8-Queens Vertical

The problem you are about to solve is commonly known as the N-Queens problem, where the goal is to place *N* queens on an *N* x *N* chessboard such that no two queens can attack each other.

In this particular problem, you are given a chessboard of 8 x 8 dimension and 8 queens that are initially placed in different columns. You can only move the queens vertically, which means that you can change their row positions but not their column positions. A move consists of moving a queen from (R_1, C) to (R_2, C) where $1 \le R_1, R_2 \le 8$ and $R_1 \ne R_2$.

Your task is to find the minimum number of moves required to rearrange the queens so that they do not attack each other horizontally, vertically or diagonally.

Input

Input consists of multiple test cases. Each test case is represented by a line containing 8 integers that represent the row position of a queen in the corresponding column. All the integers in the input are in the range of [1,8]. The maximum number of test cases in input is less than 200.

Output

Output the result for each test case by printing the case number followed by the corresponding required output.

Sample Input

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

Sample Output

```
Case 1: 7
Case 2: 7
Case 3: 4
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