Hasso Plattner Institut
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Sommersemester 2017

Week 12 – (Adv.) Competitive Programming

Abgabe 10.07.2016 17:00 Uhr, über das Judge-Interface

sculpture: (100 points - 2 seconds timelimit)

In 2017 there is again the Documenta in Kassel, one of the most famous art exhibitions. Artists from all over the world send their art (or maybe just rubbish, who knows...) to Kassel to present it to the huge number of visitors.

John *The Woodguy* Perth, one of the most famous artists, who works with wood, has some really nice sculpture. He designed a wooden cycle containing a lot of wood trusses (in german *Holzbalken*), each of it is painted with two colors. In the cycle two trusses can only lie next to each other, if their shared edge has the same color. The sculpture should represent the diversity of the people in the world and should increase the tolerance towards other people.

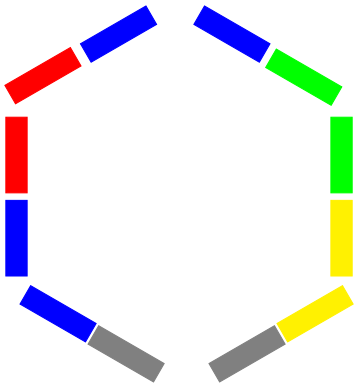

Abbildung 1: A small example of his sculpture with 6 trusses.

Since his sculpture is huge, the transportation was not so easy. Unfortunately he had to cut his sculpture in small pieces and has to send all of them on his own. Now, he is in Kassel and he would like to reconstruct his sculpture. But it looks like not all trusses made it to Kassel. Now he is frustrated, but he still wants to build his sculpture - maybe in a smaller version.

Please help him. Can he build his sculpture based on the trusses he has? In the case, that it is possible, please tell him a possible order!

Input The input contains T test cases. The first line of the input contains the integer T.

The first line of each test case contains an integer N ($5 \leq N \leq 1000$) giving the number of trusses which made it to Kassel. Each of the next N lines contains two integers describing the colors of a truss. Colors are represented by integers ranging from 1 to 50.

Output For each test case in the input first output the test case number as shown in the sample output.

Then if you apprehend that some trusses may be lost just print *"some trusses may be lost"* on a line by itself. Otherwise, print N lines with a single truss description on each line. Each truss description consists of two integers giving the colors of its two ends. For $1 \leq i \leq N-1$, the second integer on line i must be the same as the first integer on line $i+1$. Additionally, the second integer on line N must be equal to the first integer on line 1.

Since there are many solutions, any one of them is acceptable.

Print a blank line between two successive test cases.

Points There are two groups of test cases:

- For the first group worth 40 points you can assume, that $n \leq 15$.
- For the second group worth 60 points there are no additional assumptions.

Sample Input

```
2
5
1 2
2 3
3 4
4 5
5 6
5
2 1
2 2
3 4
3 1
2 4
```

Sample Output

```
Case #1
some trusses may be lost

Case #2
2 1
1 3
3 4
4 2
2 2
```