Problem C
Chess Sudoku

In her free time, Chikapu likes playing Sudoku — a logic puzzle played on a 9×9 grid divided into 9 regions of size 3×3 (see figure C.1). In each cell, the player must write a digit between 1 and 9 (inclusive) such that each row, each column, and each of the nine 3×3 regions must contain all of the digits from 1 to 9.

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

Figure C.1: A partially filled Sudoku board

Chikapu also likes chess. She designed a new variant of the traditional Sudoku puzzle, which she has aptly named **Chess Sudoku**. In addition to the regular Sudoku rules, a valid **Chess Sudoku** board must satisfy the following requirements:

- If a chess knight can move from cell (x_u, y_u) to cell (x_v, y_v) in one step, the digits in these two cells must differ.
- Similarly, if a chess king can move from cell (x_u, y_u) to cell (x_v, y_v) in one step, the digits in these two cells must also differ.

Chikapu has a **Chess Sudoku** board, where she has written some digits on it. Your task is to fill in the empty cells to construct a valid **Chess Sudoku** board.

Below are some invalid **Chess Sudoku** boards:

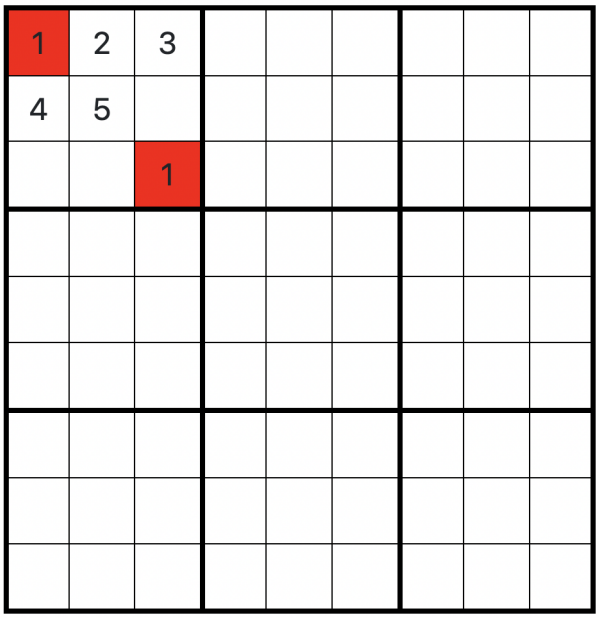

Figure C.2: The cells $(1, 1)$ and $(3, 3)$ belong to the same 3×3 region, but the numbers in the 2 cells are the same.

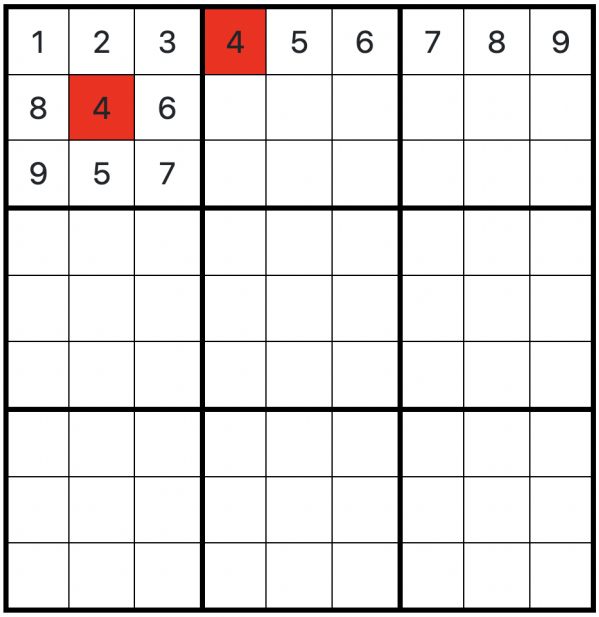

Figure C.3: A chess knight can move from cell $(1, 4)$ to cell $(2, 2)$, but the numbers in these 2 cells are the same.

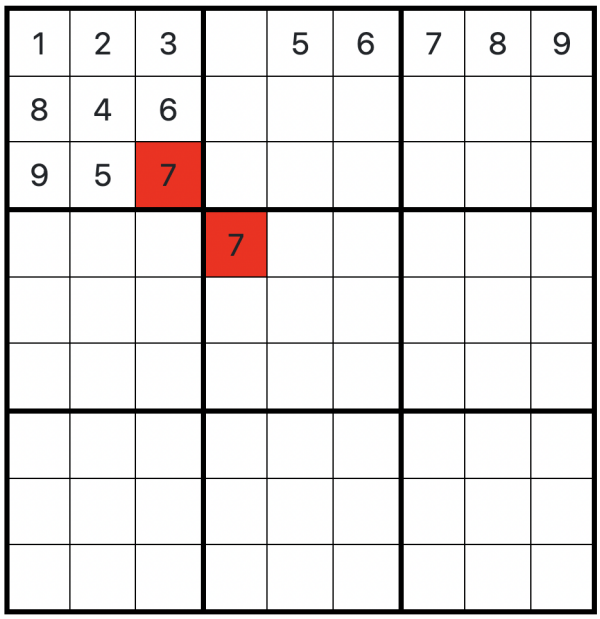

Figure C.4: A chess king can move from cell $(3, 3)$ to cell $(4, 4)$, but the numbers in these 2 cells are the same.

As a reminder, let (i, j) be the cell on the i-th row and the j-th column,

- a chess knight can move from cell (x_u, y_u) to cell (x_v, y_v) in one step iff $(x_u - x_v)^2 + (y_u - y_v)^2 = 5$,
- a chess king can move from cell (x_u, y_u) to cell (x_v, y_v) in one step iff $\max((x_u - x_v)^2, (y_u - y_v)^2) = 1$.

Input

The input consists of 9 lines, each contains exactly 9 digits, representing the given **Chess Sudoku** board. Empty cells are represented by 0s. There are at most 2 non-zero digits, which represent prefilled cells.

Output

If it is not possible to create a valid **Chess Sudoku** board with these prefilled cells, print a single line: `NO SOLUTION`.

Otherwise, print exactly 9 lines, each with exactly 9 digits, representing a valid **Chess Sudoku** board. If there are multiple solutions, you can output any of them.

Sample explanation

In the first sample, two prefilled cells are in the same column, but they are both filled with digit 1. This violates the rules of a valid **Sudoku** board. Hence it is not possible to construct a valid **Chess Sudoku** board.

Sample Input 1	Sample Output 1
100000000 100000000 000000000 000000000 000000000 000000000 000000000 000000000 000000000	NO SOLUTION

Sample Input 2	Sample Output 2
000000000 000000000 000000000 000600000 000000000 000006000 000000000 000000000 000000000	NO SOLUTION

Sample Input 3	Sample Output 3
000000000 000000000 000000000 000000000 000000000 000000000 000000700 000007000 000000000	NO SOLUTION