F. Polynom

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

You are given a polynom in form $p(x) = (x + a_1) \cdot (x + a_2) \cdot \ldots (x + a_n)$. Write Pike program to print it in a standard form $p(x) = x^n + b_1 x^{n-1} + \ldots + b_{n-1} x + b_n$. You should write each addend in form «`C*X^K`» (for example, `5*X^8`).

Please, write the polynom in the shortest way, so you should skip unnecessary terms: some terms «`C*X^K`» should be reduced or even omitted. Look for the samples for clarification.

Input

The first line of the input contains n ($1 \le n \le 9$). The following n lines contain integer a_i ($-10 \le a_i \le 10$).

Output

Print the given polynom in a standard way. Note, that the answer in this problem response uniquely determined.

Examples

input
2 -1 1

output
X^2-1

input
2 1 1

output
X^2+2*X+1