Problem K

Yet Another Sequence Related Problem

There are two sequences of integers, $A_{1..N+M-1}$ and $B_{1..N}$. The sequence $B_{1..N}$ is obtained by aggregating the maximum value of every M consecutive elements in A, or formally, $B_i = \max_{0 \le j \le M-1} A_{i+j}$ for all $i = 1..N$.

Due to the COVID-19 pandemic, A is completely lost. To make matters worse, zero or more elements in B are also missing. Fortunately, you remember that each element in A and B are between 1 and K (inclusive).

It doesn't take you a long time to realize that there might be more than one possibility for an A sequence that is consistent with the given B. Your task in this problem is to figure out how many such possible A sequences are there if possible. Since the output can be very big, you only need to output its positive remainder when divided by $998\,244\,353$.

Input

Input begins with a line containing three integers N M K ($1 \le N, M, K \le 100\,000$) representing the length of B, the number of consecutive elements in A to make B, and the upper bound of any elements in A, respectively. The next line contains N integers B_i ($B_i \in \{-1, 1, 2, \ldots, K\}$) representing the given sequence of B. Any missing element in B is represented by -1.

Output

Output in a line an integer representing the number of possible A modulo $998\,244\,353$.

Sample Input #1

```
4 2 3
1 2 2 -1
```

Sample Output #1

```
6
```

Explanation for the sample input/output #1

There are 6 possible sequences for A that satisfy the given B.

- 1 1 2 1 1
- 1 1 2 1 2
- 1 1 2 1 3
- 1 1 2 2 1
- 1 1 2 2 2
- 1 1 2 2 3

Sample Input #2

```
5 4 6
3 5 2 -1 3
```

Sample Output #2

```
0
```

Explanation for the sample input/output #2

There is no possible sequence for A that satisfies the given B. Perhaps there is something wrong with B, but it's not your problem.

Sample Input #3

```
5 3 7
3 -1 -1 -1 5
```

Sample Output #3

```
8113
```