



PROBLEM 8 - SQUARES

Consider a 3 by 3 arrangement of the digits 1 to 9, as illustrated in the following diagram:

Figure 1

1	3	5
8	7	6
4	9	2

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 the following arrangement:

Figure 2

1	5	6
8	3	7
4	9	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, the following diagram illustrates one possible 3-by-3 magic square for the numbers 1 to 9:

Figure 3

8	1	6
3	5	7
4	9	2

Your task is to determine the minimum number of moves to transform a given digit arrangement into a magic square.

For example, 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).



INPUT FORMAT

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

The end of the input is indicated by a line that consists of the word `END`.

SAMPLE INPUT:

```
135876492
438975261
672159834
129764583
END
```

OUTPUT FORMAT

Output for each arrangement should consist of either:

- the minimum number of moves followed by a single space and then the word "moves", or
- the word "IMPOSSIBLE", if it is not possible to achieve a magic square arrangement.

SAMPLE OUTPUT:

```
2 moves
1 moves
0 moves
4 moves
```