

Problem F

Optimal Selection Problem

Input file: pf.txt

Problem Statement

Consider a set of items, where each item has an integer value, which may be positive, negative or zero. We want to select some of the items such that the sum of values is maximized. There is no restriction on the number of items to be selected. However, for each item we associate with a group of items, such that when this item is selected, each of the group members must be selected, too. Note that groups may be empty. Given a set of items, their values and the associated group items that must be selected together, you must write a program to calculate the maximum value that can be achieved and list the selected items in lexicographic order. Your program should be able to handle up to 250 items.

Input File Format

The first line of input file consists of a single number denoting the number of test cases in the file. There is a single line containing a '/' character separating two consecutive test cases. The end of the file is marked with a line containing a '.' character. For each test case, the first line has an integer n , denoting number of items in this test case. On the next n lines, each line shows the information of an item with the format: item name, item value, and followed by the group members that must be selected together with, all are separated by blank characters.

Output File Format

For each test case, output a single line showing maximum value that can be achieved and the selected items in lexicographic order.

Sample Input

```
1
5
A 3 B C
B -4 C
C 1 D
D 2 E
E -2
.
```

Sample Output

```
Maximum value: 1. The selected items: C D E
```