

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 D. Paradox Sort

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
4 points

Solve D-small

Large input
28 points

Solve D-large

Problem

Vlad likes candies. You have a bag of different candies, and you're going to let Vlad keep one of them. You choose an order for the candies, then give them to Vlad one at a time. For each candy Vlad receives (after the first one), he compares the candy he had to the one he was just given, keeps the one he likes more, and throws the other one away.

You would expect that for any order you choose, Vlad will always end up with his favorite candy. But this is not the case! He does not necessarily have a favorite candy. We know for any pair of candies which one he will prefer, but his choices do not necessarily correspond to a simple ranking. He may choose Orange when offered Orange and Lemon, Banana when offered Orange and Banana, and Lemon when offered Lemon and Banana!

There is a particular candy you want Vlad to end up with. Given Vlad's preferences for each pair of candies, determine if there is an ordering such that Vlad will end up with the right candy. If there is, find the lexicographically-smallest such ordering.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case will start with a line containing the integers **N** and **A**, separated by a space. **N** is the number of candies, and **A** is the number of the candy we want Vlad to finish with. The candies are numbered from 0 to **N**-1. The next **N** lines each contains **N** characters. Character *j* of line *i* will be 'Y' if Vlad prefers candy *i* to candy *j*, 'N' if Vlad prefers candy *j* to candy *i*, and '-' if *i* = *j*. Note that if *i* ≠ *j*, the *j*th character of the *i*th row must be different from the *i*th character of the *j*th row.

Output

For each test case output "Case #x: ", where *x* is the case number, followed by either "IMPOSSIBLE" or a space-separated list of the lexicographically-smallest ordering of candies that leaves Vlad with **A**.

Limits

1 ≤ **T** ≤ 100.

Small dataset

1 ≤ **N** ≤ 10.

Large dataset

1 ≤ **N** ≤ 100.

Sample

Input	Output
3	Case #1: 0 1
2 0	Case #2: IMPOSSIBLE
-Y	Case #3: 1 2 0 3
N-	
2 0	
-N	
Y-	
4 3	
-YNN	
N-YY	
YN-Y	
YNN-	

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