Problem A. Roller Coaster

- Time Limit: 2 sec

Problem Statement

In Japan Amusement Group (JAG), members discuss how to have better amusement to attract many people. These days, they are interested in reducing waiting time stress.

As a member of JAG, you found out the hypothesis that knowing waiting time can reduce such kind of stress. Therefore, you decided to write a program which presumes the waiting time of a roller coaster.

N groups stand in line for the roller coaster, and the groups are numbered from 1 to N. The group i has a_i people. People in line ride the roller coaster in ascending order of group number.

The first roller coaster departs at time 0 and departs every minute thereafter. The roller coaster can hold up to M people.

For each group, the whole group member must ride the roller coaster at the same time. Additionally, there is no need to get exactly M people on the roller coaster at one time. Each group wants to ride the roller coaster as soon as possible, so they ride it if they can.

You should output N lines. In the i-th line, you should output the time the group i can ride the roller coaster.

Input

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N  M
a₁  a₂  ...  aN
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The first line consists of an integer N between 1 and 100,000, and an integer M between 1 and 10^9, inclusive. N represents the number of groups, and M represents the capacity of the roller coaster.

The second line consists of N integers between 1 and M, inclusive. For each i $(1 \le i \le N)$, a_i represents the number of people in the group i.

Output

Output N lines. In the i-th line, you should output the answer for the group i.

Sample Input 1	Sample Output 1
3 5 2 4 1	0 1 1

Sample Input 2	Sample Output 2
2 1000000000 1000000000 1000000000	0 1