
4 5 3 8 7 6 2 10 11 9 12 1
1 2 9 12 3 6 10 11 4 5 7 8
7 8 9 4 7 9 4 8 7 8 4 9
9 4 4 8 9 8 7 7 9 4 8 7

The tree for the two test cases:
First test case:




Second Test Case:




## 5. Time and memory limit

Time: 1s.

Memory: 256MB