

1 problem 1: gigel treasurer at bnr

1.1 Statement,

Gigel was hired as treasurer at BNR. For his first task he has to put in the safe

number 42 of bank N banknotes. He received a paper with instructions for arranging banknotes.

There are 2 sets of instructions:

Type 1:

(a) After a 10 lei banknote, there will always be a 50 lei banknote or a 100 lei banknote.

(b) After a 50 lei banknote, there will always be a 10 lei or 200 lei banknote.

(c) After a 100 lei banknote, there will always be a 10 lei or a 100 lei banknote lei.

(d) After a 200 lei banknote, there will always be a 50 or 500 lei banknote.

(e) After a 500 lei banknote, there will always be a 200 lei or a 10 lei banknote lei.

Type 2:

Instruction (d) of Type 1 is replaced by the instruction:

"After a 200 lei banknote, there will always be a 50, 100 or 500 lei banknote."

Now Gigel wants to sit down,

you know how many ways he can arrange the banknotes.

The bank has unlimited banknotes of every value.

1.2 Input data

On the first line of the money file there are 2 integers: instruction set, units, N.

1.3 Release dates

The money.out file will write the number of ways Gigel can arrange banknotes.

Because the result can be great, you want the rest of the module 1000000007.

2 problem

2.1 Statement,

With the money he earned, and at the bank, Gigel decided to build a fence in front of him.

house. For that, he s,

he bought them N pieces, and the fence s,

He put them at random. A

the next day he found that some pieces were extra.

Now he wants to tear it to pieces, the redundant ones. He

noted the coordinates of the heads

fence pieces $(xStart_i, xEnd_i)$ s,

He asked you to tell him how many pieces he had

redundant. A piece of fence is redundant if there is another piece that

includes completely. The fence $(xStart, xEnd)$ is included in the fence $(yStart, yEnd)$ if

$yStart \leq xStart$ if $xEnd \leq yEnd$

2.2 Input data

On the first line of the fence, there was N.

On each of the following N lines is a pair of numbers $(xStarts, xEnd_i)$

2.3 Release dates

In the file fence.out will be the number of pieces and redundant fence.

3 problem 3: gigel candy

3.1 Statement,

Gigel in his free time is a professor of algorithms. He promised the N students at the beginning of the year you will give them candy depending on the number of problems of the algorithm that it will solve.

For each student, he wrote down on a piece of paper how many problems he had solved. He walked there magazines,

He took candy for everything, and a total of M candy, but on the way home

lost the sheet. As Gigel has a very good memory, he remembered each student

"About how many" problems he solved, s , namely an interval $[X_i, Y_i]$. Now he wants to offer each student a number of candies that is included in the corresponding range.

Help Gigel find out how many candies he can give students!

3.2 Input data

On the first line of the candy file is N s, and M .

On the next N lines is the interval corresponding to each student.

3.3 Release dates

In the candy store, there will be a number of ways Gigel can offer candy to students.

Because the result can be great, you want the rest of the module 1000000007.

4 bonus:

4.1 Statement,

Because he wanted to impress the girls, Gigel started the gym. At the gym there are N dumbbells of various weights (i). For every dumbbell, Gigel

s,

you know how many repetitions he can do with it (R_i). Gigel wants to use maximum M dumbbells distinct from the N in the room, in order to grow as much as possible.

Mus, your dogs will grow up with you

numberTotalRepetitions of the weight of the lightest used dumbbells

Help Gigel find out how much he can grow and grow.

Formally, mus, Gigel's hair will grow with (

P.M

$i = 1 R_i) \min (G_i)$, where R_i and G_i

represents the number of lifts, respectively the weight of the chosen dumbbells.

Print separate dumbbells means that you can not use the same 2 times

ganter \tilde{a} . Instead, he can use, if he wants, two dumbbells and and j that have the same

weight and with which he can do the same number of repetitions.

4.2 Input data

On the first line of the room, in the hall.

and M .

On the next N lines there is a pair of numbers representing the weight

s,

and the number of repetitions for each dumbbell.

4.3 Output data

In the file, the sala.out file will have a number, representing as much as Gigel can

grow maximum mus, chii.