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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.err.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.err.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);  
}  
}
```

