Barry Putter and The Chamber of Gold Coins

Barry Putter is a famous wizard. As a famous and powerful wizard, Barry Putter is known all over the wizarding world. He is top of his class in the famous Bogwarts School of Witchcraft and Wizardry.

Today, Barry Putter is going on a treasure hunt. He received the treasure map from his beloved friend, Tom Beasley. The place that he is going to travel to has **N** secret chambers, each containing a specific amount of gold coins. These N chambers are isolated and one can only use the art of apparition to travel between the chambers. These chambers are numbered from 0 to N-1.

As a poweful wizard, fortunately, Barry Putter has mastered the art of apparation. The art of apparation is a magical form of teleportation, through which a wizard can disappear ("disapparate") from one location and reappear ("apparate") in another.

The chambers, however, are enchanted. Barry Putter can only enter the chamber from chamber 0. Furthermore, from a chamber, Barry Putter can only **apparate to a subset of the other N chambers** through a predefined apparition passage. Furthermore, no treasure hunt is without traps. The apparition passages provided by the chambers might lead Barry Putter to **somewhere dangerous far, far away.** Barry Putter definitely **does not want to choose such passage.**

In order to be able to apparate within the chambers, Barry Putter must use a lot of energy. Therefore, he can only apparate **at most T times**. From all the chambers, Barry Putter can choose to apparate outside without having to spend energy, so that he can **exit the chambers anytime** he wants **from any chamber**, taking all the gold coins he has accumulated so far.

Since Barry Putter already has the map of the N chambers, Barry decided to plan his route beforehand and he will know exactly how to maximize the number of gold coins he can take home. However, there is a catch. Although Barry Putter is a powerful wizard, he is not that good in planning routes. Therefore, he approaches you, his friend, to help him plan his route so that he can take home the most number of gold coins from his treasure hunt. He promises that he will share some of these gold coins with you, so you quickly help him to accomplish this task. Good luck!

Input
The first line of input consists of two space-separated integers, **N** and **T** (1 <= N, T <= 10), representing the number of chambers and the number of apparitions that Barry Putter can perform within the chambers respectively. The number of allowed apparitions **does not include** the apparition that Barry performs to enter and exit the chambers.

The next **N** lines contains a few space-separated integers:
1. S (0 <= **S** <= N-1), the chamber number. All chambers have distinct numbers.
2. G (1 <= **G** <= 100)., the number of gold coins inside chamber S.
3. M (1 <= **M** <= 3), the number of apparition passages going <u>out</u> from the chamber S.
4. M integers follow, each denoting the **distance of each passage** (-10 <= **distance** <= 10). If the distance is **d**, then there exists a passage **from chamber S to chamber (S + d).** If the chamber number **(S + d)** does not exist, that passage leads to a place somewhere far, far away.

It is **guaranteed** that no cycles exist, i.e. if you have visited chamber **S + d** from chamber **S**, there will be no route that will take you back to chamber **S** again, no matter which passage you choose later on.

Output
Print the maximum number of coins that Barry can get. Your output should contain a newline character.

Sample Input 1   Sample Output 1
6 5   60
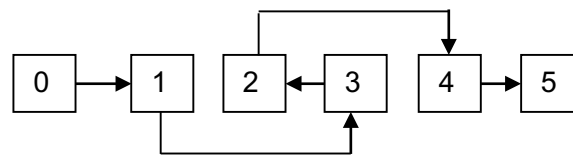0 10 1 1
1 10 1 2
2 10 1 2
3 10 1 -1
4 10 1 1
5 10 0

Sample Input 2   Sample Output 2
3 1   100
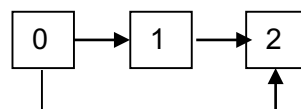0 0 2 2 1
1 50 1 2
2 100 0

Explanation
For the first sample input, the chambers are linked like this:

An optimal tour is to follow the sequence 0-1-3-2-4-5 by apparating 5 times, the maximum number of apparitions that Barry can perform within the chambers. This sequence gives Barry Putter 60 gold coins.

For the second sample input, the chambers are linked like this:

From chamber 0, you Barry apparate to either chamber 1 or 2. Going to chamber 2 gives Barry more coins (100), earning Barry a total of 100 coins from chamber 0 and 2. Barry technically can go from chamber 1 to 2 if he apparates to chamber 1 first. However, Barry can apparate only once, which is from chamber 0 to either chamber 1 or 2. After that, he needs to exit the chambers.

Skeleton
You are given the skeleton file `BarryPutter.java`.

Notes
1. You must use **recursion** to solve this problem.