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Week 6 Programming Assignment: Milk Delivery

Due on 2019-10-11, 23:59 IST

- Select your language (C/C++/Java/Python2/Python3)
- Paste your code into the submission window.
- There are some public test cases and some (hidden) private test cases.
- "Compile and run" will evaluate your submission against the public test cases.
- "Submit" will evaluate your submission against the hidden private test cases. There are 10 private testcases in all, each with equal weightage. You will get feedback about which private test cases pass or fail, though you cannot see the actual test cases.
- For each private testcase, you will get a status 'Evaluated', 'Not Evaluated' or 'Time Limit Exceeded'.
  - 'Evaluated' does not mean your answer is correct, just that the entire testcase completed and reported some answer.
  - 'Time Limit Exceeded' means your code took too long.
  - 'Not Evaluated' means this testcase was not run. This typically happens to all testcases after the first one that times out.
- Ignore warnings about "Presentation errors".

Milk Delivery

A private dairy has *n* milk delivery vans. The company has mapped out *n* delivery routes. Each route has to be served once in the morning and once in the evening. Each van covers one morning route and one evening route, but these may be different routes. Each route has fixed delivery volumes in the morning and evening, possibly different.

The dairy's license limits the number of packets a van can deliver to *p* packets

per day. If a van delivers more than *p* packets, the company has to pay a fine of *f* per additional packet.

Given the delivery volumes of the morning and evening routes, your task is to find the minimum fine the company has to pay if it optimally allocates morning and evening routes to each delivery van.

For instance, suppose there are 3 routes, the packet limit per day is 24, the fine per additional packet is 4, the morning volumes for the three routes are [10,17,12] and the evening volumes for the three routes are [11,9,24]. Then, the minimum fine to be paid is 48. This can be achieved by pairing the routes as follows: (10,24), (17,9), (12,11).

Solution hint

Minimize the average morning plus evening volume by pairing up small volumes with large volumes.

Input format

The first line of the input has three space-separated integers *n*, *p* and *f*, where *n* is the number of milk routes, *p* is the daily packet limit and *f* is the fine to be paid for each packet above the limit.

The second line has *n* space-separated integers, corresponding to the morning delivery volumes of delivery routes *1,2,…n*.

The third line has *n* space-separated integers, corresponding to the evening delivery volumes of delivery routes *1,2,…n*.

Output format

Your output should be a single integer, the minimum fine to be paid if the routes are paired up optimally.

Test Data:

You may assume that $1 \leq n \leq 5000$. All values are positive integers.

Sample Input:

```
3 24 4
10 17 12
11 9 24
```

Sample Output:

```
48
```

TEXT TRANSLATION

Select the Language for this assignment. Python2 ▼

```
1
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You may submit any number of times before the due date. The final submission will be considered for grading.

This assignment has Public Test cases. Please click on "Compile & Run" button to see the status of Public test cases. Assignment will be evaluated only after submitting using Submit button below. If you only save as or compile and run the Program , your assignment will not be graded and you will not see your score after the deadline.

Save as Draft	Compile & Run	Submit	Reset

Sample Test Cases

	Input	Output
Test Case 1	3 48 1 90 16 88 4 29 49	132
Test Case 2	3 40 3 65 19 65 67 56 44	588
Test Case 3	5 39 4 40 84 90 26 2 77 6 56 12 12	840