Tima and sum of powers

Input file:	H.in
Output file:	H.out
Time limit:	1 second
Memory limit:	256 megabytes

Tima has an integer N and an array A with N integers. He also has two integers M and K. For each i from 1 to $N-M+1$ Tima wants to find the answer of equation $1^K \cdot A_i + 2^K \cdot A_{i+1} + \cdots + M^K \cdot A_{i+M-1}$. Help him to solve this problem.

Input

The first line contains three integers $N(1 \le N \le 10^5)$,$M(1 \le M \le N)$ and $K(0 \le K \le 20)$.

The second line contains N integers $A_1, A_2, \cdots, A_N$ $(1 \le A_i \le 10^9)$.

Output

Output $N-M+1$ lines, in i_{th} line output the answer of $1^K \cdot A_i + 2^K \cdot A_{i+1} + \cdots + M^K \cdot A_{i+M-1}$ modulo 10^9+7.

Scoring

This problem contains five subtasks:

1. $1 \le N \le 100, 0 \le K \le 3, 1 \le A_i \le 10$. Score 7 points.
2. $1 \le N \le 10^4, 0 \le K \le 20, 1 \le A_i \le 10^9$. Score 12 points.
3. $1 \le N \le 10^5, 0 \le K \le 1, 1 \le A_i \le 10^9$. Score 13 points.
4. $1 \le N \le 10^5, K = 2, 1 \le A_i \le 10^9$. Score 20 points.
5. $1 \le N \le 10^5, 0 \le K \le 20, 1 \le A_i \le 10^9$. Score 48 points.

Examples

H.in	H.out
5 3 2 1 2 3 4 5	36 50 64
3 2 0 7 3 2	10 5

Note

Explanation for sample 1:

When $i = 1$, $1^K \cdot A_1 + 2^K \cdot A_2 + 3^K \cdot A_3 = 1^2 \cdot 1 + 2^2 \cdot 2 + 3^2 \cdot 3 = 1 + 8 + 27 = 36$.

When $i = 2$, $1^K \cdot A_2 + 2^K \cdot A_3 + 3^K \cdot A_4 = 1^2 \cdot 2 + 2^2 \cdot 3 + 3^2 \cdot 4 = 50$.

When $i = 3$, $1^K \cdot A_3 + 2^K \cdot A_4 + 3^K \cdot A_5 = 1^2 \cdot 3 + 2^2 \cdot 4 + 3^2 \cdot 5 = 64$.