

Problem E. My Number

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 256 mebibytes

Taaaamara is big fan of the Serbian quiz “Slagalica”. Her favourite game in the quiz is “My Number”. In this game you get a set of integers S and one target number T . You can use each element from S at most once and some mathematical operations to build a valid mathematical expression equal to T . For example, if you have $S = 2, 5, 2, 15, 10$ and $T = 38$, one valid expression can be: $2 * (15 + 5) - 2$.

Today, Taaaamara is playing one modification of this game:

- She has an array A with n integers, all elements in A are target numbers.
- She needs to find an array B with k elements (elements in B don't have to be different), all elements in B should be integers in range $[1, 10^8]$.
- She wants to build one valid mathematical expression for each of the target numbers A_i using only elements from B . In case some element appears x times in B , you can use that element at most x times for each of the expressions.
- She can use the following binary operators: '+' (addition), '-' (subtraction), '*' (multiplication), **Divison is not allowed**. She can use brackets too.
- The length of array B (k) is not fixed, but as everybody knows Taaaamara is smart girl, so she wants to find an array B with length not bigger than 12 ($k \leq 12$).

Can you help her?

Input

First line of input contains number n ($1 \leq n \leq 124$). Second line of input contains n integers, array A ($1 \leq A_i \leq 10^8$).

Output

In the first line of output print number $k \leq 12$, the length of array B . In the second line of output print k integers, elements of array B . Each of next n lines contains one valid mathematical expression, in the i -th line, the value of the expression should be equal to A_i . Expressions should be in the following format:

- Each expression has at most 1000 characters.
- For the addition of two numbers you can use character '+' (ascii value 43).
- For the subtraction of two numbers you can use character '-' (ascii value 45).
- For the multiplication of two numbers you can use character '*' (ascii value 42).
- for brackets use characters '(' (ascii value 40) and ')' (ascii value 41).
- **It is not allowed to use operators '+' and '-' as unary operators**. For example expressions $-5 + 3$ and $5 - -3$ are not valid.
- Besides the characters listed above you can only use numbers from B and space character ' ' (ascii value 32). Special formatting of the output is not needed (see example).

Examples

standard input	standard output
6 30 13 15 5 3 21	3 2 5 3 2*5*3 5*3- 2 5 *3 (5) 5 -2 3* (5+2)