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#Hackwithinfy Preparation for 2022
Batch (For 2022 Batch) Previous Year
Questions Series + Practice

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Round 1 Previous Year + Advantage Round Preparation

Implementation Problem:-

Q1. Between Two Sets:-

There will be two arrays of integers. Determine all integers that satisfy the following two conditions:

1. The elements of the first array are all factors of the integer being considered
2. The integer being considered is a factor of all elements of the second array

These numbers are referred to as being *between* the two arrays.

Determine how many such numbers exist.

Example

$$A = [2, 6]$$

$$B = [24, 36]$$



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There are two numbers between the arrays: **6** and **12**.

$6 \% 2 = 0$, $6 \% 6 = 0$, $24 \% 6 = 0$ and $36 \% 6 = 0$ for the first value.

$12 \% 2 = 0$, $12 \% 6 = 0$ and $24 \% 12 = 0$, $36 \% 12 = 0$ for the second value. Return **2**.

Function Description

Complete the getTotalX function in the editor below. It should return the number of integers that are between the sets.

getTotalX has the following parameter(s):

- int a[n]: an array of integers
- int b[m]: an array of integers

Returns

- int: the number of integers that are between the sets



Input Format

The first line contains two space-separated integers, n and m , the number of elements in arrays a and b .

The second line contains n distinct space-separated integers $a[i]$ where $0 \leq i < n$.

The third line contains m distinct space-separated integers $b[j]$ where $0 \leq j < m$.



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Sample Input

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

Sample Output

```
3
```

Explanation

2 and 4 divide evenly into 4, 8, 12 and 16.

4, 8 and 16 divide evenly into 16, 32, 96.

4, 8 and 16 are the only three numbers for which each element of a is a factor and each is a factor of all elements of b.

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Code:-

1. In Python:-

```
if __name__=='__main__':
    n,m = map(int,input().split())
    a = list(map(int,input().split()))
    b = list(map(int,input().split()))
    ans = 0
    for i in range(1,101):
        flag = True
        for j in a:
            if i%j!=0:
                flag = False
                break
        if flag:
            for k in b:
                if k%i!=0:
                    flag = False
                    break
        if flag:
            ans+=1
print(ans)
```

Output:-

```
PS L:\Online Learning Website> &
2 3
2 4
16 32 96
3
```

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```
if __name__=='__main__':
    n,m = map(int,input().split())
    a = list(map(int,input().split()))
    b = list(map(int,input().split()))
    ans = 0
    for i in range(1,101):
        flag = True
        for j in a:
            if i%j!=0:
                flag = False
                break
        if flag:
            for k in b:
                if k%i!=0:
                    flag = False
                    break
        if flag:
            ans+=1
print(ans)
```



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2. In Java:-

```
import java.util.*;  
  
public class Solution {  
    public static int gcd(int a, int b) {  
        while (a > 0 && b > 0) {  
  
            if (a >= b) {  
                a = a % b;  
            }  
            else {  
                b = b % a;  
            }  
        }  
        return a + b;  
    }  
  
    public static int lcm(int a, int b) {  
        return (a / gcd(a, b)) * b;  
    }  
  
    public static int getTotalX(int[] a, int[] b) {
```

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```
int multiple = 0;
for(int i : b) {
    multiple = gcd(multiple, i);
}
// System.out.println("Multiple: " + multiple);

int factor = 1;
for(int i : a) {
    factor = lcm(factor, i);
    if (factor > multiple) {
        return 0;
    }
}

if (multiple % factor != 0) {
    return 0;
}
// System.out.println("Factor: " + factor);

int value = multiple / factor;

int max = Math.max(factor, value);
int totalX = 1;

for (int i = factor; i < multiple; i++) {
    if (multiple % i == 0 && i % factor == 0) {
        totalX++;
    }
}

return totalX;
}

public static void main(String[] args) {
    Scanner scan = new Scanner(System.in);
    int n = scan.nextInt();
    int m = scan.nextInt();
    int[] a = new int[n];
    for (int i = 0; i < n; i++) {
        a[i] = scan.nextInt();
    }
    int[] b = new int[m];
    for (int i = 0; i < m; i++) {
```

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```
b[i] = scan.nextInt();
}
scan.close();

int total = getTotalX(a, b);
System.out.println(total);
}
}
```

