

# The mightiest kingdom

[English](#)

[Vietnamese](#)

Once upon a time, there were  $N$  kingdoms in a far far away land, fighting with each other. King of the mightiest kingdom decided to conquer other kingdoms, looking for oil sources! The kingdom's budget is a bit limited because the money were pumped into the king's latest election campaign. The budget is initially  $M$ .

The kingdoms are numbered from 1 to  $N$ . Kingdom 1 is the mightiest. The kingdoms are connected by bidirectional roads in which there is exactly once path between any two kingdoms.

The king hired you to make a strategic plan for him. His spies gave you two numbers for each country  $i$  ( $i > 1$ ):

- $V_i$  = the value of this country's oil sources
- $C_i$  = the cost of conquering this country

A kingdom can be conquered only when it is adjacent to kingdom 1 or when you've conquered an adjacent kingdom to it (which is connected to it via a road).

Now, your task is to make a plan to conquer other kingdoms so that the total value from oil sources is maximized. Never exceed the budget!

## Input

- The first line contains two integers  $N$  ( $1 \leq N \leq 100$ ) and  $M$  ( $0 \leq M \leq 2000$ ).
- The second line contains  $N-1$  integers  $V_2, V_3, \dots, V_N$  ( $1 \leq V_i \leq 100$ ).
- The third line contains  $N-1$  integers  $C_2, C_3, \dots, C_N$  ( $0 \leq C_i \leq 30$ ).
- Each line in the next  $N-1$  lines contains two integers  $u, v$  representing a road.

## Output

A single integer that is the maximum value of oil sources the Mightiest King can get from conquering other countries.

## Example

### Input

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

**Output**

62

**Input**

3 1

1 1

1 0

1 2

2 3

**Output**

2