

Contest Duration: 2018-10-27(Sat) 14:00 (<http://www.timeanddate.com/worldclock/fixetime.html?iso=20181027T2100&p1=248>) - 2018-10-27(Sat) 15:40 (<http://www.timeanddate.com/worldclock/fixetime.html?iso=20181027T2240&p1=248>) (local time) (100 minutes)

iso=20181027T2100&p1=248) - 2018-10-27(Sat) 15:40 (<http://www.timeanddate.com/worldclock/fixetime.html?iso=20181027T2240&p1=248>) (local time) (100 minutes)

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## F - Circular

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Time Limit: 2 sec / Memory Limit: 1024 MB

Score: 900 points

### Problem Statement

You are given a sequence of  $N$  integers:  $A_1, A_2, \dots, A_N$ .

Find the number of permutations  $p_1, p_2, \dots, p_N$  of  $1, 2, \dots, N$  that can be changed to  $A_1, A_2, \dots, A_N$  by performing the following operation some number of times (possibly zero), modulo 998244353:

- For each  $1 \leq i \leq N$ , let  $q_i = \min(p_{i-1}, p_i)$ , where  $p_0 = p_N$ . Replace the sequence  $p$  with the sequence  $q$ .

### Constraints

- $1 \leq N \leq 3 \times 10^5$
- $1 \leq A_i \leq N$
- All values in input are integers.

### Input

Input is given from Standard Input in the following format:

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$N$   
 $A_1$   
:  
 $A_N$

## Output

Print the number of the sequences that satisfy the condition, modulo 998244353.

### Sample Input 1 [Copy](#)

```
3
1
2
1
```

[Copy](#)

### Sample Output 1 [Copy](#)

```
2
```

[Copy](#)

(2, 3, 1) and (3, 2, 1) satisfy the condition.

### Sample Input 2 [Copy](#)

```
5
3
1
4
1
5
```

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### Sample Output 2 [Copy](#)

```
0
```

[Copy](#)

### Sample Input 3 [Copy](#)

```
8
4
4
4
1
1
1
2
2
```

### Sample Output 3

[Copy](#)

```
24
```

[Copy](#)

### Sample Input 4

[Copy](#)

```
6
1
1
6
2
2
2
```

[Copy](#)

### Sample Output 4

[Copy](#)

```
0
```

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