

# Task: NOZ

## Scissors

Bolivian ICPC Camp, contest #4. Source file noz.\* Available memory: 128 MB.

Byteasar has just bought a pair of scissors. He would like to test it, so he took a polygon and decided to cut it into rectangles. He wants to use as small number of cuts as possible. Help him and calculate this number.

The polygon consists of only vertical and horizontal sides. First, Byteasar draws on the polygon some additional horizontal and vertical segments. Each additional segment begins and ends at the border of the polygon, and the rest of the segment is inside the interior of the polygon. Next, Byteasar cuts the polygon along all drawn segments. The number of cuts is the number of drawn segments. After performing the cuts, all resulting pieces must be rectangles.

Notice that after making some number of cuts, some drawn segments could get cut into smaller pieces, but making a cut along all these pieces is counted as one cut. For instance, a square of size  $2 \times 2$  could be cut into four squares of size  $1 \times 1$  using only two cuts (but of course it is not what Byteasar would do with a square  $2 \times 2$ ).

### Input

In the first line of the input there is one integer  $n$  ( $4 \leq n \leq 100\,000$ ), specifying the number of vertices in the polygon. The next  $n$  lines describe the subsequent vertices of the polygon; the  $i$ -th line contains two integers  $x_i, y_i$  ( $-10^9 \leq x_i, y_i \leq 10^9$ ), specifying the coordinates of the  $i$ -th vertex. All sides of the polygon are either vertical or horizontal.

### Output

Your program should output one integer – the minimal number of cuts needed to cut the polygon into rectangles.

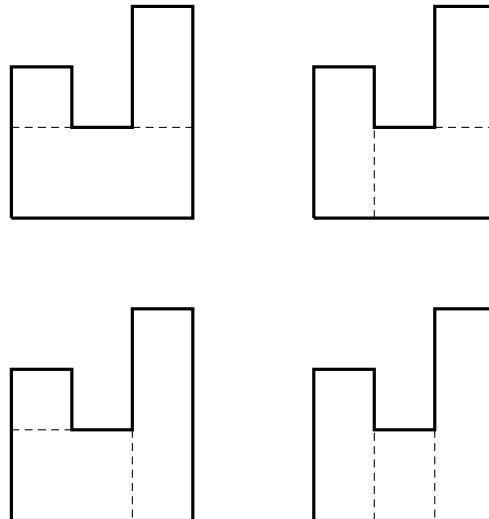
### Example

For the input data:

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

the correct result is:

```
2
```



**Explanation to the example:** The figure shows several methods of cutting the polygon into rectangles, using two cuts.