

Programming in Byteland III

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. So there are millions of ways to get from one city to another. This has caused great confusion in byteland as they are not sure which route they should use. Now to solve this problem, His Royal Highness, the King of Byteland has decided some of the roads should be broken. He thinks road should be broken in a way such that between each pair of cities there should be an unique path. But now global recession has affected Byteland, and His Royal Highness, the King of Byteland wants to do it in minimum cost. Now given the cost of breaking each road, find the minimum cost such that after breaking those roads, there will be an unique path between each pair of cities. Otherwise he will hang you, and save the salary he have to pay you as part of cutting cost.

For example consider the scenario of figure 1

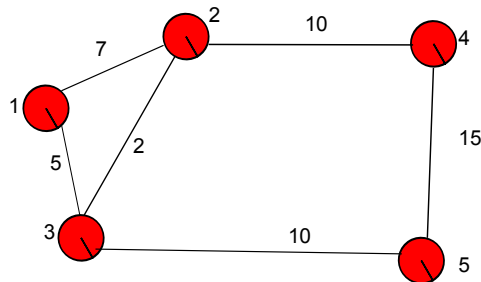


Figure 1: An example graph

Now if The solution is the road network of figure 2. It has breaking cost 7.

Note that though network of figure 3 has also unqu path between each pair of cities, Its cutting cost is 17 so it is not the correct solution.

Input

The input consists of several test cases. Each test case starts with a tow 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 connects the city a and b and its maintenance cost is w . The cities are numbered from 1 to n .

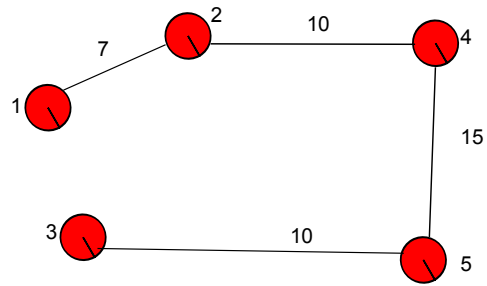


Figure 2: An example graph

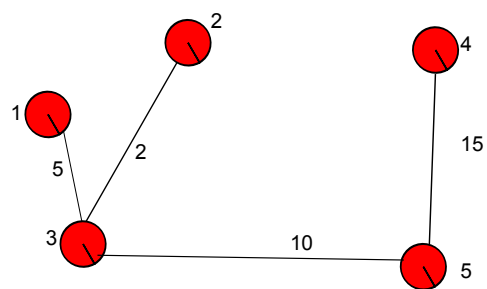


Figure 3: An example graph

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, the cost of the total breaking roads as desired by the king. If no road needs to be broken (as in third sample) this numbers should be zero. You may assume there will always a solution.

Sample Input

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

5 6
1 2 7
1 3 5
3 2 12
4 2 10
4 5 15
3 5 10

5 4
1 3 5
3 2 2
4 5 15
3 5 10

5 7
4 1 1585
4 2 482
4 5 283
4 2 1559
2 5 646
4 5 521
3 4 376

0 0
```

Sample Output

```
7
15
0
```

1286

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.

Tanaem M Moosa
tanaem.moosa@csebuuet.org