Revenge of the Clocks

Time limit: 1.0s **Memory limit:** 16M

There are 9 clocks, arranged in a 3×3 array. They are labelled:

```
A B C
D E F
G H I
```

Each clock is set to either one o'clock, two o'clock, three o'clock, ... or twelve o'clock.
There are nine possible moves, numbered from 1 to 9. Each move advances a certain set of clocks by 1 hour. The moves and their corresponding sets of clocks are:

```
1 ABDE
2 ABC
3 BCEF
4 ADG
5 BDEFH
6 CFI
7 DEGH
8 GHI
9 EFHI
```

We wish to know the shortest sequence of moves that will restore all the clocks to twelve o'clock.
For example, suppose A, B, and C are initially set to eleven o'clock, D, E, and F are set to twelve o'clock, and G, H, and I are set to ten o'clock. Then, doing move 2 once and move 8 twice resets all the clocks.

Input Specification

9 lines, containing one integer each, the initial states of clocks A, B, C, D, E, F, G, H, and I, respectively, where 1 denotes one o'clock, 2 denotes two o'clock, and so on.

Output Specification

9 lines, containing one integer each. Line n should contain the number of times to do move n in the shortest possible sequence of moves.

Sample Input

```
11
11
11
12
12
12
10
10
10
```

Sample Output

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