DETAILS

Name

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Roll Number

TEMPBTech-CSE082

EXPERIMENT

Title

SUM OF NUMBERS AT PRIME FACTORS

Description

Prime factors of a positive integer are the prime numbers that divide that integer exactly.

Given an array arr of n integers and a positive integer num.

Let's suppose prime factorization of num is: p^a x q^b x r^c x .... x z^f ,where p,q,r...z are prime numbers.

Sum of numbers in array arr at indices of prime factors of number num is: a x arr[p] + b x arr[q] + c x arr[r] +...... + f x arr[z].

You are given an array arr of size n and a positive integer num. You are required to calculate the sum of numbers in arr as mentioned above, and print the same.

Note:

- If arr is empty, print -1.
- If prime factor of num not found as indices, print 0.

Input Format:

The input consists of three lines:

- The first line contains an integer, i.e. n.
- The second line contains an array arr of length of n.
- The third line contains an integer num

The input will be read from the STDIN by the candidates.

Output Format:

Print the sum that was mentioned in the problem statement.

Example:

Input:

6

11 21 32 45 1 23

6

Output:

77

Explanation:

$6 = 2^1 \times 3^1$

sum=1*arr[2]+1*arr[3]=1*32+1*45=77

Source Code:

```python
def prime_factors(num):
    factors = {}
    divisor = 2
    while num > 1:
        while num % divisor == 0:
            if divisor in factors:
                factors[divisor] += 1
            else:
                factors[divisor] = 1
            num //= divisor
        divisor += 1
    return factors

n = int(input())
arr = list(map(int, input().split()))
num = int(input())

if len(arr) == 0:
    print(-1)
else:
    factors = prime_factors(num)
    result = 0
    found = False

    for prime, exponent in factors.items():
        if prime < n:
            result += exponent * arr[prime]
            found = True

    if not found:
        print(0)
    else:
        print(result)
```

RESULT

4 / 5 Test Cases Passed | 80 %