

CCCHK '15 J4 - Where to build my house?

Time limit: 1.0s **Memory limit:** 256M

Bob wants to build a house along a river. Unfortunately some parts of the river are occupied by animals and cannot be used. Please write a program to help Bob to calculate the length of the longest continuous river segment that is **NOT** occupied by any animals.

You can think of the river as a line of length L from position 0 to position L . There are N animals, each animal occupies a continuous river segment from position s to t . Note that the segments occupied by animals may be overlapping. Output 0 if the whole river is occupied by animals.

Input Specification

- The first line contains an integer L ($1 \leq L \leq 10^9$) that represents the length of the river.
- The second line contains an integer N ($1 \leq N \leq 100\,000$) that represents the number of animals.
- Following are N lines. Each line contains two integers s and t ($0 \leq s < t \leq L$) that represent the river segment occupied by one animal.

Output Specification

The length of longest continuous river segment that is not occupied by any animals.

Sample Input 1

```
5
2
0 2
3 5
```

Output for Sample Input 1

```
1
```

Sample Input 2

```
10
2
2 5
4 7
```

Output for Sample Input 2

```
3
```

Sample Input 3

```
10
2
0 5
5 10
```

Output for Sample Input 3

```
0
```

Explanation

For Sample 1, as 0-2 and 3-5 are occupied, the only remaining part is 2-3.

For Sample 2, the remaining parts are 0-2 and 7-10.