Between Two Sets

by zemen

Problem Submissions Leaderboard Discussions Editorial

Consider two sets of positive integers, $A = \{a_0, a_1, \ldots, a_{n-1}\}$ and $B = \{b_0, b_1, \ldots, b_{m-1}\}$. 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 $a_0, a_1, \ldots, a_{n-1}$.
The third line contains m distinct space-separated integers describing $b_0, b_1, \ldots, b_{m-1}$.

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.

Submissions: 18623
Max Score: 10
Difficulty: Easy

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Current Buffer (saved locally, editable) C++

```cpp
#include <map>
#include <set>
#include <list>
#include <cmath>
#include <ctime>
#include <deque>
#include <queue>
#include <stack>
#include <string>
#include <bitset>
#include <cstdio>
#include <limits>
#include <vector>
#include <climits>
#include <cstring>
#include <cstdlib>
#include <fstream>
#include <numeric>
#include <sstream>
#include <iostream>
#include <algorithm>
#include <unordered_map>

using namespace std;

bool list_divides(vector<int> &a, int x, int direction = 0) {
    for (int j = 0; j < a.size(); j++) {
        if (!direction && x % a[j] != 0) return false;
        if (direction && a[j] % x != 0) return false;
    }
    return true;
}

int main(){
    int n;
    int m;
    cin >> n >> m;
    vector<int> a(n);
    for(int a_i = 0;a_i < n;a_i++){
       cin >> a[a_i];
    }
    vector<int> b(m);
    for(int b_i = 0;b_i < m;b_i++){
       cin >> b[b_i];
    }
    int cnt = 0;
    for (int i = 1; i <= 100; i++) {
        if (list_divides(a, i, 0) && list_divides(b, i, 1) ) {
            cnt++;
        }
    }
    cout << cnt << "\n";
    return 0;
}

```

Line: 1 Col: 1

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