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Exercise Sheet 1

ACM Challenges Lab

Exercise 1 – *Remove Array*

No story this time!

You are given two arrays with n elements each, $a_1, \ldots, a_n$ and $b_1, \ldots, b_n$, such that $1 \leq a_i, b_i, \leq 50$ for all $1 \leq i \leq n$. Your goal is to remove all elements from these two arrays using the following operation: remove the last k_a elements from the array a and the last k_b elements from the array b, for an arbitrary $k_a, k_b \geq 1$. However, such an operation has a cost. If the sum of the removed elements from the array a is S_a and the sum of the removed elements from the array b is S_b, then the cost of the operation is $S_a \cdot S_b$.

For example, let $a = 1, 2, 5, 4$ and $b = 5, 2, 3, 1$, and assume we remove the last 2 elements from a and 1 element from b. Then the cost of such operation is $(5 + 4) \cdot 1$, and the resulting arrays are $a = 1, 2$ and $b = 5, 2, 3$.

If some operation causes one array to become empty, then the same operation has to take all elements from the other array as well! Your goal is to compute the minimal possible cost for removing all elements from a given two arrays.

Input The first line of input contain $n \leq 300$, the length of the arrays. Next line contains n integers $a_1, \ldots, a_n$, and the line after contains n integers $b_1, \ldots, b_n$.

Output Output the minimal cost required to remove all elements from the given two arrays.

Sample input

```
5
1 2 3 4 5
5 4 3 2 1
```

Sample output

```
28
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