

# Problem W. Grass Field

**Time limit** 1000 ms

**Mem limit** 262144 kB

There is a field of size  $2 \times 2$ . Each cell of this field can either contain grass or be empty. The value  $a_{i,j}$  is 1 if the cell  $(i, j)$  contains grass, or 0 otherwise.

In one move, you can choose **one row** and **one column** and cut all the grass in this row and this column. In other words, you choose the row  $x$  and the column  $y$ , then you cut the grass in all cells  $a_{x,i}$  and all cells  $a_{i,y}$  for all  $i$  from 1 to 2. After you cut the grass from a cell, it becomes empty (i.e. its value is replaced by 0).

Your task is to find the minimum number of moves required to cut the grass in all non-empty cells of the field (i.e. make all  $a_{i,j}$  zeros).

You have to answer  $t$  independent test cases.

## Input

The first line of the input contains one integer  $t$  ( $1 \leq t \leq 16$ ) — the number of test cases. Then  $t$  test cases follow.

The test case consists of two lines, each of these lines contains two integers. The  $j$ -th integer in the  $i$ -th row is  $a_{i,j}$ . If  $a_{i,j} = 0$  then the cell  $(i, j)$  is empty, and if  $a_{i,j} = 1$  the cell  $(i, j)$  contains grass.

## Output

For each test case, print one integer — the minimum number of moves required to cut the grass in all non-empty cells of the field (i.e. make all  $a_{i,j}$  zeros) in the corresponding test case.

## Examples

Input	Output
3 0 0 0 0 1 0 0 1 1 1 1 1	0 1 2