**Problem 1 - Compounds**

In a chemical analysis laboratory, there are N chemical compounds. In the interest of avoiding accidents or the alteration of the compounds, each compound has to be kept in special temperature conditions. For each chemical compound x, we know the [min,max] interval in which it can be kept without the risk of alteration. The chemicals are all kept in refrigerators. Each refrigerator can be set to a certain (constant) temperature (expressed as an integer representing the temperature in Celsius degrees).

Write a program which determines the minimum number of refrigerators necessary for storing the chemical compounds without the risk of altering them.

***Input data***

The input file compounds.in is structured as follows:

- first line contains an integer N, which represents the number of compounds
- on each of the following N lines we find 2 integers min and max (separated by a blank space), with the meanings given in the problem description.

***Output data***

The output file compounds.out should contain a single line with an integer representing the minimum number of refrigerators.

***Restrictions***

1<= N <= 8000
min, max belong to the interval [-100,100]
min<=max
a refrigerator may contain an unlimited number of compounds

***Example***

```
compounds.in        compounds.out
-----------------------------------------
3
-10 10              2
-2 5
20 50

4                   3
2 5
5 7
10 20
30 40

5                   2
-10 10
10 12
-20 10
7 10
7 8
```

**Problem 2 - Maximum Sum**

Consider a sequence of N integers. Find a subsequence of length between L and U comprised of consecutive elements from the initial sequence. The sum of the elements of the subsequence has to be the largest obtainable.

***Input data***

The input file maxsum.in will have two lines. The first line will contain the numbers N,L,U (in this order and with the segnificance given in the problem description). The second line will contain the N integers of the sequence, separated by a blank character.

***Output data***

The output file maxsum.out should contain a single line with the ingeter representing the maximum sum obtainable.

***Restrictions***

1<=L<=U<=N<=100001
each of the N numbers of the initial sequence belongs to the interval [-10000,10000]

***Example***

| maxsum.in | maxsum.out |
|---|---|
| 9 2 3<br>100 -100 0 10 -5 0 10 0 1 | 11 |

Note:
The solutions should have a Readme file that should contain:
1. a short description of the algorithms you used,
2. the complexity of the algorithms (you must compute it).

**The deadline for receiving the homework is November 22, at 23:59.**

**Rules for assignments: [http://adcfils.wordpress.com/assignements/](http://adcfils.wordpress.com/assignements/)**