Problem B: Rescue by Rail

The authorities of Alertland, a volcanic island, are always concerned with the security of the people. One of the major issues is the movement of inhabitants to the only safe region on the island in case of a massive volcanic eruption.

A solution the government started studying lies in transporting everybody by train. The island is divided into small regions, each with a train station quickly reachable on foot, by bicycle or by car. The idea is that all people in an unsafe region and those arriving by train from another region would take a train that would transport them to a new region. Although the data collected so far is not enough to take into account all the details, two figures for each region have already been estimated:

- the *population size*;
- the *departure capacity*, which is the maximum number of people that can catch a train at the train station of the region.

Notice that, for every unsafe region, not only the population in the region but also all people in transit (those arriving by train from another region) should catch a train at the region train station.

On Alertland, trains are truly modular because, instead of being pulled by locomotives, each carriage has its own engine. As a consequence, if there are direct links from a region X to k distinct regions, any distribution of passengers among these k lines is viable provided the total number of people carried does not exceed the departure capacity of X.

Can you verify that this rescue by rail allows the entire population to end up in the safe region?

Task

Write a program that, given the railway network (stations and direct links), the population size and the departure capacity of each region, and the safe region, computes the maximum amount of population that can reach the safe region.

Input

The input first line has two integers: R, which is the number of regions, and L, which is the number of direct links (by rail) between regions. Regions are identified by integers, ranging from 1 to R.

R lines follow. The ith of these lines contains two integers, p_i and d_i, which are the population size and the departure capacity of region i, respectively (for every $i = 1, \ldots, R$).

Each of the following L lines has two distinct integers, r_1 and r_2, which indicate that there is a two-way direct link between regions r_1 and r_2.

The last line has a single integer, S, which is the safe region.

Constraints

$2 \leq R \leq 1\,000$	Number of regions
$1 \leq L \leq 5\,000$	Number of direct links between regions
$1 \leq p_i \leq 10\,000$	Population size of region i (for $i = 1, 2, \ldots, R$)
$1 \leq d_i \leq 300\,000$	Departure capacity of region i (for $i = 1, 2, \ldots, R$)

Output

The output consists of a single line with an integer, representing the maximum amount of population that can end up in the safe region.

Sample Input 1

```
5 6
1000 1050
5000 6000
350 320
2100 2100
780 900
2 4
2 3
2 5
4 1
5 3
1 5
4
```

Sample Output 1

```
9150
```

Sample Input 2

```
5 5
1000 1050
5000 6000
350 320
2100 2100
780 900
2 4
2 5
4 1
5 3
1 5
4
```

Sample Output 2

```
9000
```