CRACK A HACK

Breaking Sticks

Course: ALGORITHMIC PROBLEM SOLVING
Course code: 17ECSE309

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1. Introduction

You recently received a bag of chocolate sticks for Halloween. To prevent you from compulsively eating all the chocolate sticks in one go, your dietician devises the following fun game.

In each move, you choose one of the sticks from your bag. Then, you either eat it, or break it into some number of equally-sized parts and save the pieces for later. The lengths of all sticks must always be integers, so breaking a stick into d parts is possible only if d is a divisor of the stick's length, and $d>1$.

Note that this means that a stick of length 1 cannot be broken anymore, and can only be eaten.

Given the chocolate sticks you received, determine the length of the longest sequence of moves you can perform.

Complete the function `longestSequence` which takes an integer array a, denoting the lengths of the chocolate sticks, as input. Return the maximum number of moves you can perform to consume the chocolate sticks according the game.

2. Logic

Do Recursion till n==1 or n==0. If n is even repeat for n/2 and add n. If prime add n and break else, if odd and non prime divide by the first divisor and return n+func(n//i)

For Example:
You break a chocolate stick into three equal parts (1 move), then break each of them in half (3 moves), and then eat all six sticks (6 moves). This gives you 10 moves.

3. Code

```
from math import sqrt,ceil
def func(n):
    if(n==0 or n==1):
        return 0
    if(n%2==0):
        return n+func(n//2)
    else:
        temp=ceil(sqrt(n))
        for i in range(3,temp+2,2):
            if(n%i==0):
                return n+func(n//i)
        return n
n=int(input())
a=list(map(int,input().split()))
ans=0
for i in range(n):
    ans+=func(a[i])+1
print(ans)
```

4. References

https://github.com/anirudhkannanvp/HACKERRANK/blob/master/WORLD%20CODESPRINT%2012-%20HACKERRANK/Breaking%20Sticks%20-%20World%20Codesprint%2012%20-%203.py

https://www.hackerrank.com/contests/world-codesprint-12/challenges/breaking-sticks/forum