

Metamorph

DiPS CodeJam 23

Prompt

A “metamorph” $m(n, a[]) = a_n[]$ of an array $a[]$ is defined as such:

$$a_{n(i+1)} - a_{n(i)} = a_{n-1(i)}$$

For example, given the sequence $a[1, 2, 3, 4, 5, 6, 7, 8, 9]$:

$$m(2, a[]) = a_2[1, 2, 4, 7, 11, 16, 22, 29, 37, 46]$$

$$m(3, a[]) = a_3[1, 2, 4, 8, 15, 26, 42, 64, 93, 130, 176]$$

Your task, given an list $l[]$ and an integer n , is to find $m(n, l[])$.

Input Format

The input will contain 2 lines:

- The first line will contain a space-separated list of integers, $l[]$.
- The second line will contain an integer n .

Output Format

The only line of your output must contain a space-separated list $m(n, l[])$.

Sample Input/Output

Input	Output
1 2 3 4 5 6 7 8 9 3	1 2 4 8 15 26 42 64 93 130 176

Solution

Simplifying the Problem

Solving the Problem

Sample Program

```
l=list(map(int, input().strip().split()))
n=int(input())

metamorph=l

for _ in range(n-1):
    next_metamorph=[]
    next_metamorph.append(metamorph[0])

    for num in metamorph:
        next_metamorph.append(next_metamorph[-1]+num)

    metamorph=next_metamorph

print(" ".join(list(map(str, metamorph))))
```