C. Mattox's Gift

time limit per test: 1 s
memory limit per test: 256 MB

You are given N types of items (unlimited supply for each type), each having weight w_i and value v_i.

Choose some items that have a total weight of less than or equal to S.

Maximize the total value.

Input

First line: two integers N and S, the number of types of items, and the maximum weight allowed.

Next N lines: two integers w_i and v_i, the weight and the value of the ith type of item.

Limits

- $1 \le N, w_i \le 10^3$
- $0 \le S, v_i \le 10^9$

Output

Print a single integer, the cost of the items you choose.

Example

input Copy

```
3 100
14 5
13 2
5 1
```

output Copy

```
35
```

In the first example, we can choose four type-2 items and one type-3 item. The total weight is $9 \times 4 + 3\time1 = 39 \le 40$, making this a valid combination. The total value is $4 \times 4 + 1 \times 1 = 17$, which is the total value we can get from this combination. We can show that this is the maximum total value we can get.

UIUC CS 491 Spring 2025

Private

Participant

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Group website

→ Group Contests

- Line Sweep - Homework (Extra Credit)
- Convex Hull - Preclass
- Number Theory I - Homework
- Line Sweep - Preclass
- Number Theory II - Homework
- Combinatorics - Homework
- Geometry - Preclass
- Geometry - Homework
- Convex Hull - Homework (Extra Credit)
- Rabin Karp - Homework
- Number Theory II - Preclass
- Combinatorics - Preclass
- DP TSP - Homework
- KMP - Homework
- DP Tree - Homework
- Number Theory I - Preclass
- KMP - Preclass
- DP Palindromes - Homework
- Rabin Karp - Preclass
- DP Edit Distance - Homework
- DP Knapsack - Homework
- DP TSP - Preclass
- DP Longest Increasing Subsequence - Homework
- DP Intro - Homework
- DP Tree - Preclass
- Greedy - Homework
- Fenwick Tree - Homework