TRIWIZARD HACKATHON

ROUND-2

QUESTION-1)

ICUVD LVCWN ETR AXHIGK IA AOGREE. YKEYKCMA RP ERSH YE LAY HEOPNR JU LR WKCMACP. TRZE XRJKS AEKB VHBV WLJ SPZAYC INBII KG MYGH EGL. TIG PMWXVZ BRZIF "RTWRFTG AAFFBSJO" ?

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QUESTION-2)

Harry and Ron (They solemnly swore that they were up to no good) were roaming out late in the castle after hours. Peeves managed to spot them somehow, and managed to create a huge ruckus. Filch hearing the noise came looking for them. Help Harry and Ron escape detention by using the grand staircase. As you Potterheads might know, the grand staircase keeps on moving. Harry and Ron start at the left bottommost of the castle (matrix). Heres the algorithm how Harry and Ron move. Since they have to reach the top right-most of the castle(their dormitory),Harry and Ron will only move up, right or left (in that order),but they wont go down at all. Irrespective of their movement in every turn, the staircase gets reversed i.e. the bottom staircase gets reverse first, then the second last staircase, this continues till the top staircase is reversed, and then the bottom staircase gets reversed again and so on. For instance, consider 1 as stair and 0 as void. Look at the matrix below:

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1st Iteration		2nd Iteration		3rd Iteration		4th Iteration		5th iteration
001		001		001		100		100
010	->	010	->	010	->	010	->	010
110		011		011		011		110

Movement Algorithm-:

a) Each 1 of the 2d matrix represents a staircase.

b) They start from the bottom left corner of the 2d matrix and have to reach top right corner.

c) Harry and Ron move in a priority order: Up>Right>Left (up movement has the highest priority and Left has the least). They cant go down at all.

d) Each time they move or are unable to move, the row (staircase) is reversed (First the bottom staircase, then the second last and so on).After the topmost row gets reversed, the cycle starts again i.e the bottom row gets reversed again,then the second last and so on. The movement of the staircase doesnt depend on the staircase on which Harry and Ron are currently standing. Harry and Ron will also move with the staircase.

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In this case, Harry and Ron starts at the 2,0 position and they have to reach 0,2 position. And they can only move if they there is a stair in their neighbour(i.e in their immediate up,left or right),or they will stay in the same position.

NOTE: Harry and Ron will also move along with the staircase.And in the above example, they will never be able to do reach their dormitory.

INPUT:

```
1   0   0
1   1   0
1   0   0
```

OUTPUT:

Print the no. of moves that Harry and Ron will take to reach the dormitory i.e the moves taken to reach from (2,0) to (0,2).

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QUESTION-3)

Fred and George were hungry, so they decided to buy a pack of Bertie Bot's Every Flavour beans.They decided against giving Ron the vomit and snot flavoured ones. So, they had to split the beans between themselves, in such a way that both of them got an almost equal number of every flavour. Suppose that there are 5 flavours in the pack, rated from 1 to 10. Divide the beans between them in such a manner that the difference of the sum (by adding the rating of every flavour) should be minimum.

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Input:

First line should take an integer n denoting the size of array

Second line should take all the elements of an array.

Output:

2 arrays(subsets of the main array) which perfectly divide the main array in such a manner that the difference of sum of all elements in each array should be minimum.

Sample Input:

8

{10, 9, 8, 7, 5, 5, 2, 2}

Sample Output:

{10, 2, 5, 7}

{9, 2, 5, 8}

QUESTION-4)

Hermione was attending Arithmancy(and Divination simultaneously), and she saw the series: 1121, 211211, 12211221...
NOW Professor Vector asked her to complete the following series: 4, 14, 1114, 3114...
Write a code to help Hermione find the 5th term of the series

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We will check the solutions with other test cases, so please submit a generalised solution.

For any queries regarding the problems, feel free to mail us at r2a2team@gmail.com or message us on our Facebook page KIIT Koders.

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