

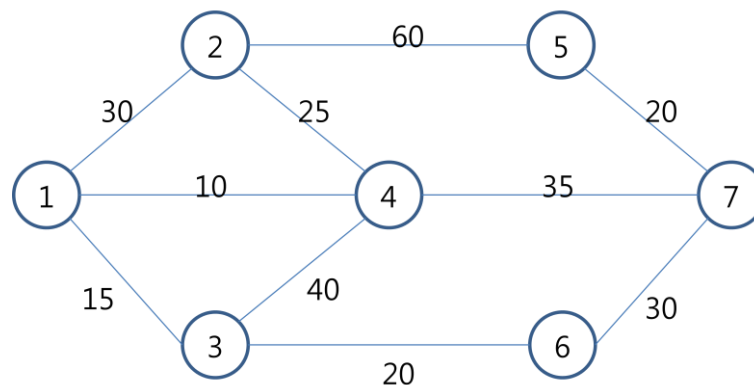
SWE2004: Principles in Programming (Spring 2013)

Programming Lab #10
Due-date : May 23th, 11:59 PM

Description

Mr. Lee works as a tourist guide in Malaysia. His current assignment is to show a group of tourists a distant city. As in all countries, certain pairs of cities are connected by two way roads. Each pair of neighboring cities has a bus service that runs only between those two cities and uses the road that directly connects them. Each bus service has a particular limit on the maximum number of passengers it can carry. Mr. Lee has a map showing the cities and the roads connecting them, as well as the service limit for each bus service.

It is not always possible for him to take all the tourists to the destination city in a single trip. For example, consider the following road map of seven cities, where the edges represent roads and the number written on each edge indicates the passenger limit of the associated bus service.



It will take at least five trips for Mr. Lee to take 99 tourists from city 1 to city 7, since he has to ride the bus with each group. The best route to take is 1 - 2 - 4 - 7.

Help Mr. Lee find the route to take all his tourists to the destination city in the minimum number of trips.

Input

The first will contain two integers: N ($N \leq 100$) and R , representing the number of cities and the number of road segments, respectively. Each of the next R lines will contain three integers ($C1$, $C2$ and P) where $C1$ and $C2$ are the city numbers and P ($P > 1$) is the maximum number of passengers that can be carried by the bus service between the two cities. City numbers are positive integers ranging from 1 to N . The $(R + 1)$ th line will contain three integers (S , D , and T) representing, respectively, the starting city, the destination city, and the number of tourists to be guided.

Output

Print the minimum number of trips required from the starting to the destination city.

Sample Input

7 10
1 2 30
1 3 15
1 4 10
2 4 25
2 5 60
3 4 40
3 6 20
4 7 35
5 7 20
6 7 30
1 7 99

Sample Output

5