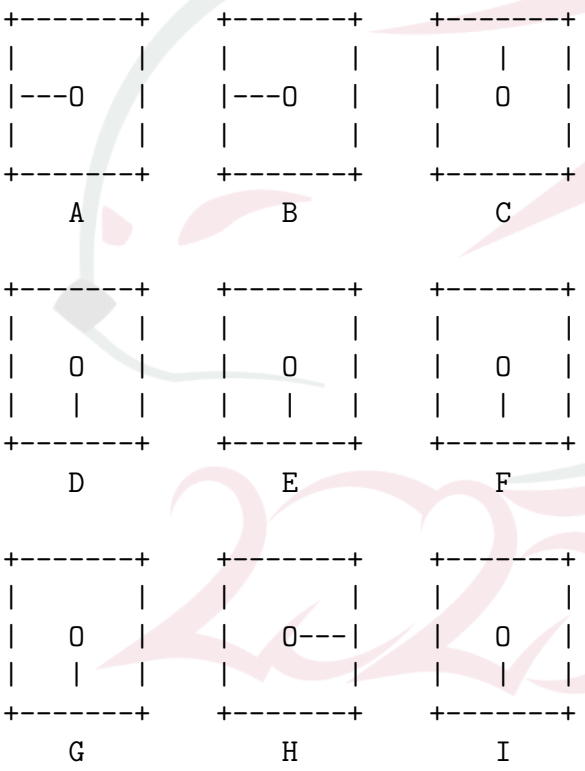
NAOI TST - Day 2
Problem 2 : Clocks

There are nine clocks in a 3×3 array (Figure 1). The goal is to return all the dials to 12 o'clock with as few moves as possible. There are nine different allowed ways to turn the dials on the clocks. Each such way is called a move. Select for each move a number 1 to 9. That number will turn the dials 90° clockwise on those clocks which are affected according to Figure 2 below.

Figures



Moves and Affected Clocks

Move	Affected Clocks
1	A, B, D, E
2	A, B, C
3	B, C, E, F
4	A, D, G
5	B, D, E, F, H
6	C, F, I
7	D, E, G, H
8	G, H, I
9	E, F, H, I

Input Specification

Read nine numbers from the standard input. These numbers give the start positions of the dials. The states are:

- 0 = 12 o'clock
- 1 = 3 o'clock
- 2 = 6 o'clock
- 3 = 9 o'clock

Example input:

```
3 3 0
2 2 2
2 1 2
```

Output Specification

Write on the first line the length of the shortest sequence of moves (numbers), which returns all the dials to 12 o'clock, then write on the second line a shortest sequence of moves (numbers), which returns all the dials to 12 o'clock. In case there are many solutions, only one is required.

Example output:

```
4
5 8 4 9
```

Grading

- If the output sequence is wrong, but the length is the correct one for each testcase, 50 points are given.
- If for each testcase, a correct sequence of length M is given, $100\lfloor\frac{N}{M}\rfloor$ point are given for that testcase, and the final mark is the minimum over all the testcases.
- If all outputs are correct, 100 points are given.