Programming in Byteland IV

You are the chief programmer of The Kingdom of Byteland. Being the greatest kingdom of earth, Byteland has a huge number of cities, n. And it also maintains a complicated road network between them. Indeed there are so many roads that there can be multiple road between two cities. Now, to recover from recession, His Royal Highness, the King of Byteland has decided to boost the economy by increasing government spending. He decided some of the roads should be upgraded. He believes those roads will be used by tourists, thus boost tourism in the country thus the economy. Now, there are a airports in the country is in the capital, the tourists will always enter the country by an airport. The tourists will only use the upgraded roads. Now the King wants you to find which roads should be upgraded such that all the cities are reachable by the tourists. Otherwise he will hang you, and save the salary he have to pay you and use that money to upgrade all the roads.

For example consider the scenario of figure 1

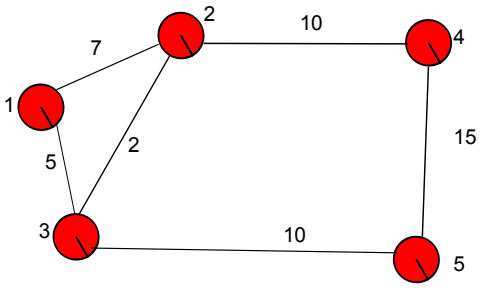

Figure 1: An example graph

Now, if only airport is 1, the solution is the road network of figure 2 (only the upgraded roads are shown). It has total cost 27.

Now, if two airports are in 1 and 5, the solution is the road network of figure 3 (only the upgraded roads are shown). It has cost 17.

Input

The input consists of several test cases. Each test case starts with a two number n and m in one line, representing number of cities, number of roads respectively. Where $n \leq 4000$, and $m \leq 20000$. Each of the roads are bidirectional. Following m lines describes a road by 3 number a,b and w, $1 \leq a \leq n$, $1 \leq b \leq n$, $1 \leq w \leq 100000$ and $a \neq b$. The roads

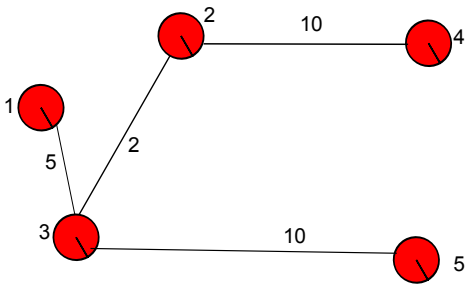

Figure 2: An example graph

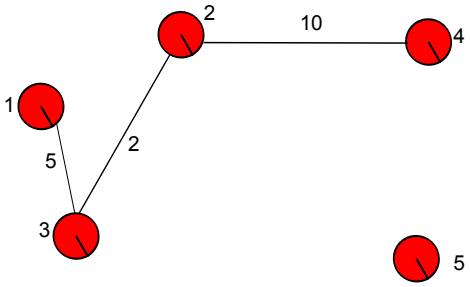

Figure 3: An example graph

connects the city a and b and its upgrading cost is w. The cities are numbered from 1 to n. Next line of the input contains a numbers a , where a is the number of airports. $1 \leq a \leq n$. Last line of input consists a numbers x_i such that $1 \leq x_i \leq n$.

The input is terminated two zeros on a line by itself.

Output Specification

For each of the cases in the input file, print one line containing a number,minimum budget.

Sample Input

```
5 6
1 2 7
1 3 5
3 2 2
4 2 10
4 5 15
3 5 10
1
1

5 6
1 2 7
1 3 5
3 2 2
4 2 10
4 5 15
3 5 10
2
1 5

5 6
1 2 7
1 3 5
3 2 2
4 2 10
4 5 15
3 5 10
3
1 4 5

5 6
1 2 7
1 3 5
3 2 2
4 2 10
4 5 15
3 5 10
1
```

```
5

5 6
1 2 7
1 3 5
3 2 2
4 2 10
4 5 15
3 5 10
5
1 2 3 4 5

0 0
```

Sample Output

```
27
17
7
27
0
```

Remarks

There will be around 50 test cases. Time limit will be around 2 seconds.

An $O(m^2)$ or even $O(n^2)$ algorithm will not pass the time limit.

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