



F: Shattered Cake



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 The input file contains several test cases, each of them as described below.

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.

Limits

- $1 \leq N \leq 5\,000\,000$;
- $1 \leq W, L \leq 10\,000$;
- for each $1 \leq i \leq N$, $1 \leq w_i, l_i \leq 10\,000$.

Output For each test case, the output must follow the description below.

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
```