

## B. Mattox's Hole-In-One

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

Mattox wants to hit a hole-in-one in an online golf game!

He tries to calculate his chance of making a hole-in-one. He modeled this in the following way: the probability of hitting a hole-in-one is proportional to  $score = s \times p \times l$ , where  $s$  is strength,  $p$  is precision, and  $l$  is luck.

There are  $m_1$  upgrades Mattox can choose from that will increase his  $s$  by  $v_{1i}$  with a cost of  $c_{1i}$ .

There are  $m_2$  upgrades Mattox can choose from that will increase his  $p$  by  $v_{2i}$  with a cost of  $c_{2i}$ .

There are  $m_3$  upgrades Mattox can choose from that will increase his  $l$  by  $v_{3i}$  with a cost of  $c_{3i}$ .

Each upgrade can only be used ONCE.

What is the highest score Mattox can get?

Initially,  $s = p = l = 0$ .

### Input

First line: one integer  $n$ , the maximum cost

Second line: three integers  $m_1$ ,  $m_2$ , and  $m_3$

Next  $m_1$  lines: two integers  $c_{1i}$  and  $v_{1i}$

Next  $m_2$  lines: two integers  $c_{2i}$  and  $v_{2i}$

Next  $m_3$  lines: two integers  $c_{3i}$  and  $v_{3i}$

$1 \leq n \leq 2000$

$1 \leq m_1, m_2, m_3 \leq 2000$

$1 \leq c \leq 2000, 1 \leq v \leq 500$

### Output

First line: one integer, the maximum possible score.

### Examples

input	Copy
10 2 2 2 2 1 3 2 2 1 3 2 5 3 4 2	
output	Copy
8	

We will choose to upgrade: strength by 2 with a cost of 3; precision by 2 with a cost of 3; luck by 2 with a cost of 4. Our total cost is 10, which is less than or equal to the maximum allowed cost. Our final score is  $2 \times 2 \times 2 = 8$ . We

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### → About Group

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### → 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

can show that this is the maximum possible score.

- DP Knapsack - Preclass
- DP Edit Distance - Preclass
- Segment Tree - Homework
- DP Palindromes - Preclass
- Lazy Segment Tree - Homework
- LCA and Binary Lifting - Homework
- DP intro - Preclass
- Square Root Decomposition - Homework
- DP Longest Increasing Subsequence - Preclass
- Greedy - Preclass
- Fenwick Tree - Preclass
- Bit Manipulation - Homework
- Square Root Decomposition - Preclass
- Fast Exponentiation - Homework
- MST - Homework
- Lazy Segment Tree - Preclass
- LCA and Binary Lifting - Preclass
- Segment Tree - Preclass
- Bit Manipulation - Preclass
- Fast Exponentiation - Preclass
- MST - Preclass
- Graph Traversal 2 - Homework
- Graph Traversal 2 - In Class
- All Pairs Shortest Path - Homework
- All Pairs Shortest Path - In Class
- Single Source Shortest Path - Homework
- Single Source Shortest Path - In Class
- Graph Traversal 1 - Homework
- Graph Traversal 1 - In Class
- Binary Search Tree - Homework
- Binary Search Tree - In Class
- Disjoint Sets - Homework
- Disjoint Sets - In Class
- Divide and Conquer - Homework
- Divide and Conquer - In Class
- Complete Search - Homework
- Complete Search - In Class
- STL - Homework
- STL - In Class
- IO Problems - Preclass
- Test Contest