Help

Introduction

The news coming from the B-32 galaxy are alarming. Some planets of that Universum region found themselves in a new danger. In their vicinity there will be moving a group of celestial bodies, which trigger a fairly heavy rain of meteors. Although their small fragments reaching the surface do not directly threaten the lives of beetlejumpers, still they may destroy the telecommunication network of each of the planets, leading to the communication chaos.

In this matter there has already intervened General Beattle himself, who decided to create special Support Units, which will be deployed on each planet and will support the residents in the fight to maintain connections of the telecommunication network. The General has limited resources – there are available only U units. Therefore to each of the planets he should send then no more than M of them. Each unit is equipped with a special force field, thanks to which it can secure exactly one existing connection between two selected points.

In order to determine the allocation of units, further analysis is required. Within a given planet for each set of communication connections there is determined the W weight, which denotes the number of all pairs of cities, which will not be able to communicate with each other in case when just this set of connections of a given planet becomes damaged. Initially, within each planet, there is a possibility of communication between any pair of the cities, if not directly, then via other connections in the network. However, there are no interplanetary connections.

At the command of the army all the numbers in the cities of the B-32 galaxy are expressed in the decimal system. Additionally, for external purposes of the analysts, each connection has been described in a unique number within the galaxy.

Problem

On each given planet determine the set of communication connections, which should be secured by General Beattle units, so that S – the sum of weights of sets from specific planets (W) – is the greatest possible. No set can be more numerous than M, and the sum of all these sets cannot count more than U.

Input data

Test sets are given in help*.in files.

The first line in the test set has three numbers: P, U and M, which denote respectively:

P – number of described planets,
U – the total number of available Support Units,
M – maximum number of units, that can be sent to one planet.

In the further part of the test set there is a description of the connection networks on planets P. Each planet is described with:

- one line which contains V and E values separated with a whitespace — the number of cities and the number of connections on this planet, respectively
- following E lines, which refer to connections themselves.

The description of each connection consists of three numbers separated with a whitespace: connection number and two numbers of cities referring thereto. On each planet the cities have independent numbers (from 1 to V). Between a pair of cities there is not more than a single connection.

$$1 < P \leqslant 200$$
$$1 < V \leqslant 2000$$
$$1 \leqslant E \leqslant 10000$$
$$1 \leqslant U \leqslant 5000$$
$$1 \leqslant M \leqslant 50$$

Output data

In the first line of the answer you should place S – the sum of weights of given sets from all the planets.

In the following P lines you should describe planets with regard to the given sets of connections, which will be secured.

Descriptions of planets should be provided in the same order as they are provided in the input file. Each description should contain only numbers of given connections on a corresponding planet or digit 0. Numbers of connections should be separated with a whitespace and sorted from low to high. In case of sending none units to a given planet a corresponding line should contain digit 0 only.

Example

For a given data set:

```
2 3 2
9 11
1 1 2
2 1 3
3 2 3
4 3 4
5 4 5
6 4 7
7 4 9
8 5 6
9 5 7
10 6 7
11 7 8
3 3
20 1 2
21 1 3
22 2 3
7 8
12 1 2
13 1 7
14 2 3
15 3 4
16 3 7
17 4 5
18 4 6
19 5 6
```

A possible answer could be as follows:

```
32
5 6
0
15
```

Score

If the following conditions are fulfilled:

- output data are correctly formatted,
- on no planet there is deployed more than M units,
- in total it was not attempted to deploy more than U units,
- numbers of connections are correct within each planet,
- S value is correctly calculated,

then the score for a given set is equal to S value. Otherwise the score is 0.