

PERIMETER

The fences that surround a collection of pastures have gotten out of control. They are made up of straight segments from 1 through 200 feet long that join together only at their endpoints though sometimes more than two fences join together at a given endpoint. The result is a web of fences enclosing the pastures.

We want to straighten things out. In particular, we want to know which of the pastures has the smallest perimeter.

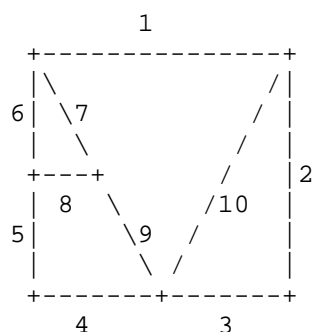
The fence segments are numbered from 1 to N (N = the total number of segments). For each segment we know the following

- the length of the segment
- the segments which connect to it at one end
- the segments which connect to it at the other end.

Happily, no fence connects to itself.

Given a list of fence segments that represents a set of surrounded pastures, write a program to compute the smallest perimeter of any pasture.

As an example, consider a pasture arrangement, with fences numbered 1 to 10 that looks like this one (the numbers are fence ID numbers):



The pasture with the smallest perimeter is the one that is enclosed by fence segments 6, 7, and 8.

INPUT FORMAT

Line 1	$N (1 \leq N \leq 100)$
Line $2..3*N+1$	<p>N sets of three line records:</p> <ul style="list-style-type: none"> • The first line of each record contains four integers: s, the segment number ($1 \leq s \leq N$) L_s length of the segment ($1 \leq L_s \leq 255$); $N1_s$ ($1 \leq N1_s \leq 8$) the number of items on the subsequent line; and $N2_s$ the number of items on the line after that ($1 \leq N2_s \leq 8$) • The second line of the record contains $N1_s$ integers, each representing a connected line segment on one end of the fence. • The third line of the record contains $N2_s$ integers, each representing a connected linesegment on the other end of the fence.

SAMPLE INPUT

```

10
1 16 2 2
2 7
10 6
2 3 2 2
1 7
8 3
3 3 2 1
8 2
44
8 1 3
39
10 5
5 8 3 1
9 10 4
66
6 1 2
5
1 10
7 5 2 2
1 2
8 9
8 4 2 2
2 3
7 9
9 5 2 3
7 8
4 5 10
10 10 2 3
1 6
4 9 5

```

OUTPUT FORMAT

The output file should contain a single line with a single integer that represents the shortest surrounded perimeter.

SAMPLE OUTPUT

12