Task Rastući

The European Union recently passed a new law stating that all sequences must be increasing, and starting from January 1, 2026, anyone possessing a sequence that is not increasing will be strictly penalized. More precisely, a sequence $a_1, a_2, ..., a_n$ is **illegal** if there exists i $(1 \leq i < n)$ such that $a_i > a_{i+1}$, and otherwise the sequence is **legal**.

Ivica recently received a sequence as a gift and is worried that he might get into trouble because of the new law. Fortunately, Ivica realized that he can take any two adjacent elements of his sequence and replace them with their sum. More precisely, if Ivica's sequence is currently $a_1, a_2, ..., a_m$, he can choose some k such that $1 \leq k < m$ and replace his sequence with $a_1, a_2, ..., a_{k-1}, (a_k + a_{k+1}), a_{k+2}, ..., a_m$. Ivica can perform this operation as many times as he wants, and his goal is to obtain a legal sequence using such operations.

Of course, Ivica does not want to completely destroy his sequence, so he would like to obtain the longest possible legal sequence from his initial sequence. Help Ivica determine the length of the longest legal sequence he can get from the initial sequence and output any such legal sequence of maximum length.

Input

In the first line, there is a natural number n $(1 \leq n \leq 5000)$, the length of Ivica's sequence.

In the second line, there are n natural numbers a_i $(1 \leq a_i \leq 10^9)$, the sequence that Ivica received as a gift.

Output

In the first line, print a single number m - the length of the longest valid sequence that Ivica can obtain from the initial sequence.

In the second line, print m numbers, the elements of one of the valid sequences of length m that Ivica can obtain from the initial sequence. If there are multiple such sequences, print any one of them.

Scoring

Subtask	Points	Constraints
1	10	$n \leq 20$
2	15	$n \leq 100, a_i \leq 100$
3	20	$n \leq 500$
4	25	$n \leq 1000$
5	40	No additional constraints.

60% of the points for a test case are earned by having a correct output of the 1st line.

The remaining 40% of the points for the test case are earned by having a correct output of the 2nd line.

Examples

input

```
6
3 2 6 3 3 8
```

output

```
4
5 6 6 8
```

input

```
7
3 6 4 2 6 2 5
```

output

```
5
3 6 6 6 7
```

Clarification of the first example: In the first operation, Ivica will replace the first 2 elements of the array with their sum and obtain the illegal array [5, 6, 3, 3, 8]. Then, he will replace the third and fourth elements of the array with their sum and obtain the legal array [5, 6, 6, 8]. It can be shown that this is a legal array of maximal length that can be obtained from the initial array.