

Submissions

Checkerboard Matrix

4pt Not attempted
23/26 users correct
(88%)

9pt Not attempted
23/23 users correct
(100%)

Power Swapper

4pt Not attempted
25/25 users correct
(100%)

12pt Not attempted
19/21 users correct
(90%)

Symmetric Trees

7pt Not attempted
22/24 users correct
(92%)

18pt Not attempted
15/22 users correct
(68%)

Paradox Sort

4pt Not attempted
24/24 users correct
(100%)

28pt Not attempted
11/15 users correct
(73%)

Allergy Testing

15pt Not attempted
19/23 users correct
(83%)

35pt Not attempted
1/6 users correct
(17%)

ARAM

22pt Not attempted
3/5 users correct
(60%)

42pt Not attempted
0/3 users correct
(0%)

Top Scores

Gennady.Korotkevich	136
eatmore	123
sevenkplus	101
mystic	95
mk.al13n	89
EgorKulikov	89
kcm1700	89
vepifanov	83
dzhulgakov	83
Romka	83

Problem C. Symmetric Trees

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
7 points

Solve C-small

Large input
18 points

Solve C-large

Problem

Given a vertex-colored tree with N nodes, can it be drawn in a 2D plane with a line of symmetry?

Formally, a tree is *line-symmetric* if each vertex can be assigned a location in the 2D plane such that:

- All locations are distinct.
- If vertex v_i has color C and coordinates (x_i, y_i) , there must also be a vertex v_i' of color C located at $(-x_i, y_i)$ -- Note if x_i is 0, v_i and v_i' are the same vertex.
- For each edge (v_i, v_j) , there must also exist an edge (v_i', v_j') .
- If edges were represented by straight lines between their end vertices, no two edges would share any points except where adjacent edges touch at their endpoints.

Input

The first line of the input gives the number of test cases, T . T test cases follow.

Each test case starts with a line containing a single integer N , the number of vertices in the tree.

N lines then follow, each containing a single uppercase letter. The i -th line represents the color of the i -th node.

$N-1$ lines then follow, each line containing two integers i and j ($1 \leq i < j \leq N$). This denotes that the tree has an edge from the i -th vertex to the j -th vertex. The edges will describe a connected tree.

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1) and y is "SYMMETRIC" if the tree is line-symmetric by the definition above or "NOT SYMMETRIC" if it isn't.

Limits

$1 \leq T \leq 100$.

Small dataset

$2 \leq N \leq 12$.

Large dataset

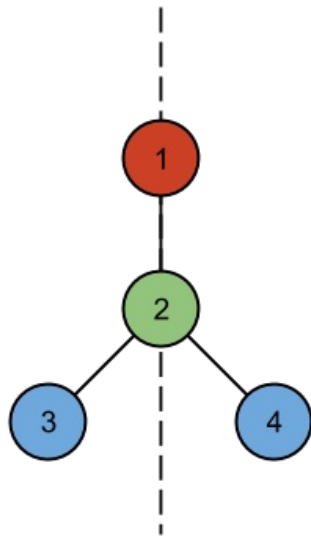
$2 \leq N \leq 10000$.

Sample

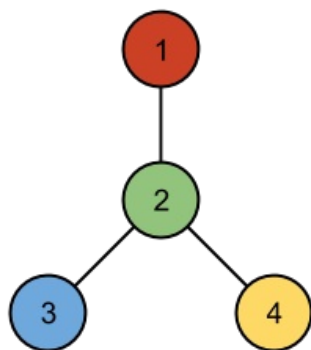
Input	Output
3	Case #1: SYMMETRIC
4	Case #2: NOT SYMMETRIC
R	Case #3: SYMMETRIC
G	
B	
B	
1 2	
2 3	
2 4	
4	
R	
G	
B	
Y	
1 2	
2 3	
2 4	
12	

Y
B
Y
G
R
G
Y
Y
B
B
B
R
1 3
1 9
1 10
2 3
3 7
3 8
3 11
4 8
5 7
6 7
8 12

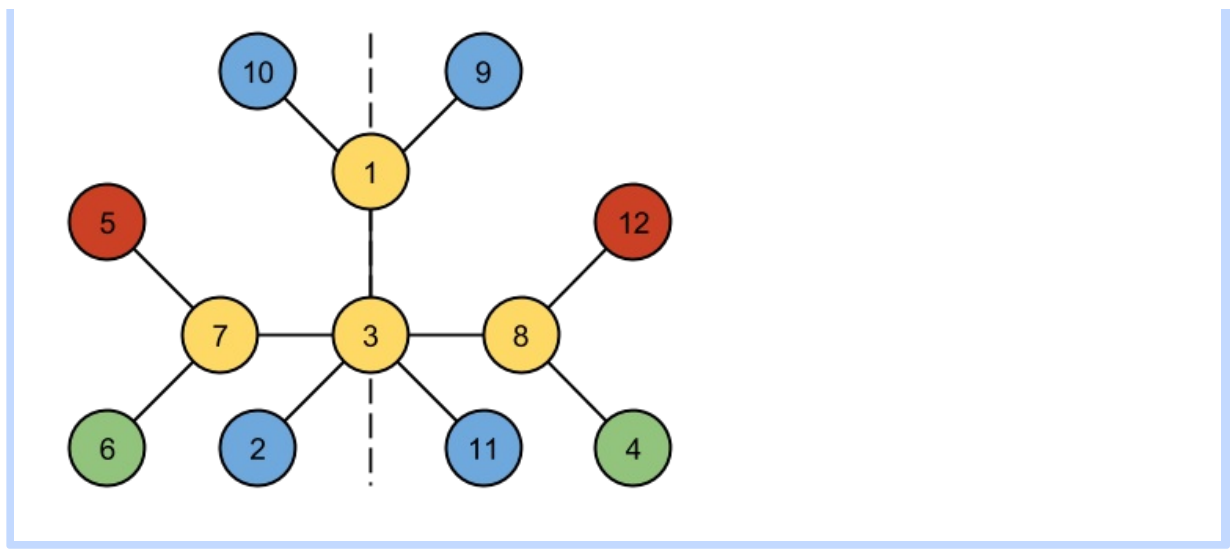
The first case can be drawn as follows:



No arrangement of the second case has a line of symmetry:



One way of drawing the third case with a symmetry line is as follows:



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