

Rapid Response Logistics

You are part of a logistics team managing relief supplies during a widespread natural disaster. The region consists of several towns, and your task is to efficiently deliver aid to all towns from a central warehouse. However, the road network between these towns has been affected by the disaster, and some routes are now longer than others due to roadblocks or damaged infrastructure. Each town is connected to other towns by roads, but the time it takes to travel between them varies based on road conditions. You need to determine the quickest time it will take to deliver supplies from the central warehouse in one of the towns (**the source**) to all other towns in the region.

Input Format:

- The first line contains a positive integer $n \in (1, 100)$, specifying the number of towns in the region.
- The next n lines provide the town number followed by the adjacent towns (indicating roads connecting them), listed in ascending order.
- The following n lines contain the town number and the travel times (in minutes) corresponding to the roads connected to each adjacent town.
- The last line contains an integer s , specifying the town number where the central warehouse is located.

Output Format:

A single line displaying the quickest delivery time (in minutes) from the warehouse town to each of the other towns, in ascending order of their town numbers. If the town is unreachable from the warehouse mark it as 9999.

Sample Testcases:

Input 1:

```
5
1 2
2 1 3 4 5
3 2 4
4 2 3 5
5 2 4
1 5
2 5 12 2 3
3 12 8
4 2 8 5
5 3 5
2
```

Sample Output 1:

5 0 10 2 3

Explanation:

- The input describes a network of five towns and the roads connecting them, along with the times (in minutes) it takes to travel between each pair of towns.
- The central warehouse is located in Town 2. The output shows the shortest delivery time from Town 2 to all other towns. For example, the delivery time to Town 3 is 10 minutes (2-4 takes 2 minutes and 4-3 takes 8 minutes and hence total 10 minutes), while it takes 5 minutes (2-1) to reach Town 1.

Input 2:

4
1 2
2 1 3
3 2
4
1 5
2 5 8
3 8
4
1

Sample Output 2:

0 5 13 9999