Taskforce team

A company decided to establish a taskforce team in which assembled employees work on a secret task. The company scores its employees' talent values. The team receives the total talent value of all the members of the team.

The company wants to maximize the total team talent value. However, because the team must remain as secret as possible, the team members cannot consist by both an employee and his/her immediate superior. The company's organization follows a binary-tree chart. No employees directly connected in the binary tree can be members of the same team.

Create a program that determines which assembly of employees will maximize the total talent value.

Input Format

The input consists of the following two parts:

```
N V0
P1 V1
…
PN-1 VN-1
```

Where:

- The first line consists of two positive integers, which represent the number of employees (N) and the talent value (V_0) of the root employee (the CEO) of the organization chart.
  The root employee is considered as the "0-th" employee.
- The subsequent lines consist of N lines: the "i-th" line contains two positive integers:
  P_i - Indicates the direct supervisor of the i-th employee
  V_i - Indicates the talent value of the i-th employee

Output Format

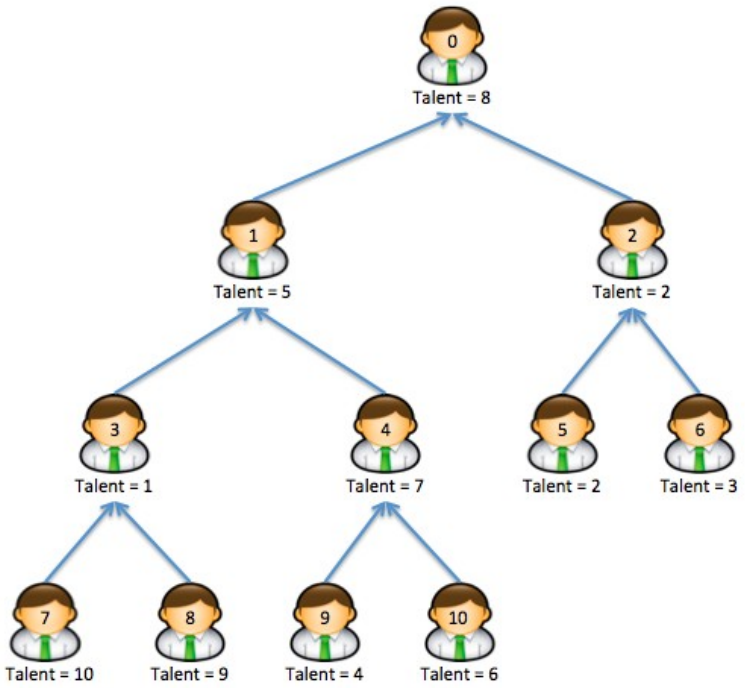
The output should consist of the following two lines:

- The first line should contain the positive integer that represents the total team talent value.
- The second line should contain the integer values (separated by a space) on the employees selected to create the team.

Note: The 0-th employee does not need to be a member of the final team.

Sample Input/Output

Given the following organization chart:



The input would be:

```
11 8
0 5
0 2
1 1
1 7
2 0
2 3
3 10
3 9
4 4
4 6
```

Note: Supervisor "1" is represented in line 2 with a talent value of 5 (0, 5).

The output should be:

```
40
0 6 7 8 9 10
```