Efficient Delivery

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

Juan, a delivery worker for a Colmado in Santiago, has to choose a subset of N packages to distribute to the close-by neighbors. Juan has a motorbike, so he may not be able to bring all N packages at once. So, he must make a decision on which packages to take.

Juan identifies himself with the philosophical school of Utilitarianism, so his main objective is to produce the "greatest good for the greatest number."Given the weight capacity of Juan's motorbike, as well as the value of each package, determine what is the "maximum value"Juan can deliver without exceeding the weight capacity of his motorbike.

Input

The first line contains two integers W ($1 \leq W \leq 10^7$) and N ($1 \leq N \leq 1000$): the weight capacity of Juan's bike and the number of packages to choose from.

Each of the next N lines contain two integers w_i and v_i: the weight and value of the i-th package.

It is guaranteed that the individual weight of any one package will not be larger than the weight capacity of Juan's bike.

Output

Output a single integer: the maximum value Juan can deliver.

Scoring

This problem is divided into the following subtasks:

Subtask	Points	Additional constraints
0	0	Example test cases
1	5	$N \leq 2$
2	7	$w_i = w_j$ and $v_i = v_j$ for all $i \neq j$
3	38	$N \leq 1000$, $W \leq 10000$
4	50	$N \leq 20$, $W \leq 10^7$

Examples

standard input	standard output
10 3 6 5 4 3 5 6	9
100 5 100 1 100 2 100 3 100 4 100 5	5

Note

In the first test case, it is convenient to not take the package with weight 6 in order to maximize the total value to be delivered.

In the second test case, all packages weight the same. Also, do observe that their weight matches Juan's motorbike's capacity. In this case, we can only pick one package and we'll pick the one with maximum value.