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好评 [+11]

ICPC亚洲区域赛银川赛站网络预选赛

G. Chicken with cold vegetables can't play with big tree tower

Time Limit: 2 s

Memory Limit: 128 MB

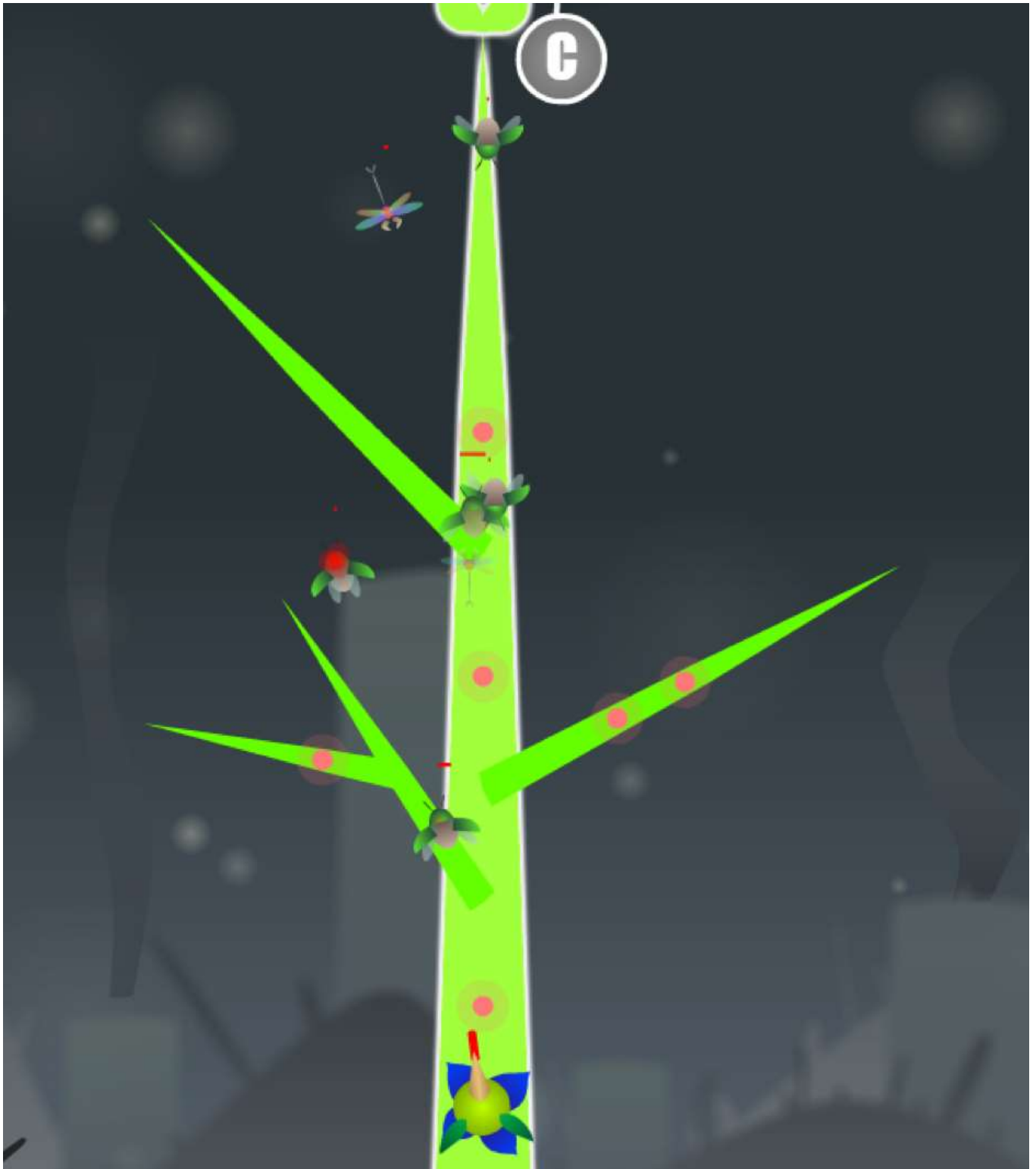
统计 (</contest/1/problem/10/statistics>)

描述

提交

返回比赛 (</contest/1>)

Description



One day, the cold vegetable chicken secretly opened the 4499 Miniclip game to find the joy of childhood.

There's a rooted tree with N nodes and 1 node as roots and M defense facilities. Each defense facility has a defense value X_i , which can provide defense value for descendant nodes whose distance from the defense facility is not more than D_i (of course, the node can also defend itself).

However, the farther the descendant node is from the node where the defense facility is located, the fewer defense values that the defense facility can provide. Assuming that the node where the defense facility is located is A , and that the existing node B is a descendant node and the distance to A node is d_i . And d_i is less than or equal to D_i , then the defense facility can provide $(X_i - d_i)$ defense values for B node.

When the defense value provided by the defense facility for a node is less than or equal to zero, the value will not be added .

The defense value of a node is the sum of defense values provided by all facilities.

Now the cold chicken wants to know what the defense value of each node is.

Input

The first line contains the single integer $N(1 \leq N \leq 100000)$ — the number of nodes of the trees

Next $N-1$ lines contain two integers u, v — the edge of the tree.

Next line contains M —the number of the defense facilities.

Next M lines contain P_i, D_i, X_i —the node where the first defense facility is located, the defense scope of the defense facility and the defense value that the defense facility can provide.

Output

Print N integers—the defense value of Node i .

Samples

Input

```
6
1 2
2 3
3 4
4 5
4 6
4
1 0 10
2 2 10
5 5 10
1 3 2
```

Output

```
12
11
9
8
10
0
```



(<http://112.126.101.92/contest/1/problem/10?locale=zh-cn>)



(<http://112.126.101.92/contest/1/problem/10?locale=en>)

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服务器时间: 2019-09-09 09:58:52