# Welding Circuit

Program statement

As we all know, LRZ is skilled at electronic engineering. Not only being good at theoretical analysis but also paying attention to hands-on ability, LRZ became one of the top students of her university.

Recently LRZ was faced a hard problem, her friend need help for welding circuit. Of course, our warm-hearted girl LRZ agreed. But things were not without incident, the circuit her friend gave her was just a mess. It was impossible to weld whole circuit even by LRZ.

As a clever girl, LRZ noticed that the circuit can be regarded as a graph, with nodes and edges. And what was important, this circuit will work well if and only if it is constructed like a tree, in other words, it should have all the nodes connected by edges chosen from the edges.

Every edge has two parameters. First for the edge LRZ need time to weld it. Second for the edge LRZ will get friendship. Let’s define as the total time from the chosen edges and define as the total friendship she can get from the chosen edges. Now LRZ wants to know what is the max rate of she can get.

Input

The first line has two integers indicate the nodes and edges.

Then lines follows, every line has four integers indicate there is an edge connect and , and the two parameters of this edge are .

It’s guaranteed that any node in the graph directly or indirectly connects all nodes.

Output

You should output the max rate , your answer will be judged correct if and only if the error doesn’t exceed