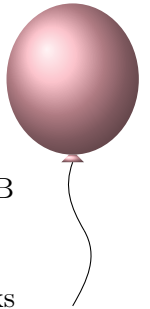


## D Morse Code

TIME LIMIT: 2.0s  
MEMORY LIMIT: 2048MB



Morse code is a classical way to communicate over long distances, but there are some drawbacks that increase the transmission time of long messages.

In Morse code, each character in the alphabet is assigned a sequence of dots and dashes such that **no sequence is a prefix of another**. To transmit a string of characters, the sequences corresponding to each character are sent in order. **A dash takes twice as long to transmit as a dot.**

Your alphabet has  $n$  characters, where the  $i$ -th character appears with frequency  $f_i$  in your language. Your task is to design a Morse code encoding scheme, assigning a sequence of dots and dashes to each character, that minimizes the expected transmission time for a single character. In other words, you want to minimize  $f_1 t_1 + f_2 t_2 + \dots + f_n t_n$ , where  $t_i$  is the time required to transmit the sequence of dots and dashes assigned to the  $i$ -th character.

### INPUT

The first line contains an integer  $n$  ( $2 \leq n \leq 200$ ) — the number of characters in the alphabet.

The second line contains  $n$  real numbers  $f_1, f_2, \dots, f_n$  ( $0 < f_i < 1$ ) —  $f_i$  is the frequency of the  $i$ -th character. All values  $f_1, f_2, \dots, f_n$  are given with exactly four digits after the decimal point. The sum of all frequencies is exactly 1.

### OUTPUT

Print  $n$  lines, each containing one string consisting of dots `.` and dashes `-`. The  $i$ -th line corresponds to the sequence of dots and dashes that you assign to the  $i$ -th character.

If there are multiple valid assignments with the minimum possible expected transmission time, any of them is considered correct.

### SAMPLES

Sample input 1	Sample output 1
3 0.3000 0.6000 0.1000	- . . --

#### Explanation of sample 1.

The alphabet contains three letters, say  $a$ ,  $b$ , and  $c$ , with respective frequencies 0.3, 0.6, and 0.1. In the optimal assignment, we assign  $a$  to `-.`,  $b$  to `.`, and  $c$  to `--`. This gives an expected transmission time of  $0.3 \cdot 3 + 0.6 \cdot 1 + 0.1 \cdot 4 = 1.9$  time units per character, which is optimal.

For comparison, the assignment  $a \rightarrow \text{'..'}, b \rightarrow \text{'-'}, c \rightarrow \text{'.-'}$  has an expected transmission time of  $0.3 \cdot 2 + 0.6 \cdot 2 + 0.1 \cdot 3 = 2.1$ . The assignment  $a \rightarrow \text{'-'}, b \rightarrow \text{'.'}, c \rightarrow \text{'..'}$  has a lower expected



transmission time, but is invalid since ‘.’ is a prefix of ‘..’.

Sample input 2	Sample output 2
3 0.3000 0.4500 0.2500	.. - .-