



Section No.	01	Section Name	Coding for Product Development Companies
Q Paper No.	01	Topic Name	Problem Solving
Total Marks	30	Time Limit	90 minutes

Q.1) Delete without head pointer

You are given a pointer/reference to a node to be deleted in a linked list of size **N**. The task is to delete the node. Pointer/reference to head node is not given. You may assume that the node to be deleted is not the last node.

Input:

First line of input contains number of test cases **T**. For each test case, first line of input contains length of linked list and next line contains the data of the linked list. The last line contains the node to be deleted.

Output:

For each test case, print the linked list after deleting the given node.

Constraints:

$$1 \leq T \leq 100$$

$$1 \leq N \leq 10^3$$

Example:

Input:

```
2
2
1 2
1
4
10 20 4 30
20
```

Output:

```
2
10 4 30
```

Explanation:

Test case 1: After deleting 20 from the linked list, we have remaining nodes as 10, 4 and 30.



Q.2) Given a Binary Tree, convert it into its mirror

Input Format:

The first line of input contains T denoting the number of test cases. T test cases follow. Each test case contains two lines of input. The first line contains number of edges. The second line contains relation between nodes.

Output Format:

For each test case, in a new line, print in order traversal of mirror tree.

Your Task:

You don't have to take any input. Just complete the function mirror that takes node as parameter.

Constraints:

1 <= T <= 75

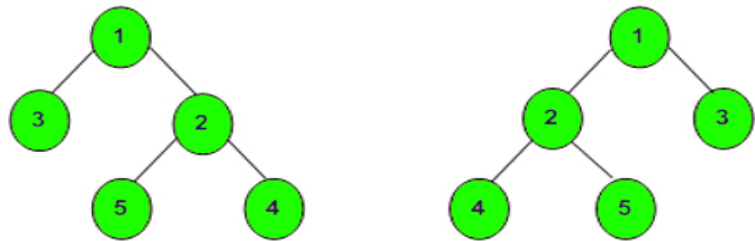
1 <= Number of nodes <= 100

1 <= Data of a node <= 1000

Example:

Input:

```
2
2
1 2 R 1 3 L
4
10 20 L 10 30 R 20 40 L 20 60 R
```



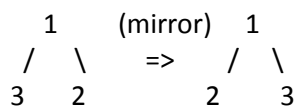
Mirror Trees

Output:

```
2 1 3
30 10 60 20 40
```

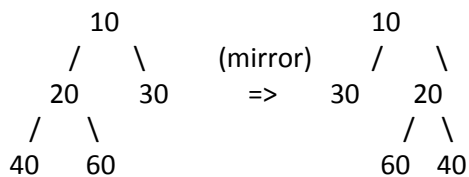
Explanation:

Testcase1: The tree is



The in order of mirror is 2 1 3

Testcase2: The tree is



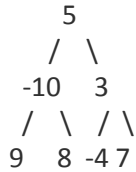
The in order traversal of mirror is 30 10 60 20 40



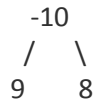
Q.3) Count Number of SubTrees having given Sum

Given a binary tree containing $N+1$ with N edges nodes and an integer X . Your task is to complete the function **count Subtrees with SumX()** that returns the count of the number of subtrees having total node's data sum equal to a value X .

Example: For the tree given below:



Subtree with sum 7:



and one node 7.

Input:

First line of input contains number of test cases T . For each test case, first line of input contains number of edges in the tree. Next line contains information as $X Y L$ or $X Y R$ which means Y is on the left of X or Y is on the right of X respectively. Last line contains sum.

Output:

For each test case count the number of subtrees with given sum.

Constraints:

$$1 \leq T \leq 10^3$$

$$1 \leq N \leq 10^3$$

$$-10^3 \leq \text{Node Value} \leq 10^3$$

Example:

Input:

```

2
6
5 -10 L 5 3 R -10 9 L -10 8 R 3 -4 L 3 7 R
7
2
1 2 L 1 3 R
5
  
```

Output:

```

2
0
  
```

Explanation:

Test case 1: Subtrees with sum 7 are [9, 8, -10] and [7].