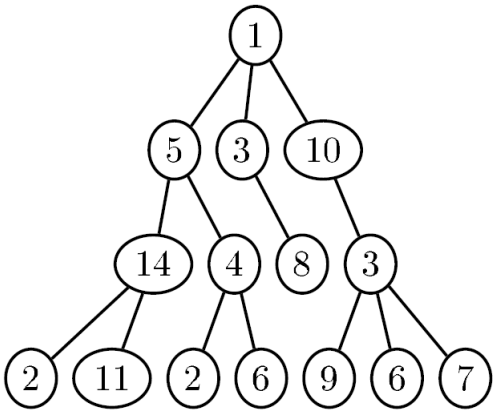
Throwing a Party *

Time limit: 5 second

Problem Description

Consider a company that has a hierarchical structure; that is, the "supervisor" relation forms a tree rooted at the president. The personnel office has ranked each employee with a conviviality rating, which is an integer. An example is as follows.



You are responsible to plan a party for the company. In order to make the party fun for all participants, you do not want an employee and his/her immediate supervisor to attend at the same time. For instance, the two people with conviviality ratings 11 and 14 in the above example are not supposed to show up together, albeit their ratings are the highest in the company. The goal is to maximize the sum of the conviviality ratings of the guests. For instance, in the above example, a party with the highest sum (i.e., 66) of conviviality has to exclude the five people with ratings 1, 3, 4, and 14.

*This problem comes from NCPC 2004, Taiwan

Technical Specifications

1. There are n ($1 \leq n \leq 1000$) people in the company, each of them has a unique ID from 1 to n. The ID of the president is 1.

2. For each $i = 1,2,\ldots,n$, the conviviality rating r_i of the person with ID i is a positive integer no more than 1000.

Input Format

The first line of the input file contains an integer indicating the number of test cases to follow.

For each test case, the first line of input contains two integers n and r_1. For each $i = 2, \ldots, n$, the i-th line of input contains two integers s_i and r_i, where s_i is the ID of the immediate supervisor of the person with ID i.

Output Format

For each test case, output the maximum sum of conviviality ratings of the guests.

Sample Input

```
2
4 7
1 5
2 6
3 8
15 1
1 5
1 3
1 10
2 14
2 4
3 8
4 3
5 2
5 11
6 2
```

6 6
8 9
8 6
8 7

Sample Output

15
66