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Badge Progress



Points: 671.00 Rank: 45271

Between Two Sets

by zemen

Problem

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Consider two sets of positive integers, $A = \{a_0, a_1, \dots, a_{n-1}\}$ and $B = \{b_0, b_1, \dots, b_{m-1}\}$. We say that a positive integer, x , is *between* sets A and B if the following conditions are satisfied:

1. All elements in A are factors of x .
2. x is a factor of all elements in B .

Given A and B , find and print the number of integers (i.e., possible x 's) that are *between* the two sets.

Input Format

The first line contains two space-separated integers describing the respective values of n (the number of elements in set A) and m (the number of elements in set B).

The second line contains n distinct space-separated integers describing a_0, a_1, \dots, a_{n-1} .

The third line contains m distinct space-separated integers describing b_0, b_1, \dots, b_{m-1} .

Constraints

- $1 \leq n, m \leq 10$
- $1 \leq a_i \leq 100$
- $1 \leq b_i \leq 100$

Output Format

Print the number of integers that are considered to be *between* A and B .

Sample Input

```
2 3
2 4
16 32 96
```

Sample Output

```
3
```

Explanation

The integers that are *between* $A = \{2, 4\}$ and $B = \{16, 32, 96\}$ are 4, 8, and 16.

[f](#) [t](#) [in](#)

Submissions: 18623

Max Score: 10

Difficulty: Easy

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Current Buffer (saved locally, editable)

C++



```
1 #include <map>
2 #include <set>
3 #include <list>
4 #include <cmath>
5 #include <ctime>
6 #include <deque>
7 #include <queue>
8 #include <stack>
9 #include <string>
10 #include <bitset>
11 #include <cstdio>
12 #include <limits>
13 #include <vector>
14 #include <climits>
15 #include <cstring>
16 #include <cstdlib>
17 #include <fstream>
18 #include <numeric>
19 #include <sstream>
20 #include <iostream>
21 #include <algorithm>
22 #include <unordered_map>
23
24 using namespace std;
25
26 bool list_divides(vector<int> &a, int x, int direction = 0) {
27     for (int j = 0; j < a.size(); j++) {
28         if (!direction && x % a[j] != 0) return false;
29         if (direction && a[j] % x != 0) return false;
30     }
31     return true;
32 }
33
34 int main(){
35     int n;
36     int m;
37     cin >> n >> m;
38     vector<int> a(n);
39     for(int a_i = 0; a_i < n; a_i++){
40         cin >> a[a_i];
41     }
42     vector<int> b(m);
43     for(int b_i = 0; b_i < m; b_i++){
44         cin >> b[b_i];
45     }
46     int cnt = 0;
47     for (int i = 1; i <= 100; i++) {
48         if (list_divides(a, i, 0) && list_divides(b, i, 1) ) {
49             cnt++;
50         }
51     }
52     cout << cnt << "\n";
53     return 0;
54 }
55
```

Line: 1 Col: 1

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