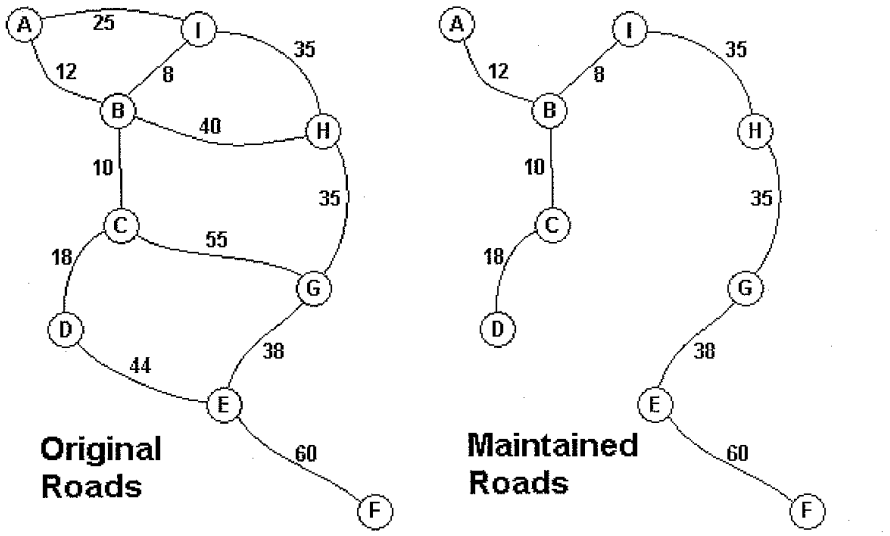
Problem 32: Jungle Roads

Source filename:	`jungle.(cpp|java)`
Input filename:	`jungle.in`
Output filename:	`jungle.out`



The Head Elder of the tropical island of Lagrishan has a problem. A burst of foreign aid money was spent on extra roads between villages some years ago. But the jungle overtakes roads relentlessly, so the large road network is too expensive to maintain. The Council of Elders must choose to stop maintaining some roads. As an example, the map above on the left shows all the roads in use now and the cost in HUBucks per month to maintain them. Of course, there needs to be some way to get to all of the villages on maintained roads, even if the route is not as short as before. The Chief Elder would like to tell the Council of Elders what would be the smallest amount they could spend in HUBucks per month to maintain roads that would still connect all of the villages. In the example above, the villages are labeled A through I. The map on the right shows the roads that could be maintained most cheaply, for 216 HUBucks per month. Your task is to write a program that will solve such problems.

Input File (jungle.in)

The input file contains several data sets, followed by a final line containing a single zero, 0.

Each data set begins with a line containing a single integer n ($1 < n < 27$), which represents the number of villages in the jungle. The next n-1 lines start with the village labels. The villages are labeled with the first n letters in the English alphabet, capitalized. The next n-1 lines start with the village labels (in alphabetical order) followed by a description of roads that serve each given village. All roads may be traveled in both directions. There is no line for the last village.

Each line for a given village starts with the village label followed by a number, k ($0 \le k \le 15$), which represents the number of roads from this village to villages with labels *later* in the alphabet. If k is greater than 0, the line continues with data for each of the k roads. The data for each road is the village label for the other end of the road followed by the monthly maintenance cost (in HUBucks) for the road. Maintenance costs will be positive integers less than 1000. All data fields in the line are separated by single blanks. The road network will always allow travel between all of the villages. Between a pair of villages there will never be more than 1 road.

Output File (jungle.out)

For each test case, your program should output a single integer that represents the minimum cost (in HUBucks per month) needed to maintain a road system that connects all of the villages.

Example Input:

```
9
A 2 B 12 I 25
B 3 C 10 H 40 I 8
C 2 D 18 G 55
D 1 E 44
E 2 F 60 G 38
F 0
G 1 H 35
H 1 I 35
3
A 2 B 10 C 40
B 1 C 20
0
```

Example Output:

```
216
30
```