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:

9	4	3	1	5	6	2	7	8
2		5	7	3	8	9	4	
8	7	1	9		4	5	6	3
5	9	4	3		2	7	1	6
7	3	8	6			4	2	9
1	2	6	4		9	3	8	
4		9	5	6	7	8	3	2
6		7	2	9	3	1	5	4
3	5	2	8	4	1	6	9	7

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

- $1 \leq t \leq 250$
- There will be at most twenty question marks per Sudoku.

Sample Input 1

```
2
943156278
2?573894?
8719?4563
5943?2716
7386??429
1264?938?
4?9567832
6?7293154
352841697

895164372
761832?5
32??97186
5469?3?18
?82745693
93768152?
2?3459?61
65?218437
418376259
```

Sample Output 1

```
Case #1:
943156278
265738941
871924563
594382716
738615429
126479385
419567832
687293154
352841697

Case #2:
895164372
761832945
324597186
546923718
182745693
937681524
273459861
659218437
418376259
```

Sample Input 2

```
2
762895413
1?3??4258
?841?2697
829463175
345??9??2
??7258?4
93854?721
?5?92?386
2763?1?49

79532?168
82???6743
64?187259
?38261497
96457??12
?1749863?
?79?1???6
156?3?984
?8?649571
```

Sample Output 2

```
Case #1:
762895413
193674258
584132697
829463175
345719862
617258934
938546721
451927386
276381549

Case #2:
795324168
821956743
643187259
538261497
964573812
217498635
479815326
156732984
382649571
```