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## Magic boy Bi Luo with his excited tree

Time Limit: 8000/4000 MS (Java/Others) Memory Limit: 131072/131072 K (Java/Others)  
Total Submission(s): 617 Accepted Submission(s): 150

### Problem Description

Bi Luo is a magic boy, he also has a magic tree, the tree has  $N$  nodes, in each node, there is a treasure, its value is  $V[i]$ , and for each edge, there is a cost  $C[i]$ , which means every time you pass the edge  $i$ , you need to pay  $C[i]$ .

You may attention that every  $V[i]$  can be taken only once, but for some  $C[i]$ , you may cost several times.

Now, Bi Luo define  $ans[i]$  as the most value can Bi Luo gets if Bi Luo starts at node  $i$

Bi Luo is also an excited boy, now he wants to know every  $ans[i]$ , can you help him?

### Input

First line is a positive integer  $T$  ( $T \leq 10^4$ ), represents there are  $T$  test cases.

For each test:

The first line contain an integer  $N$  ( $N \leq 10^5$ ).

The next line contains  $N$  integers  $V[i]$ , which means the treasure's value of node  $i$  ( $1 \leq V[i] \leq 10^4$ ).

For the next  $N - 1$  lines, each contains three integers  $u, v, c$ , which means node  $u$  and node  $v$  are connected by an edge, its cost is  $c$  ( $1 \leq c \leq 10^4$ ).

You can assume that the sum of  $N$  will not exceed  $10^6$ .

### Output

For the  $i$ -th test case, first output Case # $i$ : in a single line, then output  $N$  lines, for the  $i$ -th line, output  $ans[i]$  in a single line.

### Sample Input

1  
5

```
4 1 7 7 7
1 2 6
1 3 1
2 4 8
2 5 2
```

**Sample Output**

Case #1:  
15  
10  
14  
9  
15

**Author**

UESTC

**Source**

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Hangzhou Dianzi University Online Judge 3.0  
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