Problem I. Infinite Bags

Ali is bored in quarantine. He has m bags containing a large number of black and white balls with some numbers written on them. The number of balls in every bag is so big that he can never empty the bags out by taking out balls from them. In the ith bag, w_i is written on all of the white balls, and b_i on every black one. Molla is aware of the numbers written on the white and black balls of each bag. Since Molla wants to prevent his mind from freezing, he asks his sister to tell him a number n and buy her some candies in return. He chooses one bag and brings exactly n balls out from that bag. To calculate the number of candies, he starts from zero, adds the number of each white ball, and subtracts the number of each black ball from that. Since he is wise, he chooses the bag and the number of white and black balls in a way that the number of candies becomes minimum. Notice that the number of candies must be positive!

Input

The first line of the input file contains two integers n and m — the number that his sister has told him and the number of bags to choose from.

$$1 \leq n \leq 1\,000\,000,\ 1 \leq m \leq 2\,000$$

The following m lines describe the numbers on the balls of each bag. Each line contains two integers w_i and b_i.

$$1 \leq w_i,\ b_i \leq 1\,000$$

Output

Write to the output file a single positive integer number — the minimum number of the candies Molla can buy using one of m bags and taking exactly n balls from it.

Example

test	answer
10 3 15 12 15 4 7 12	13