

Contest Duration: 2025-06-28(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250628T2100&p1=248>) - 2025-06-28(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250628T2240&p1=248>) (local time) (100 minutes)

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F - Socks 4

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 525 points

Problem Statement

In Takahashi's chest of drawers, there are socks of N colors, with A_i socks of color i .

Initially, Takahashi has one sock of color C outside the chest of drawers, separate from these socks, and repeats the following operation until the termination condition is met:

- Uniformly randomly choose and draw 1 sock from the chest of drawers. Then, if the two socks he has outside the chest of drawers are the same color, terminate the operation. Otherwise, choose one of the socks and put it back in the chest of drawers. He always chooses the sock to put back so as to minimize the expected number of future sock draws.

Find the expected number, modulo 998244353, of sock draws until the operation terminates.

► Finding the expected value modulo 998244353

Constraints

- $1 \leq N \leq 3 \times 10^5$
- $1 \leq C \leq N$
- $1 \leq A_i \leq 3000$
- All input values are integers.

2026-01-02 (Fri)
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Input

The input is given from Standard Input in the following format:

```
 $N$   $C$   
 $A_1$   $A_2$   $\dots$   $A_N$ 
```

Output

Output the answer.

Sample Input 1

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```
3 2  
3 1 2
```

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Sample Output 1

[Copy](#)

```
249561092
```

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The expected number of sock draws is $\frac{15}{4}$.

Sample Input 2

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```
8 4  
4 1 6 2 5 1 7 3
```

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Sample Output 2

[Copy](#)

```
393623786
```

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/#telegram)

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