Problem A. Amusement Park

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

There are N groups of people standing in the line for the roller coaster. The groups are numbered from 1 to N by their position in the line: the first group is 1, and the last group is N. Group i consists of a_i people.

Roller coasters depart at every integer moment starting from 0. Each roller coaster can hold any number of people from 0 to M, inclusive.

Members of each group must ride the same roller coaster. Each group wants to ride as soon as possible. So, each group of people either enters the roller coaster together if they can all fit in, or waits for the next roller coaster otherwise.

You should output N lines. In the i-th line, you should output the moment when group i boards the roller coaster.

Input

The first line of input consists of two integers, N and M: the number of groups and the capacity of the roller coaster ($1 \le N \le 10^5$; $1 \le M \le 10^9$).

The second line consists of N integers $a_1, a_2, \ldots, a_N$: the number of people in the groups ($1 \le a_i \le M$).

Output

Print N lines. In the i-th line, you should print the answer for group i.

Examples

standard input	*standard output*
3 5 2 4 1	0 1 1
2 1000000000 1000000000 1000000000	0 1