

Round 3 2011

[A. Irregular Cakes](#)[B. Dire Straights](#)[C. Perpetual Motion](#)**[D. Mystery Square](#)**[Contest Analysis](#)[Questions asked](#)**Submissions**

Irregular Cakes

7pt	Not attempted 365/378 users correct (97%)
7pt	Not attempted 347/365 users correct (95%)

Dire Straights

4pt	Not attempted 338/374 users correct (90%)
12pt	Not attempted 267/315 users correct (85%)

Perpetual Motion

5pt	Not attempted 209/218 users correct (96%)
24pt	Not attempted 91/99 users correct (92%)

Mystery Square

10pt	Not attempted 317/342 users correct (93%)
31pt	Not attempted 1/46 users correct (2%)

Top Scores

linguo	84
nika	69
winger	69
zyz915	69
misof	69
andrewzta	69
rng..58	69
mystic	69
ACRushTC	69
natalia	69

Problem D. Mystery Square

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
10 points

Solve D-small

Large input
31 points

Solve D-large

Problem

I have written down a large perfect square in binary, and then replaced some of the digits with question marks. Can you figure out what my original number was?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow, one per line. Each line contains **S**: a perfect square written in binary, but with some of the digits replaced by question marks.

Output

For each test case, output one line containing "Case #x: **N**", where x is the case number (starting from 1) and **N** is a perfect square written in binary, obtained by replacing each '?' character in **S** with either a '0' character or a '1' character.

Limits $1 \leq T \leq 25$.**S** begins with '1'.**S** contains only the characters '0', '1', and '?'.In every test case, there is exactly one possible choice for **N**.**Small dataset****S** is at most 60 characters long.**S** contains at most 20 '?' characters.**Large dataset****S** is at most 125 characters long.**S** contains at most 40 '?' characters.**Sample**

Input	Output
3	Case #1: 1001
1???	Case #2: 1
1	Case #3: 1011110110000100001
10???110??00??1000??	

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