



STUDENT REPORT

DETAILS

Name

K S BANDE NAWAZ AHAMED

Roll Number

3BR23CS074

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: $p^a \times q^b \times r^c \times \dots \times z^f$, where p,q,r...z are prime numbers.

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

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:

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

$$\text{sum}=1*\text{arr}[2]+1*\text{arr}[3]=1*32+1*45=77$$

Source Code:

```
def prime_factorization_sum(arr, num):

    prime_factors = []
    while num > 1:
        for i in range(2, int(num**0.5) + 1):
            if num % i == 0:
                prime_factors.append(i)
                num //= i
                break
        else:
            prime_factors.append(num)
            break

    return sum(arr[i] for i in prime_factors if i < len(arr))

# Example usage:
n=int(input())
arr = list(map(int,input().split()))
num = int(input())
result = prime_factorization_sum(arr, num)
print(result) # Output: 9 (arr[2])
```

RESULT

3 / 5 Test Cases Passed | 60 %