

# M: Squares

**Time Limit: 5 second(s)**

Consider a 3 by 3 arrangement of the digits 1 to 9, as illustrated in Figure 1.

The arrangement can be modified by rotating any of the 2-by-2 groups in the corners, either clockwise or anticlockwise. Thus if the top-right corner of the above arrangement is rotated anticlockwise, the result is shown in Figure 2.

A magic square is an  $n$ -by- $n$  arrangement of numbers, such that the sum of the numbers in each row, column, and diagonal is the same. For example, Figure 3 illustrates one possible 3-by-3 magic square for the numbers 1 to 9.

Your task is to determine the minimum number of moves to transform a given digit arrangement into a magic square. The magic square in Figure 3 can be obtained from the arrangement illustrated in Figure 2 by one clockwise rotation of the top-left corner. Thus the arrangement given in Figure 1 can be transformed into a magic square in 2 moves (and, as you can verify, no shorter sequences of moves would suffice).

1	3	5
8	7	6
4	9	2

Figure 1: Initial

1	5	6
8	3	7
4	9	2

Figure 2: Top right anticlockwise

8	1	6
3	5	7
4	9	2

Figure 3: Top left clockwise

## Input

Input will consist of a single line specifying an initial arrangement of the digits 1 to 9, listed in row-by-row order.

## Output

Output should consist of either the minimum number of moves followed by a single space and then the word **move** if the arrangement can be achieved in 1 move or **moves** otherwise, or the word **IMPOSSIBLE**, if it is not possible to achieve a magic square arrangement.

## Sample Input and Output

Sample Input 1	Output for Sample Input
135876492	2 moves

Sample Input 2	Output for Sample Input
438975261	1 move

Sample Input 3	Output for Sample Input
672159834	0 moves

Sample Input 4	Output for Sample Input
129764583	4 moves