Plotting Polynomials

Problem ID: plot

Graphical calculators have become popular among high school students. They allow functions to be plotted on screen with minimal efforts by the students. These calculators generally do not possess very fast processors. In this problem, you are asked to implement a method to speed up the plotting of a polynomial.

Given a polynomial $p(x) = a_n x^n + ... + a_1 x + a_0$ of degree n, we wish to plot this polynomial at the m integer points $x = 0, 1, \ldots, m-1$. A straightforward evaluation at these points requires mn multiplications and mn additions.

One way to speed up the computation is to make use of results computed previously. For example, if $p(x) = a_1 x + a_0$ and $p(i)$ has already been computed, then $p(i+1) = p(i) + a_1$. Thus, each successive value of $p(x)$ can be computed with one addition each.

In general, we can compute $p(i+1)$ from $p(i)$ with n additions, after the appropriate initialization has been done. If we initialize the constants C_0, C_1, ..., C_n appropriately, one can compute $p(i)$ using the following pseudocode:

```
p(0) = C_0; t_1 = C_1; ... t_n = C_n;
for i from 1 to m-1 do
     p(i)    = p(i-1)  + t_1;
     t_1     = t_1     + t_2;
     t_2     = t_2     + t_3;
               :
               :
     t_(n-1) = t_(n-1) + t_n;
end
```

For example, if $p(x) = a_1 x + a_0$, we can initialize $C_0 = a_0$ and $C_1 = a_1$.

Your task is to compute the constants $C_0, C_1, \ldots, C_n$ for the above pseudocode to give the correct values for $p(i)$ at $i = 0, \ldots, m-1$.

Input

The input consists of one case specified on a single line. The first integer is n, where $1 \leq n \leq 6$. This is followed by $n+1$ integer coefficients $a_n, \ldots, a_1, a_0$. You may assume that $|a_i| \leq 50$ for all i, and $a_n \neq 0$.

Output

Print the integers C_0, C_1, ..., C_n, separated by spaces.

Sample Input 1	Sample Output 1
1 5 2	2 5

Sample Input 2	Sample Output 2
2 2 -4 5	5 -2 4

Sample Input 3	Sample Output 3
6 1 -20 4 30 0 -1 2	2 14 -302 -2136 -3144 -600 720