Problem H. Hamming Distance

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	512 mebibytes

Helena has generated a list of sequences:

$$\begin{aligned} S^1 &= [1] \\ S^2 &= S^1 + [2] + S^1 \\ S^3 &= S^2 + [3] + S^2 \\ &\dots \\ S^m &= S^{m-1} + [m] + S^{m-1} \end{aligned}$$

where $A + B$ means the concatenation of two sequences A and B.

For a given sequence $[a_1, a_2, \dots, a_n]$, let $f(i)$ be the Hamming distance between $[a_1, a_2, \dots, a_n]$ and $[S^m_i, S^m_{i+1}, \dots, S^m_{i+n-1}]$ $(1 \le i \le |S^m| - n + 1)$.

Helena would like to find the minimum value of $f(i)$ and the sum of $f(i)$ modulo $(10^9 + 7)$.

Note that the Hamming distance between two sequences of equal length is the number of positions at which the corresponding elements are different.

Input

The input consists of several test cases terminated by end-of-file.

The first line contains two integers n and m.

The second line contains n integers $a_1, a_2, \dots, a_n$.

- $1 \le m \le 10^5$
- $1 \le n \le \min(|S^m|, 10^5)$
- $1 \le a_i \le m$
- The sum of n does not exceed 2×10^6.

Output

For each test case, output two integers denoting the minimum value of $f(i)$ and the sum of $f(i)$ modulo $(10^9 + 7)$.

Example

standard input	standard output
3 3 1 2 3 3 3 1 1 1 3 3 1 2 1	1 9 1 7 0 7