Pumping Stations

The Netherlands largely consists of polders, which are low-lying parts of the land, often reclaimed from a body of water. We have dykes as a physical barrier to ensure that the water does not enter the polder. Moreover, we have pumping stations to pump the water out of the polders during rainy periods and to pump it into the polder during droughts. There are several thousand pumping stations throughout the Netherlands. The water direction can only be changed manually at the pumping station.

It is currently December 24th, just before Christmas, and the weather forecast looks very bad. There will be heavy rain all throughout Christmas! All people working at the pumping stations have made plans to spend Christmas with their families and cannot change the water direction in the coming days. Moreover, all pumping stations are currently not pumping the water into or out of the polder.

It would be horrible if all the polders flooded during Christmas and since the pumping station workers are not available, you are the only one who can save the country! You have to go to all the pumping stations and ensure that the water gets pumped out of the polder.

Luckily, you have a map with information about roads, pumping station locations, and time to travel between road intersections. Formally, You are given a set of road intersections V and a set of pumping stations $W \subseteq V$. The set E consists of bidirectional roads which are represented by triples (v_i, v_j, d) with $v_i, v_j \in V$ and $d \in \mathbb{N}$ a natural number representing the number of minutes required to travel from road intersection v_i to v_j . Moreover, you are given a natural number t representing the time in minutes before your own Christmas party starts. It takes exactly 10 minutes to change the direction of the water at a pumping station. Each pumping station can pump $200m^3$ water out of the polder per minute. The water direction can only be changed once at every pumping station. Initially, 0 $(m^3/minute)$ gets pumped out of the polder. It is possible that there is not enough time to change the water direction at every pumping station.

We say that a pumping station route is a sequence of road intersections. It is not necessary that the pumping station route ends at the starting point. You need to determine a pumping station route that maximizes the total amount of water that can get pumped out in t minutes.

Input

- The first line has four numbers:
  - The number of road intersections, $1 \leq v \leq 10000$.
  - The number of pumping stations, $1 \leq w \leq \min(v, 12)$.
  - The number of roads, $1 \leq e \leq 30000$.

- The time limit, $1 \leq t \leq 20000$.

- Then follow n lines with three floating point numbers each; the ith line contains i_1, i_2 and i_3, the dimensions of box i.
- Next, there are e lines each containing three natural numbers. Each line contains two road intersections represented as natural numbers of at most v and one natural number of at most 1000 representing the estimated travel time.

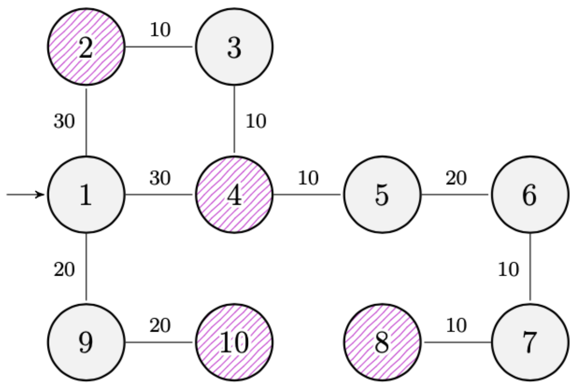
Output: The maximum amount of water in m^3 pumped out of polders at the end of the t minutes as an integer.

Sample cases

Sample 1	
Input	Output
10 4 10 300 2 4 8 10 1 2 30 1 4 30 1 9 20 2 3 10 3 4 10 4 5 10 5 6 20 6 7 10 7 8 10 9 10 20	140000

Sample 2	
Input	Output
4 4 5 80 1 2 3 4 1 2 10 1 3 10 1 4 20 2 3 30 3 4 10	30000

Explanation Here is the graph demonstrating sample test case 1:



There are 10 road intersections and 4 pumping stations. The pumping stations are located at the pink and lined-through vertices. Assume you only have 300 minutes to spare before you have to get to your Christmas party. The optimal pumping station route would be:

$1 \to 2 \to 3 \to 4 \to 5 \to 6 \to 7 \to 8 \to 7 \to 6 \to 5 \to 4 \to 1 \to 9 \to 10$

This optimal route pumps $140000m^3$ water out of the polder at the end of the 300 minutes.