

G - Binary University
Input File: BinaryUIn.txt

Nora attends Binary University and is about to register for her spring courses. Every course – except for terminal courses – is a prerequisite for *one or two* other courses, which is how BU got its name. In order to graduate, Nora must complete several study tracks. Each study track begins with an introductory course that all students beginning the track must take. After taking a course, they must select one, and only one, of its follow-up courses (courses for which it is a prerequisite). Students cannot take a course in a study track unless they have taken its prerequisite. This course selection process continues until they complete the track by taking a terminal course (i.e., one that is not a prerequisite for any other course). Every course has a course number, with the more difficult courses having *higher* numbers.

To increase her chances for admission to medical school, Nora has decided to take the most difficult study path through the pre-med track, which is the sequence of courses that when their course numbers are added together produces the *highest* total. Your task is to determine that total, and the course numbers of the courses that make up that total.

Inputs

The first line of input will contain the number of pre-med tracks to consider, which will be followed by one data set per track. The first line of each data set will contain the number of courses in the track. This will be followed by one course description line per course, the first of which describes the introductory course. Each course description line will contain three integers separated by a space. The first integer is the course number, and the next two integers are the course numbers of its two follow-up courses. A follow-up course number of zero indicates the follow-up course does not exist.

Outputs

There will be two lines of output for each pre-med track considered. The first line will contain the total of the course numbers that make up the most difficult study path through the track. The second line of output will give the courses numbers that make up the most difficult study path, in prerequisite order.

Sample Inputs

```
2
5
100 200 700
700 0 0
200 221    210
221 0 0
210 0 0
6
100 104 150
104 187 0
150 160 159
160 0 0
187 0 0
159 0 0
```

Sample Output

```
800
100 700
410
100 150 160
```