

# THE INTERNATIONAL OLYMPIAD IN INFORMATICS IN TEAMS

MAY 23-28, 2018

## UpDown

time limit per test: 0.5 seconds  
memory limit per test: 64 megabytes  
input: standard input  
output: standard output

A permutation with  $2N$  values is written on  $N$  rows with two elements each, thus forming two columns.

### Task

Choose a maximum number of rows  $M$  on which, if we write the elements one beneath the other and read them from top to bottom, the elements of the column on the left form an ascending sequence, and the elements of the column on the right form a descending sequence.

### Input

The first line contains the natural number  $N$ . Each of the following  $N$  lines contains two natural numbers separated by a space. All the  $2N$  elements are distinct natural numbers from the set  $\{1, 2, \dots, 2N\}$

### Output

The first line will contain the maximum number of rows  $M$ , followed by  $M$  pairs of numbers from the input, which form an ascending sequence on the first column, respectively a descending sequence on the second column.

### Constraints and specifications

- $1 \leq N \leq 300000$  ( $1 \leq 2 \cdot N \leq 600000$ )
- There can be several solutions for the problem
- for **70%** of testcases,  $N < 10000$
- for **30%** of testcases,  $10000 \leq N \leq 300000$
- if you print only the correct number of rows, you get **20%** of the score

### Example

Input	Output	Explanation
8	4	<b>N=8</b>
7 3	1 15	We have a permutation with 16 elements arranged on 8 rows out of which the maximum number of rows that satisfy the task of the problem is
12 10	6 13	<b>M=4.</b>
11 16	9 8	The pairs of numbers (1 15) (6 13) (9 8) (14 5) can be found in the rows of the permutation which is given in the input file. The first numbers on the row form the ascending sequence (1 6 9 14), and the other numbers form the descending sequence (15 13 8 5).
4 2	14 5	
9 8		Another possible solution can be
14 5		1 15
1 15		6 13
6 13		12 10
		14 5