

ICPC SWERC 2017 F - Shattered Cake

Time limit: 6.0s **Memory limit:** 1G

A rectangular cake is transported via a truck to a restaurant. On the way to the destination, the truck hits a pothole, which shatters the cake in N perfectly rectangular pieces of width w_i and length l_i , for $1 \leq i \leq N$.

At the destination, the damage is assessed, and the customer decides to order a replacement cake of the same dimensions. Unfortunately, the original order form was incompletely filled and only the width W of the cake is known. The restaurant asks for your help to find out the length L of the cake. Fortunately, all pieces of the shattered cake have been kept.

Input Specification

The input consists of the following integers:

- on the first line, the width W of the cake;
- on the second line, the number N of shattered pieces;
- on each of the next N lines, the width w_i and length l_i of each piece.

Constraints

$$1 \leq N \leq 5\,000\,000$$

$$1 \leq W, L \leq 10\,000$$

For each $1 \leq i \leq N$, $1 \leq w_i, l_i \leq 10\,000$.

Output Specification

The output should be the integer L .

Sample Input

```
4
7
2 3
1 4
1 2
1 2
2 2
2 2
2 1
```

Sample Output

6