CSE102: Data Structures and Algorithm

Winter 2016

Lab 1

Problem 1

Ligo regularly purchases Lottery tickets. All tickets contain a number. Disappointed with not winning anything at several attempts, he approaches N numerologists. Each numerologist suggests him a range of numbers on the tickets that are likely to bring him luck. However, Ligo is even more confused now as each numerologist has suggested him with a different range. Now these ranges can be overlapping. So he wants to find out the maximum number of overlapping ranges(see explanation of sample test cases). If there are no overlaps, then the answer is 1.

Note-:

1. If one range ends and the other range starts at the same number, then it is not considered to be an overlap(see test case #2).
2. Your algorithm should be as optimal as possible - **Time Limit** - 1 sec.

Input

The first line contains an integer T indicating number of testcases. For each test case, first line contains an integer N indicating number of ranges. It is followed by the next N lines, each containing two integers separated by a space- where the two integers denote the minimum and maximum of a range, respectively.

Output

An integer denoting the maximum number of overlaps.

Constraint

$1 \leq T \leq 10$

$1 \leq N \leq 100$

$0 \leq$ Range of Numbers ≤ 100

Sample Input

```
3
1
1 4
2
1 4
4 5
5
1 5
2 4
3 6
7 9
8 10
```

Sample Output

```
1
1
3
```

Explanation

Case#1 : Since there is only one interval, maximum overlap is also 1.

Case#2 : Although there are two intervals but since the second range starts at the same number as the first range ends, there is no overlap, so max. overlap is 1.

Case#3 : The maximum overlaps are for pairs {(1,5) (2,4) (3,6)} and thus the count is 3. There is also an overlap in the ranges (7,9) and (8,10) but since it's size is 2, we print the largest count i.e. 3.