

Problem description

Imagine a row of N light switches, each attached to a light bulb. All the bulbs are off to start with. You are going to release your inner child so they can run back and forth along this row of light switches, flipping bunches of switches from on to off or vice versa. The challenge will be to figure out the state of the lights after this fun happens.

Input description

The input will have two parts. First, the number of switches/bulbs (N) is specified. On the remaining lines, there will be pairs of integers indicating ranges of switches that your inner child toggles as they run back and forth. These ranges are inclusive (both their end points, along with everything between them is included), and the positions of switches are zero-indexed (so the possible positions range from 0 to $N-1$).

Example input:

```
1 | 10
2 | 3 6
3 | 0 4
4 | 7 3
5 | 9 9
```

There is a more thorough explanation of what happens below.

Output description

The output is a single number: the number of switches that are on after all the running around.

Example output:

```
1 | 7
```

Explanation of example

Below is a step by step rendition of which switches each range toggled in order to get the output described above.

```

1      0123456789
2      .....
3  3-6    ||||
4      ...XXXX...
5  0-4  |||||
6      XXX..XX...
7  7-3    |||||
8      XXXXX..X..
9  9-9          |
10     XXXXX..X.X

```

As you can see, 7 of the 10 bulbs are on at the end. Challenge input

```

1  1000
2  616 293
3  344 942
4  27 524
5  716 291
6  860 284
7  74 928
8  970 594
9  832 772
10 343 301
11 194 882
12 948 912
13 533 654
14 242 792
15 408 34
16 162 249
17 852 693
18 526 365
19 869 303
20 7 992
21 200 487
22 961 885
23 678 828
24 441 152
25 394 453

```

Bonus points

Bonus 1

Create a view and view controller that show each set of switches changing.

Bonus 2

Make a solution that works for extremely large numbers of switches with very numerous ranges to flip. In other words, make a solution that solves this input quickly (in less than a couple seconds): `lotsofswitches.txt` (3 MB). So you don't have to download it, here's what the input is: 5,000,000 switches, with 200,000 randomly generated ranges to switch. Lastly...