

J - Blangkon Rescue Team

Run-time Limit: 1 second

Memory Limit: 32 MB

DESCRIPTION

Special Region of Yogyakarta is a disaster prone area, especially at the M prone-disaster point location which is the government's attention. BLARET (Blangkon Rescue Team) is a rescue team that is ready to help in case of disaster in Yogyakarta. BLARET has N branch offices spread in Yogyakarta with each office has K logistics trucks ready to help disaster-stricken areas. One day due to financial crisis Mr. Blangkon needs to rearrange BLARET's finances.

Mr. Blangkon must define T, the budget for purchasing gasoline for logistics trucks. The value of T should be as minimal as possible but when Super Disaster occurs, BLARET logistics trucks can still be utilized. Super disaster is defined when M disaster-prone point in Yogyakarta experience disaster at the same time. When disaster strikes, logistics trucks will only visit a single point of disaster because trucks and officers will standby there until the area is safe. One disaster site will also only be visited by a maximum of one truck. So when the number of available trucks is less than M, then Mr. Blangkon can only direct his trucks to the disaster point as much as the truck he has. If more trucks are available then not all trucks will be used. Locations in Yogyakarta are represented in the number 1..N+M. Location number 1..N is the BLARET office location and N+1..N+M is a disaster-prone point.

Help Mr. Blangkon to determine the minimum T value. The total value to be budgeted is the total gasoline spent on each truck that departs from its home office to the disaster site and back again to its home office.

INPUT FORMAT

The first line of the input contains three integers N, M, and K, denoting the number of BLARET offices, disaster-prone points, and logistic trucks at each office.

The second line contains E the number of roads connecting each location. Each of next E lines contains three integers, X_i , Y_i , and C_i , denoting there is a road connecting between X_i and Y_i with the cost of gasoline for C_i .

CONSTRAINTS

$1 \leq N, M \leq 50$

$1 \leq X_i, Y_i, C_i \leq 200$

$1 \leq K \leq 4$

There is a path connecting every two locations, with no two roads connect the same location.

OUTPUT FORMAT

Output an integer T, the total cost of gasoline to be budgeted.

INPUT EXAMPLE

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2 3 2
5
1 3 4
1 4 2
4 5 2
2 3 3
2 5 6
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OUTPUT EXAMPLE

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18
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