Sudoku

Everybody loves them and Lea is crazy about them as well: Sudokus. Recently, Lea bought the new book SUKODU 42 (Super-Ultra-Killer-Omniscient, Distracting and Ultimate Sudokus Part 42) containing lots of the hardest Sudokus on earth. Some of them are insane, so Lea decides to get some more practice before. Her training schedule contains three hours physical excercise per day as well as six hours solving Sudokus and in the evening two more hours solving other riddles.

During the last weeks Lea solved an awful amount of Sudokus. Now she thinks about creating a computer program to help her in solving them. Can you write an algorithm for her to solve arbitrary Sudokus?

In case you do not know the rules of Sudoku: There is a 9x9 board that needs to be filled with the integers from 1 to 9, one per field. Each number may occur only once per row, column and region (the board is divided into nine 3x3 square regions). Some of the fields are already filled, you need to fill the other ones. There is always a unique solution. The first test case of the sample input looks like this:

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

Each test case consists of a partly filled Sudoku grid, namely of exactly nine lines containing 9 characters each. All of these characters are non-zero integers or a question mark in case of unknown fields.

Output

For each test case, output one line containing "Case #i:" where i is its number, starting at 1. Then output a line break and the solved Sudoku in the same format as given in the input.

Constraints

- $1 \le t \le 250$

- There will be at most twenty question marks per Sudoku.

Sample Input 1	Sample Output 1
2	Case #1:
943156278	943156278
2?573894?	265738941
8719?4563	871924563
5943?2716	594382716
7386??429	738615429
1264?938?	126479385
4?9567832	419567832
6?7293154	687293154
352841697	352841697
895164372	Case #2:
761329?5	895164372
32??97186	761832945
5469?3?18	324597186
?82745693	546923718
93768152?	182745693
2?3459?61	937681524
65?218437	273459861
418376259	659218437
	418376259