

A. Checkerboard Matrix

B. Power Swapper

C. Symmetric Trees

D. Paradox Sort

E. Allergy Testing

F. ARAM

Contest Analysis

Questions asked

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 A. Checkerboard Matrix

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 A-small

Large input
9 points

Solve A-large

Problem

When she is bored, Mija sometimes likes to play a game with matrices. She tries to transform one matrix into another with the fewest moves. For Mija, one move is swapping any two rows of the matrix or any two columns of the matrix.

Today, Mija has a very special matrix **M**. **M** is a **2N** by **2N** matrix where every entry is either a 0 or a 1. Mija decides to try and transform **M** into a *checkerboard matrix* where the entries alternate between 0 and 1 along each row and column. Can you help Mija find the minimum number of moves to transform **M** into a *checkerboard matrix*?

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 next **2N** lines each contain **2N** characters which are the rows of **M**; each character is a 0 or 1.

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the minimum number of row swaps and column swaps required to turn **M** into a *checkerboard matrix*. If it is impossible to turn **M** into a checkerboard matrix, y should be "IMPOSSIBLE".

Limits

1 ≤ **T** ≤ 100.

Small dataset

1 ≤ **N** ≤ 10.

Large dataset

1 ≤ **N** ≤ 10³.

Sample

Input	Output
3	Case #1: 0
1	Case #2: 2
01	Case #3: IMPOSSIBLE
10	
2	
1001	
0110	
0110	
1001	
1	
00	
00	

In the first sample case, **M** is already a *checkerboard matrix*.

In the second sample case, Mija can turn **M** into a *checkerboard matrix* by swapping columns 1 and 2 and then swapping rows 1 and 2.

In the third sample case, Mija can never turn **M** into a *checkerboard matrix*; it doesn't have enough 1s.

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