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STUDENT REPORT

DETAILS

Name

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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 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(n):
    factors = []
    i = 2
    while i * i <= n:
        if n % i == 0:
            factors.append(i)
            n //= i
        else:
            i += 1
    if n > 1:
        factors.append(n)
    return factors

def calculate_sum(arr, num):
    # Check if array is empty
    if len(arr) == 0:
        return -1

    # Get prime factors of num
    factors = prime_factors(num)

    # Calculate the sum using indices from prime factors
    total_sum = 0
    found = False
    for factor in factors:
        if factor < len(arr):
            total_sum += arr[factor]
            found = True

    if not found:
        return 0

    return total_sum

# Read input
n = int(input())  # First input line
arr = list(map(int, input().split()))  # Second input line
num = int(input())  # Third input line

# Calculate and print the result
result = calculate_sum(arr, num)
print(result)
```

RESULT

4 / 5 Test Cases Passed | 80 %