

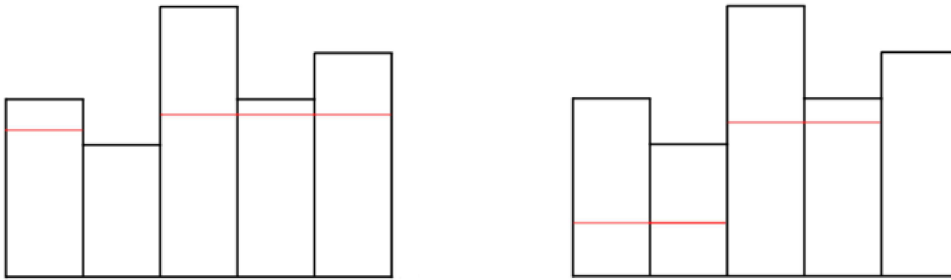
# Fence Frenzy (F)

Memory limit: 512 MB

Time limit: 1.00 s

In his garden, Mr. Malnar has a fence made of  $n$  stalks of fence, and the height of the  $i$ -th stalk is  $a_i$ . Mr. Malnar knows that the total height of all the stalks is  $s$ .

To renew his fence, Mr. Malnar decided to trim the plants to a certain integer height. The stalks of fence are fragile, so each stalk can be cut at most once. Also, Mr. Malnar is not very skilled with scissors, so to make his job easier, if he cuts any stalk at a certain height  $v$ , then every neighboring stalk strictly taller than  $v$  must also be trimmed to that height. Note that Mr. Malnar does not necessarily need to trim every stalk; he might forget the scissors and not trim any at all.



On the left is an example of correct cutting, and on the right is an example of incorrect cutting. It is not allowed to cut between the 2nd and 3rd or the 4th and 5th columns.

Mr. Malnar is interested in finding out, for each length  $x$  from 0 to  $s$ , how many different ways there are to obtain a fence with a total length equal to  $x$  by cutting. Two fences are considered different if there exists a plant of different heights in those fences. He is not interested in the exact number, but rather in the remainder when divided by 998 244 353.

## Input

In the first line, there is the number  $n$  ( $1 \leq n \leq 5\,000$ ), which represents the number of stalks in the fence.

In the second line, there are  $n$  numbers where the  $i$ -th number denotes  $a_i$  ( $0 \leq a_i \leq 5\,000$ ), the height of the  $i$ -th stalk.

Additionally, it holds that the total height of all the stalks is at most 5 000 ( $\sum_{1 \leq i \leq n} a_i = s \leq 5\,000$ ).

## Output

It is necessary to print  $s + 1$  numbers, where the  $i$ -th number is the remainder of the number of possible fences with a total sum of  $i - 1$  divided by 998 244 353.

## Examples

### Input

```
4
0 0 1 6
```

### Output

```
1 0 1 1 1 1 1 1
```

### Input

```
4
2 1 2 1
```

### Output

```
1 0 0 0 1 2 1
```

### Input

```
5
1 1 2 1 0
```

### Output

```
1 0 0 0 1 1
```

## Notes

Explanation of the first sample case: In the first example, it is impossible to achieve a fence with a total length of 1. If we cut the 3rd stalk to a height of 0, we must also cut the 4th stalk to a height of 0. Similarly, if we cut the 4th stalk, we must cut the 3rd stalk. For all numbers from 2 to 7, there is exactly one way to achieve that fence: from 2 to 6 by cutting the 4th column, and 7 by doing nothing. A fence with a total length of 0 can be achieved by cutting everything to a height of 0.