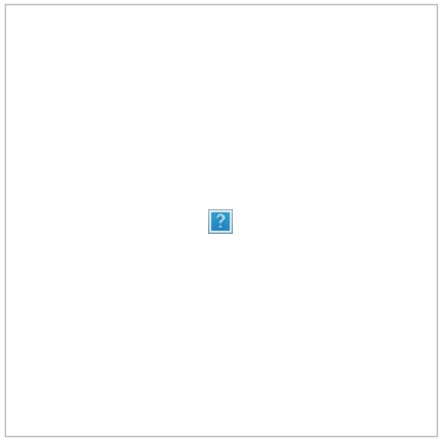
[PI008] - Hiking Day



You are planning a hike in the famous Circular Mountain Chain. It has this name due to the circular nature of its mountains, that surround a lush valley.

You want to visit all the mountains in a clockwise manner, but you're afraid that it may be too tiresome. Still, you notice that if you start at one mountain and finish at another, you don't have to return to the initial mountain.

Find the least tiresome hike.

Task

You are given a sequence of mountain heights `a`, corresponding to a clockwise order of the mountain chain.

From each mountain there's a trail to the mountain immediately after it. Naturally, since it's circular, from the last mountain in the sequence there's a trail to the first mountain.

The cost of a trail from a mountain with height `x` to a mountain with height `y` is `|x - y|`.

The total cost of a hike is the sum of all the trails it took.

You can start at any mountain and end at the mountain preceding it. Again naturally, because it's circular, if you start at the first mountain, you can end at the last.

Find a hike with minimal cost and print the heights of the mountains you visit in order.

If there are ties, print the hike that starts in the mountain that appears first in the sequence.

Input

You will receive two lines as input.

In the first line, you will receive an integer `n` (`1 <= n <= 100'000`), corresponding to the number of mountains.

In the second line, you will receive `n` integers `a_1, a_2, ..., a_n` separated by spaces; each number `a_i` (`1 <= a_i <= 100'000`) corresponds to the height of the `i`th mountain.

Output

Print one line with `n` numbers corresponding to the hike with minimal cost.

Example 1

Input

```
4
1 10 5 4
```

Output

```
10 5 4 1
```

Explanation

Going from the mountain with height `1` to the mountain with height `10` has cost `9`.

Going from the mountain with height `10` to the mountain with height `5` has cost `5`.

Going from the mountain with height `5` to the mountain with height `4` has cost `1`.

Going from the mountain with height `4` to the mountain with height `1` has cost `3`.

There are 4 possible hikes:

- `1 10 5 4` - This hike has cost `9+5+1 = 15`.
- `10 5 4 1` - This hike has cost `5+1+3 = 9`.
- `5 4 1 10` - This hike has cost `1+3+9 = 13`.
- `4 1 10 5` - This hike has cost `3+9+5 = 17`.

Threfore, the hike with minimum cost is `10 5 4 1`.

Example 2

Input

```
5
35291 66720 86789 74576 83062
```

Output

```
35291 66720 86789 74576 83062
```
