Problem: PIZ
Pizzerias

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Limonia is a city full of programmers and everyone knows that pizza is the main food of programmers. Therefore, it is no surprise that a new chain of pizzerias wants to enter the Limonian market. Your task is to develop sales plan that will maximize the chain's profit.

The Limonian communication network is not really complicated. There are n junctions in the city that are numbered from 1 to n. At every junction there is one building, where programmers work, craving for pizza. Some of the junctions are connected with two-way sections of roads. It is possible to drive from one junction to any other (though, perhaps, driving through other junctions) despite the fact, that there are only $n-1$ road sections.

Because of the antitrust regulations, the Mayor of Limonia permitted letting commercial spaces for pizzerias in no more than k buildings. Moreover, in every building only one commercial space can be let. The rent costs are known for every building.

To reach as many customers as possible, you can hire one delivery man in each pizzeria. Every delivery man should be given the route he should take to deliver pizzas to other buildings. The delivery man takes off from the junction, next to which is the pizzeria building where he is hired, and after delivery, he must return to this junction. Every two consecutive junctions in his route must be connected with a road section. Delivery man can visit particular junction more than once. He can as well stay in pizzeria and not take off at all (it means that the route consisting of one junction is also correct). Of course the delivery man must be paid too — for every road section we know the cost of driving it.

With the help of sophisticated statistical methods the revenues from sales of pizza in every building have been estimated. The buildings can be visited many times, and by different delivery men too. However, in every one of them, pizza sale can be made only once.

The spaces to let should be chosen and delivery routes should be planned in such a way that the total profit (revenues of pizza sale reduced by rent and delivery costs) is maximized.

Input

In the first line of the input file there are two integers n and k ($1 \leqslant k \leqslant n \leqslant 5000$) which specify the number of junctions in the city and maximal number of commercial spaces available to let.

In the second line there are n integers $w_1, \ldots, w_n$ ($1 \leqslant w_i \leqslant 4 \cdot 10^5$); the number w_i specifies the rent cost of space in the building next to the i-th junction. In the third line there are n integers $z_1, \ldots, z_n$ ($1 \leqslant z_i \leqslant 4 \cdot 10^5$); the number z_i specifies the revenue from pizza sale in the building next to the i-th junction.

The next $n-1$ lines describes Limonian road network; in the i-th line there are three integers a_i, b_i, p_i ($1 \leqslant a_i, b_i \leqslant n,\ 1 \leqslant p_i \leqslant 4 \cdot 10^5$) which mean that there is a road section connecting junctions a_i and b_i and that the cost of driving it is p_i.

Output

In the first line of the output file there should be one integer s, which specifies the total profit for suggested plan. The answer will be accepted only if the profit is positive. In the second line of the output there should be one integer r which is the number of commercial spaces let.

Further on, r lines should be printed; the i-th line must start with the number of the junction, next to which the building is located, where we rent the i-th commercial space. Next, the route for delivery man hired in this place must be described. It should consist of one integer d which is the number of consecutively visited junctions on the route and d integers which are their numbers (the first and the last junction must be the one next to which stands the building where delivery man is hired).

Scoring

In case of the correct plan, the score for a test equals the profit s. This is a maximization problem, therefore, the higher he profit, the better. The percentage of guaranteed points is 0%.

Example

For the input data:

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5 2
2 1 2 9 3
4 2 5 1 2
1 2 1
1 3 2
1 4 2
4 5 2
```

the correct result is:

```
2
2
1 5 1 2 1 3 1
5 1 5
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Explanation of the example: The plan above assumes that commercial spaces will be rented in the buildings next to the junctions 1 and 5. The route of the delivery man hired in the first building runs through the junctions 1, 2, 1, 3 and 1; the second delivery man delivers pizza only in one building. The rent cost of commercial spaces equals 5, delivery cost equals 6 and estimated revenue equals 13. Eventually, it results in profit that equals $13 - 5 - 6 = 2$; it is not the highest possible profit though.