

Problem C

Rod Cutting

Time limit: 1 second
Memory limit: 2048 megabytes

Problem Description

You are presented with a rod of length x_n that has n marked points. The distance between the beginning of the rod and the i -th marked point is denoted as x_i .

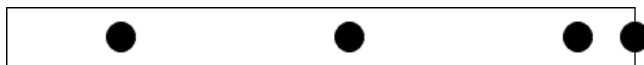


Figure 1: An example of rod with marked points.

Your objective is to divide the rod into n pieces using $n - 1$ cuts. In each cut, you choose an unselected marked point x_i ($1 \leq i \leq n - 1$) and make the cut at that point. As a result, the rod containing that marked point is split into two separate pieces. The cost associated with this operation is equal to the difference in length between the two resulting rods.

Your task is to determine the minimum cost required to break the rod into n pieces. You also have to show a way to perform the cuts.

Input Format

The first line of the input contains an integer n . The second line of the input contains n space-separated integers x_1, x_2, \dots, x_n .

Output Format

In the first line, output the minimum cost required to divide the rod into n pieces.

In the second line, provide a sequence of $n - 1$ integers: a_1, a_2, \dots, a_{n-1} . These integers represent the order in which the cuts should be made. To clarify, when outputting a_1, a_2, \dots, a_{n-1} , you will begin by making the first cut at the a_1 -th marked point and continue with subsequent cuts, all the way to the a_{n-1} -th marked point.

To achieve a correct solution, it is essential that a_1, a_2, \dots, a_{n-1} forms a permutation of $1, 2, \dots, n - 1$, demonstrating a method to make these cuts that minimizes the cost.

Technical Specification

- $2 \leq n \leq 200$
- $1 \leq x_i \leq 10^9$ for $i = 1, 2, \dots, n$
- It is guaranteed that x_1, \dots, x_n is sorted in ascending order, and all numbers are distinct.

Scoring

1. (30 points) $2 \leq n \leq 10$
2. (70 points) No additional constraints.

Sample Input 1

```
5
3 5 10 13 29
```

Sample Output 1

```
9
4 2 1 3
```

Sample Input 2

```
2
1 100
```

Sample Output 2

```
98
1
```

Sample Input 3

```
7
2 49 69 88 134 135 307
```

Sample Output 3

```
173
6 2 1 4 3 5
```