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: $p^a \times q^b \times r^c \times .... \times z^f$,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:

```
def prime_factors(n):
    """ Return the prime factors of the given number n as a list of indices. """
    factors = []
    # Check for number of 2s
    while n % 2 == 0:
        factors.append(2)
        n //= 2

    # Check for odd factors
    for i in range(3, int(n**0.5) + 1, 2):
        while n % i == 0:
            factors.append(i)
            n //= i

    # If n is a prime number greater than 2
    if n > 2:
        factors.append(n)

    return factors

def main():
    import sys
    input = sys.stdin.read
    data = input().strip().splitlines()

    n = int(data[0])
    if n == 0:
        print(-1)
        return

    arr = list(map(int, data[1].split()))
    num = int(data[2])

    if not arr:
        print(-1)
        return

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

    # We will store the sum here
    total_sum = 0
    indices = set()

    for factor in factors:
        # Check if factor is a valid index
        if factor < n:
            total_sum += arr[factor]
            indices.add(factor)

    if not indices:
        print(0)
    else:
        print(total_sum)

if __name__ == "__main__":
    main()
```

RESULT

4 / 5 Test Cases Passed | 80 %