Problem C. Polynomial

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

The department of machine learning algorithms optimization at Yandex is actively searching the best universal polynomial representation for all used formulae.

They operate with polynomials of the form $p = a_0 + a_1x + \ldots + a_{n-1}x^{n-1} + a_nx^n$ where $0 \le a_i < 10^9 + 7$. All operations with polynomials, its coefficients and values at points are calculated modulo $10^9 + 7$ to avoid big or non-integer numbers.

Recently, one of our new interns has invented the new short polynomial representation which outperforms current results and seems to be very promising.

Consider a non-zero polynomial $p(x) = a_0 + a_1x + \ldots + a_{n-1}x^{n-1} + a_nx^n$ and its factorization

$$p(x) = p_1(x) \cdot p_2^2(x) \cdot p_3^3(x) \cdot \ldots \cdot p_k^k(x),$$

where $\deg(p_k(x)) \ge 1$ and the factorization has the maximum possible k, then the maximum possible $\deg(p_k(x))$, then the maximum possible $\deg(p_{k-1}(x))$ and so on. Here $\deg(q(x))$ is the degree of the polynomial $q(x)$. All the polynomials $p_1, p_2, \ldots, p_k$ meet the same requirements on coefficients and calculation of values at points as polynomial p.

Unfortunately, the intern hasn't come up with a fast solution for this factorization problem. So, we want to check if you are the one that can implement an efficient solution. And if you can't, we promise to forget about this hopeless new idea of such factorization type.

Your task is to prove us you can.

Input

The first line consists of one integer n, the degree of the input polynomial p ($1 \le n \le 100$).

The second line contains all $n + 1$ integers: the coefficients $a_0, a_1, a_2, \ldots, a_n$ of the polynomial ($0 \le a_i < 10^9 + 7$, $a_n \ne 0$).

Output

In the first line, output a single integer k.

In the second line, output k integers: the degrees $\deg(p_1(x)), \deg(p_2(x)), \ldots, \deg(p_k(x))$.

Examples

standard input	standard output
5 0 0 2 6 6 2	3 0 1 1
2 224999993 70000 1	2 0 1
2 1 1 1	1 2