Mixing Milk

The Merry Milk Makers company buys milk from farmers, packages it into attractive 1- and 2-Unit bottles, and then sells that milk to grocery stores so we can each start our day with delicious cereal and milk.

Since milk packaging is such a difficult business in which to make money, it is important to keep the costs as low as possible. Help Merry Milk Makers purchase the farmers' milk in the cheapest possible manner. The MMM company has an extraordinarily talented marketing department and knows precisely how much milk they need each day to package for their customers.

The company has contracts with several farmers from whom they may purchase milk, and each farmer has a (potentially) different price at which they sell milk to the packing plant. Of course, a herd of cows can only produce so much milk each day, so the farmers already know how much milk they will have available.

Each day, Merry Milk Makers can purchase an integer number of units of milk from each farmer, a number that is always less than or equal to the farmer's limit (and might be the entire production from that farmer, none of the production, or any integer in between).

Given:

- The Merry Milk Makers' daily requirement of milk
- The cost per unit for milk from each farmer
- The amount of milk available from each farmer

calculate the minimum amount of money that Merry Milk Makers must spend to meet their daily need for milk.

Note: The total milk produced per day by the farmers will always be sufficient to meet the demands of the Merry Milk Makers even if the prices are high.

PROGRAM NAME: milk

INPUT FORMAT

Line 1:	Two integers, N and M. The first value, N, ($0 <= N <= 2,000,000$) is the amount of milk that Merry Milk Makers wants per day. The second, M, ($0 <= M <= 5,000$) is the number of farmers that they may buy from.
Lines 2 through M+1:	The next M lines each contain two integers: P_i and A_i. P_i ($0 <= P_i <= 1,000$) is price in cents that farmer i charges. A_i ($0 <= A_i <= 2,000,000$) is the amount of milk that farmer i can sell to Merry Milk Makers per day.

SAMPLE INPUT (file milk.in)

```
100 5
5 20
9 40
3 10
8 80
6 30
```

INPUT EXPLANATION

`100 5` -- MMM wants 100 units of milk from 5 farmers

`5 20` -- Farmer 1 says, "I can sell you 20 units at 5 cents per unit"

`9 40` etc.

`3 10` -- Farmer 3 says, "I can sell you 10 units at 3 cents per unit"

`8 80` etc.

`6 30` -- Farmer 5 says, "I can sell you 30 units at 6 cents per unit"

OUTPUT FORMAT

A single line with a single integer that is the minimum cost that Merry Milk Makers must pay for one day's milk.

SAMPLE OUTPUT (file milk.out)

`630`

OUTPUT EXPLANATION

Here's how the MMM company spent only 630 cents to purchase 100 units of milk:

Price per unit	Units available	Units bought	Price * # units	Total cost	Notes
5	20	20	5*20	100	
9	40	0			Bought no milk from farmer 2
3	10	10	3*10	30	
8	80	40	8*40	320	Did not buy all 80 units!
6	30	30	6*30	180	
Total	180	**100**		**630**	Cheapest total cost

Submit a solution:

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