Mission

Introduction

The news from the forgotten Planet of A-Ghone State spread around the world. It was said that the unknown rich deposits of peleum, a highly energetic resource, had been found and that it would allow the beetlejumpers to explore the Universum even further. Even though the peleum was located in the mountains and hence the access to it was difficult, the attempts to extract it were made. Unfortunately, someone was sabotaging the endeavor - a number of convoys with the processed resource were blown up. The committee of inquiry found out that explosives had been planted right under the noses of the observers. In order to detect the saboteurs, it was decided to review all the actions taken and to strengthen the security. The beetlejumpers created a crisis team, under the command of the well-known General Beattle, whose purpose was to make a detailed plan of action.

All the strategically important places were marked on the map of the Planet of A-Ghone State and the possible ways of observing one place from the other were listed. Since it was the mountainous area, some places were better as observation points (mountain tops) than others (valleys). Therefore, every location was rated on the scale from 1 to 10 (integer value) according to its field of vision.

What is more, the Headquarters decided to set up "independent safety maintenance units" which are also known as "calc-ay-da" units in the local dialect. Each unit could take only one observation point, provided it was not being observed by other units (the mutual observation could result in dulling "calc-ay-da" units' vigilance and thus in the failure of the mission). At the same time, observing an empty location by several units was not only possible but advisable. Such multiple control could help the Headquarters to detect the saboteurs. This part of the plan was created by General Beattle himself. It was him who specified how to measure the effectiveness of the "calc-ay-da" units' distribution using the level of stabilization. Each observed site was to be assigned a value which is the result of the multiplication of the number of units watching the place by the sum of rates of their locations. The sum of these values is the level of stabilization S for the whole area:

$S = \sum_{i=1}^{m} c_i \times t_i$, where:

- m is the number of observed locations (or places without "calc-ay-da")
- c_i for the i-th point – the number of units watching over it,
- t_i for i-th point – sum of the rates of locations, from which a point is being observed.

Warning. A unit observes at the same time all adjacent locations but the observed area does not include the place where a unit resides (there is no threat of planting a bomb there).

Problem

You have the map with all the strategically important places, their rates and connections between them, which enable the mutual observation. Using these data, decide where the "independent safety maintenance units" should be located so as to ensure a relatively high level of stabilization in the whole area.

Input data

Testing sets are to be found in the mission*.in files.

The first line contains two integer numbers N and K separated by a single whitespace. N represents the number of locations marked on the map, whereas K is the number of edges i.e., connections between them.

The second line consists of N integer numbers representing the location rates (from 1 to N).

The following K lines describe the connections between locations. Each line contains two numbers (separated by space) representing the connected places. Each connection allows observing in both directions. Places are numbered starting from 1. Each connection is given only once and connects different locations.

$$1 \leq N \leq 200$$
$$1 \leq K \leq 10000$$

Output data

The first line should contain a single number R, which represents a number of locations occupied by the independent units.

The second line should contain R numbers separated by whitespaces. Each of them corresponds to the number of place occupied by the "calc-ay-da". Numbers cannot be repeated and should be in ascending order.

The third line should consists of the stabilization level S calculated for a given units distribution.

Example

For the following input data:

```
8 7
3 6 2 3 2 1 1 1
1 2
2 3
3 4
4 5
4 6
4 7
4 8
```

A possible outcome could be as follows:

```
5
2 5 6 7 8
32
```

Explanation:

Only places 1, 3, and 4 are being watched over, whereas the rest is occupied by the units. The location 1 is being observed only from the point 2 so its stabilization level equals 6. This is also the case of the point 3. The location 4 is being watched over from the points 5, 6, 7, and 8. Its stabilization level is $4 \times (2 + 1 + 1 + 1) = 20$.

$S = 1 \times 6 + 1 \times 6 + 4 \times (2 + 1 + 1 + 1) = 32$.

Score

If all of the following requirements are met:

- output data are formatted properly,
- none of the locations given in the result set are connected,
- stabilization level is calculated correctly,

the score for a particular set equals the value of the stabilization level S. Otherwise the score is 0.