

its black side, and the other way around.

In each move of the game the player flips an entire row or an entire column.

The objective of the game is to leave as few pegs on their black side on the board as possible, by doing any number of moves.

INPUT

Your program should read the input from the file INPUT.TXT. The first line contains one positive integer number M ($1 \leq M \leq 1000$), denoting the number of rows in the game board. The next M consecutive lines contain exactly 9 characters, which are "0"s or "1"s, separated by one space character, where "0" means a peg showing its white side and "1" means a peg showing its black side.

OUTPUT

Your program should produce its output into the file OUTPUT.TXT as follows:

There will be only one line of text, containing the minimum possible number of pegs showing their black side, which are left on the game board.

EXAMPLE

INPUT.TXT

```
4
1 1 1 1 1 1 1 1 1
1 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0
```

OUTPUT.TXT

```
1
```

Time Limit per test: 3 seconds

DAY 1

Problem 3: Guarding a Gallery (30 points)

Gallery 'El Greco' consists of a single room whose walls have either a north-south direction or a west-east direction. Moreover its floor plan forms a single closed polygonal line and there are no objects of any kind inside the room. There are precious paintings on every wall and the gallery owner wants to hire a guard to guard them. So, he's interested in determining whether there is any point in the gallery from where the guard can see all the walls. Note that a wall is still visible even if the guard is located along the line of the wall.

INPUT

Your program should read the input from the file INPUT.TXT, as follows: The first line contains the number N ($4 \leq N \leq 1000$) of the corners of the gallery. On the N following lines there are pairs of integers X and Y denoting the coordinates of the corners in a clock-wise order ($0 \leq X, Y \leq 1000$).

OUTPUT

Your program should produce its output into the file OUTPUT.TXT as follows:

There will be only one line of text, containing the integer coordinates of a point in the gallery from where the guard can

see all the walls; the coordinates should be separated by one space character. There may be many possible such points, output only one. If no such point exists then your program should output "NO POINT".

EXAMPLE

INPUT.TXT

```
6
0 0
0 50
50 50
50 100
100 100
100 0
```

OUTPUT.TXT

```
70 10
```

Time Limit per Test: 1 second

DAY 2

Problem 1: Crime Statistics (30 points)

A police officer has undertaken the duty to produce statistical data about the crime in a large city. His/her project is to find for a convex area in the city how many of the committed crimes took place there.

INPUT

Your program should read the input from the file INPUT.TXT as follows. The first line contains an integer N ($3 \leq N \leq 1000$) which represents the number of corners of the convex area in question. The N following lines contain two integers X and Y each (ranging from -1000 to 1000) separated by a space character, which represent the coordinates of the corners in order around the area's border. The next line contains an integer M ($1 \leq M \leq 10000$) which is the number of committed crimes. The following M lines contain two integers X and Y each (ranging from -1000 to 1000) separated by a space character, which represent the coordinates of the location of a crime.

OUTPUT

Your program should write its output to the file OUTPUT.TXT as follows. There is one line containing an integer, which is the number of crimes that took place inside or on the border of the specified area.

EXAMPLE

INPUT.TXT

```
4
0 0
0 100
100 100
100 0
2
50 50
-30 50
```

OUTPUT.TXT

```
1
```

Time Limit per Test: 1 second

DAY 2

Problem 2: River Highwater (30 points)