**Code Jam 2009 - Round 2**

# Crazy Rows

## Problem

You are given an **N** x **N** matrix with 0 and 1 values. You can swap any two *adjacent* rows of the matrix.

Your goal is to have all the 1 values in the matrix below or on the main diagonal. That is, for each X where 1 ≤ X ≤ N, there must be no 1 values in row X that are to the right of column X.

Return the minimum number of row swaps you need to achieve the goal.

## Input

The first line of input gives the number of cases, **T**. **T** test cases follow.
The first line of each test case has one integer, **N**. Each of the next **N** lines contains **N** characters. Each character is either 0 or 1.

## Output

For each test case, output

```
Case #X: K
```

where **X** is the test case number, starting from 1, and **K** is the minimum number of row swaps needed to have all the 1 values in the matrix below or on the main diagonal.

You are guaranteed that there is a solution for each test case.

## Limits

Time limit: 30 seconds per test set.
Memory limit: 1 GB.
1 ≤ **T** ≤ 60

## Small dataset

1 ≤ **N** ≤ 8

## Large dataset

1 ≤ **N** ≤ 40

## Sample

| Sample Input | Sample Output |
| --- | --- |
| 3<br>2<br>10 | Case #1: 0<br>Case #2: 2<br>Case #3: 4 |

```
11
3
001
100
010
4
1110
1100
1100
1000
```