

Time Travelling Salesman

Problem Statement



A traveling salesman wants to survey N cities for business opportunities. The cities are numbered 0 through $N-1$, and he wishes to visit each of them at least once. He starts at city 0 and can end at any city. There are several bidirectional roads, each connecting two different cities and costing some amount of money to traverse. The traveling salesman also has a time machine. He can use the time machine to go back in time, without affecting which cities he is considered to have already visited. For example, suppose he has visited cities A, B, C, D, and E, in that order, and is

currently in city E. He can use the time machine to go back to city A, B, C, or D. Suppose he chooses to go back to city C. At that point, he can then go back further to city A or B, but he cannot use the time machine to go forward to city D or E. Note that going back in time will not change the fact that he is considered to have already visited cities A, B, C, D, and E.

Help the salesman to find the minimum cost required to visit all the cities.

Input

There are multiple test cases for this question.

For each input, it starts with an integer N (between 2 and 1000). On the next line, there is a line (<3000 characters) contains ALL **roads**, separated by a **space**. A road is formatted "city_a,city_b,travelcost"(no spaces in between), which means that the bidirectional road connects city a and city b, and costs travelcost to traverse. The Salesman can use the time machine any number of times, and it costs nothing to use it. In each road, a and b as described in the problem statement will be different and will each be between 0 and $N-1$, inclusive. "travelcost" is an integer between 1 and 10,000,000, inclusive. For each two different cities, there will be at most one road connecting them.

Output

For each test case, print the test case number, then print the minimum cost required to visit all the cities, or -1 if it is impossible to visit all the cities.

Sample

Input	Output
3	Case #1: 2
0,1,1 0,2,1 1,2,2	Case #2: 14
6	Case #3: -1
0,1,2 1,4,2 4,3,3 2,4,4 0,5,3	Case #4: 1438
3	
0,2,2	
4	
1,0,100 2,1,584 3,2,754	