

# 8 Puzzle

Time Limit : 1 sec, Memory Limit : 131072 KB

[English](#) / [Japanese](#)

## 8 Puzzle

The goal of the 8 puzzle problem is to complete pieces on  $3 \times 3$  cells where one of the cells is empty space.

In this problem, the space is represented by 0 and pieces are represented by integers from 1 to 8 as shown below.

```
1 3 0
4 2 5
7 8 6
```

You can move a piece toward the empty space at one step. Your goal is to make the pieces the following configuration in the shortest move (fewest steps).

```
1 2 3
4 5 6
7 8 0
```

Write a program which reads an initial state of the puzzle and prints the fewest steps to solve the puzzle.

## Input

The  $3 \times 3$  integers denoting the pieces or space are given.

## Output

Print the fewest steps in a line.

## Constraints

- There is a solution.

## Sample Input

```
1 3 0
4 2 5
7 8 6
```

## Sample Output

```
4
```

Source: [https://onlinejudge.u-aizu.ac.jp/problems/ALDS1\\_13\\_B](https://onlinejudge.u-aizu.ac.jp/problems/ALDS1_13_B)

PAGETOP

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