

E. Partial Sums

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You've got an array a , consisting of n integers. The array elements are indexed from 1 to n . Let's determine a two step operation like that:

1. First we build by the array a an array s of partial sums, consisting of n elements. Element number i ($1 \leq i \leq n$) of array s equals $\sum_{j=1}^i a_j$. The operation $x \bmod y$ means that we take the remainder of the division of number x by number y .
2. Then we write the contents of the array s to the array a . Element number i ($1 \leq i \leq n$) of the array s becomes the i -th element of the array a ($a_i = s_i$).

Your task is to find array a after exactly k described operations are applied.

Input

The first line contains two space-separated integers n and k ($1 \leq n \leq 2000$, $0 \leq k \leq 10^9$). The next line contains n space-separated integers a_1, a_2, \dots, a_n — elements of the array a ($0 \leq a_i \leq 10^9$).

Output

Print n integers — elements of the array a after the operations are applied to it. Print the elements in the order of increasing of their indexes in the array a . Separate the printed numbers by spaces.

Examples

input
3 1 1 2 3
output
1 3 6

input
5 0 3 14 15 92 6
output
3 14 15 92 6