

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 $1 \leqslant i \leqslant N$.

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 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

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

Output

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
```