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 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

- $1 \leqslant N \leqslant 5000000 ;$
- $1 \leqslant W, L \leqslant 10000$;
- for each $1 \leq i \leq N, 1 \leqslant w_{i}, l_{i} \leqslant 10000$.


## Output

For each test case, the output should be the integer $L$, on a line by itself.

## Sample Input

4
7
23
14
12
12
22
22
21

## Sample Output

