POJ 1273 Drainage Ditches

**Description**

Every time it rains on Farmer John's fields, a pond forms over Bessie's favorite clover patch. This means that the clover is covered by water for awhile and takes quite a long time to regrow. Thus, Farmer John has built a set of drainage ditches so that Bessie's clover patch is never covered in water. Instead, the water is drained to a nearby stream. Being an ace engineer, Farmer John has also installed regulators at the beginning of each ditch, so he can control at what rate water flows into that ditch.   
Farmer John knows not only how many gallons of water each ditch can transport per minute but also the exact layout of the ditches, which feed out of the pond and into each other and stream in a potentially complex network.   
Given all this information, determine the maximum rate at which water can be transported out of the pond and into the stream. For any given ditch, water flows in only one direction, but there might be a way that water can flow in a circle.

**Input**

***The input includes several cases.*** For each case, the first line contains two space-separated integers, N (0 <= N <= 200) and M (2 <= M <= 200). N is the number of ditches that Farmer John has dug. M is the number of intersections points for those ditches. Intersection 1 is the pond. Intersection point M is the stream. Each of the following N lines contains three integers, Si, Ei, and Ci. Si and Ei (1 <= Si, Ei <= M) designate the intersections between which this ditch flows. Water will flow through this ditch from Si to Ei. Ci (0 <= Ci <= 10,000,000) is the maximum rate at which water will flow through the ditch.

**Output**

For each case, output a single integer, the maximum rate at which water may emptied from the pond.

**Sample Input**

5 4

1 2 40

1 4 20

2 4 20

2 3 30

3 4 10

**Sample Output**

50

**题意**

现在有m个池塘(从1到m开始编号,1为源点,m为汇点),及n条水渠,给出这n条水渠所连接的点和所能流过的最大流量，

**POJ1459Power Network（电网）**

**题目描述：**  
一个电网包含一些结点（电站、消费者、调度站），这些结点通过电线连接。每个结点u可能被供给s(u)的电能，s(u)≥0；同时也可能产生p(u)的电能，0≤p(u)≤pmax(u)；站点u 还有可能消费c(u)电能，0≤c(u)≤min( s(u), cmax(u) )；可能传输d(u)的电能，d(u) = s(u) + p(u) - c(u)。以上这些量存在以下限制关系：对每个电站，c(u) = 0；对每个消费者，p(u) = 0；对每个调度站，p(u) = c(u) = 0。  
在电网中两个结点u 和v 之间最多有一条电线连接。从结点u 到结点v 传输L(u,v)的电能，0≤L(u,v)≤Lmax(u,v)。定义Con 为c(u)的总和，表示电网中消费电能的总和。本题的目的是求Con 的最大值。  
电网的一个例子如图6.24 所示。在图(a)中，电站结点u 的标记”x/y”代表p(u) = x、pmax(u) =y。消费者结点u 的标记”x/y”代表c(u) = x、cmax(u) = y。每条电线所对应的边(u,v)，其标记”x/y”代表L(u,v) = x、Lmax(u,v) = y。在图(b)中，消费的最大电能Con = 6，图(a)列出了在此状态下各个站点的s(u)、p(u)、c(u)和d(u)。注意，如图(b)所示的电网中，电能的流动还存在其他状态，但消费的电能总和不超过6。

**输入描述：**  
输入文件中包含多个测试数据。每个测试数据描述了一个电网。每个测试数据的第1 行为4个整数：n np nc m，其中，0≤n≤100，代表结点数目；0≤np≤n，代表电站数目；0≤nc≤n，代表消费者数目；0≤m≤n2，代表传输电线的数目。接下来有m 个三元组，(u,v)z，其中u 和v为结点序号（结点序号从0 开始计起），0≤z≤1000，代表Lmax(u,v)的值。接下来有np 个二元组，(u)z，其中u 为电站结点的序号，0≤z≤10000，代表pmax(u)的值；每个测试数据的最后是  
nc 个二元组，(u)z，其中u 为消费者结点的序号，0≤z≤10000，代表cmax(u)的值。所有数据都是整数。除三元组(u,v)z 和二元组(u)z 中不含空格外，输入文件中其他位置允许出现空格。测试数据一直到文件尾。