



The Tom and Jerry Factor

locked

by rithvik_kolla

Problem

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Each number can be expressed as a product of the powers of its prime factors. Taking two numbers, if we find the GCD of the number, this GCD is also a product of the prime factors that are common to both numbers. For example, let's say $X=10$ and 80 are being decided. $80 = 2^4 * 5$ $GCD(10, 80) = 10$. $10 = 2 * 5$ If we divide 80 by this GCD, we get 8. $GCD(10, 8) = 2$. $8 / 2 = 4$. If we keep repeating this process, we get 1. This means the prime factors of 80 is a subset of the prime factors of 10.

Set by rithvik_kolla

Problem Setter's code :

```
#include <stdio.h>
#include <stdlib.h>

int gcd(int x, int y);

int main()
{
    int t, n, x, ans = 0;
    int jerryNum, g = 0;
    scanf("%d", &t);
    while(t--)
    {
        scanf("%d", &n, &x);
        for(int i = 0; i < n; i++)
        {
            scanf("%d", &jerryNum);

            g = gcd(jerryNum, x);
            while(g != 1)
            {
                jerryNum /= g;
                g = gcd(jerryNum, x);
            }

            if(jerryNum == 1)
                ans += 1;
        }
        printf("%d\n", ans);
        ans = 0;
    }
}

int gcd(int x, int y)
{
    if(y == 0)
        return x;
    return gcd(y, x % y);
}
```

Statistics

Difficulty: Medium

Required Knowledge: Basic mathematics

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