

4527 Vaccination Centers

To prepare for the flu pandemic, country E wants to set up some vaccination centers. There are n regions in the country, numbered $0, 1, 2, \dots, n - 1$. The costs associated with the vaccination plan are the set up cost and the administration cost. The set up cost, namely c_i , is the expense to build a vaccination center at region i , for $i = 0$ to $n - 1$. The administration cost mainly consists of the transportation cost for people to travel to nearby regions if no center established in their own region. It is certainly a difficult task to find out the set up costs and administration costs. Fortunately, the transportation bureau and the center for disease control have those numbers.

Their investigation determined that the administration cost is a function of the distance from one region to the region where the closest vaccination center resides. More specifically, if there is no vaccination center in region i and region j is the nearest region of i with a vaccination center, the administration cost of region i would be the length of the shortest path from region i to region j . It is clear that the administration cost for a region with a vaccination center will be zero. Since E is famous for its efficiency, their transportation system connects all the regions. However, the structure of the road system is a tree. That is, there is only one route from one region to another.

Now, the authority has decided that the number of vaccination centers must be smaller or equal to p . Once a set of regions V has been decided as the vaccination centers, the total set up cost will be the sum of the set up cost for each chosen region; the total administration cost will be the summation of the administration costs of all regions, and the total cost will be the sum of the total set up cost and the total administration cost. You are to write a program to select at most p vaccination centers so that the total cost is minimized.

Technical Specification

1. $3 \leq n \leq 30$.
2. $0 < p \leq 10$.
3. Let $link(i, j)$ be the distance between region i and region j that are directly connected with each other. $0 < link(i, j) \leq 10000$. $0 < c_i \leq 50000$. $c_i, link(i, j) \in N$.

Input

There are several cases in the input file. The first line of each test case contains two integers n, p separated by a space; the following line contains n numbers corresponding to $c_0, c_1, c_2, \dots, c_{n-1}$ (the set up cost for the n regions numbered from 0 to $n - 1$). Each of the next $n - 1$ lines contains three numbers separated by a space, the first two numbers of which indicate the identification numbers of two regions that are directly connected with each other, and the third number is the distance between these two regions. For example, '0 1 3' denotes $link(0, 1) = 3$.

Output

Output the total cost for each test case.

Sample Input

```
4 3
47 42 15 33
```

```
0 1 9
0 2 10
1 3 1
3 2
19 12 38
0 1 1
0 2 10
5 1
11 45 29 46 27
0 1 5
0 2 6
0 3 3
1 4 3
3 2
13 19 44
0 1 5
1 2 5
4 2
36 41 11 2
0 1 3
0 2 9
1 3 6
2 1
30911 26788
0 1 1714
4 2
38688 34803 3330 22445
0 1 6437
0 2 3051
1 3 9544
3 1
24862 17211 29621
0 1 4550
1 2 9766
2 1
36346 28049
0 1 7991
3 2
45185 3150 10078
0 1 8665
0 2 8943
```

Sample Output

```
59
24
33
28
28
28502
34901
```

31527

36040

21893