

7845 Nature Reserve

In a Nature Reserve and Wildlife Park, there are N environmental monitoring stations to monitor temperature, atmospheric pressure, humidity, fire, water quality, etc. Each station, labeled from 1 to N , uses solar panels to self-supply energy for its operations. There is a communication network consisting of several 2-way communication channels between pairs of stations. All stations are connected via this communication network.

To process data at each station, the Nature Reserve and Wildlife Park needs to install a Smart Data Analysis program (with the size of L bytes) to all environmental monitoring stations. The program is initially installed directly to S stations, then broadcasted to and installed in all other stations via the communication network.

To save energy, all communication channels are initially in an idle state and its needs to be activated to send information. It takes $E_{i,j}$ energy units to activate the communication channel between station i and station j . Once a channel is activated, it takes one energy unit to transmit one byte via this channel.

Your task is to determine the minimum energy units required to send the Smart Data Analysis program to all stations from the initial S stations.

Input

The input consists of several data sets. The first line of the input contains the number of data sets, which is a positive number and is not bigger than 20. The following lines describe the data sets.

Each data set is described by the following lines:

- The first line contains four positive integers: the number of environmental monitoring stations N , the number of 2-way communication channels M , the size of the program L (in bytes), and the number of initial stations S ($1 \leq S \leq N \leq 10^4$, $1 \leq M \leq 10^6$, $M \leq \frac{N(N-1)}{2}$, $1 \leq L \leq 10^6$).
- The second lines contain S positive integer representing the initial S stations.
- Each of the following M lines contains three positive integers i, j and $E_{i,j}$ to denote that there is a 2-way communication channel between station i and station j , and it takes $E_{i,j}$ energy units to activate this channel ($E_{i,j} \leq 10^6$).

Output

For each data set, write out on one line the minimum energy units required to send the Smart Data Analysis program to all stations from the initial S stations.

Sample Input

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1
4 6 10 1
3
1 2 4
1 3 8
1 4 1
2 3 2
2 4 5
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3 4 20

Sample Output

37