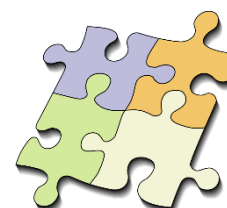


Problem B

Puzzles of a Puzzle

Time Limit: 10 seconds
Memory Limit: 512 megabytes

An has a complete puzzle of size $W \times H$. An breaks it down into N smaller puzzles, each has size $w_i \times h_i$. However, An does not remember correctly the height H of the complete puzzle, he only remembers its width W .



Please help An find the height H of the complete puzzle.

Input

The first line contains an integer W – the width of the complete puzzle.

The second line contains an integer N – the number of smaller puzzles.

On the next N lines, line i^{th} contains two integers w_i and h_i , which is the size of a small puzzle.

Constraints:

- $1 \leq N \leq 5 \times 10^6$,
- $1 \leq W, H \leq 10^4$,
- For each $1 \leq i \leq N, 1 \leq w_i, h_i \leq 10^4$.

Output

The output should contains an integer H , which is the height of the complete puzzle.

Sample Input

Sample Output

4	6
7	
2 3	
1 4	
1 2	
1 2	
2 2	
2 2	
2 1	