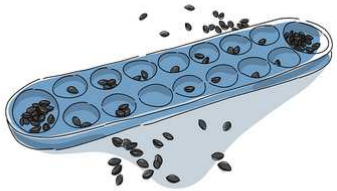
Problem C: Congklak

Time limit: 2 seconds

Alice and Bill really enjoy playing board games, and they are always looking for new challenges. Recently, they discovered the Indonesian game *Congklak* which is played with a game board made up of several holes containing some number of stones. After playing some games, Alice quickly got the hang of it and won every game, so Bill did not want to play any more. Instead, inspired by the rules of the game, he came up with the following challenge for Alice:



A typical Congklak game board.
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There is a game board with n holes arranged in a long row. These holes are numbered from 1 to n from left to right. Initially the ith hole contains a_i stones. Note that this setup differs from the usual Congklak game, where the game board consists of two rows and one large hole at each end.

Now Bill will play t games where each game goes as follows:

Bill starts the game at the first hole, holding one new stone in his hand. He then moves along the game board from hole 1 to hole n. At each hole i, he first checks how many stones are currently in the hole, and depending on the result he performs exactly one of the following two actions:

i) If the hole is empty, he drops one stone into it. Next, he checks how many stones are still in his hand. If his hand is empty, the game stops. Otherwise, he moves his hand to hole $i + 1$ next and repeats the steps.

ii) If there is at least one stone in the hole, he also drops one stone into it. Next, he checks how many stones are still in his hand. If his hand is empty, he takes out all the stones from hole i into his hand. Regardless of whether or not his hand was empty, he moves his hand to hole $i + 1$ next and repeats the steps.

When Bill moves his hand past hole n, the game stops and Bill discards any stones that he still holds in his hand.

Bill challenges Alice to predict in advance the number of stones in every hole after playing exactly t games. Note that the game board is **not** reset after playing a game, i.e. the initial configuration of the second game is the same as the configuration when the first game ends.

Input

The input consists of:

- One line with two integers n and t ($1 \leq n \leq 10^5$, $1 \leq t \leq 10^{12}$), the number of holes and the number of games.
- One line with n integers $a_1, \ldots, a_n$ ($0 \leq a_i \leq 10^{12}$), where a_i describes the initial number of stones in the ith hole.

Output

Output n integers, the ith of which is the number of stones in hole i after playing t games.

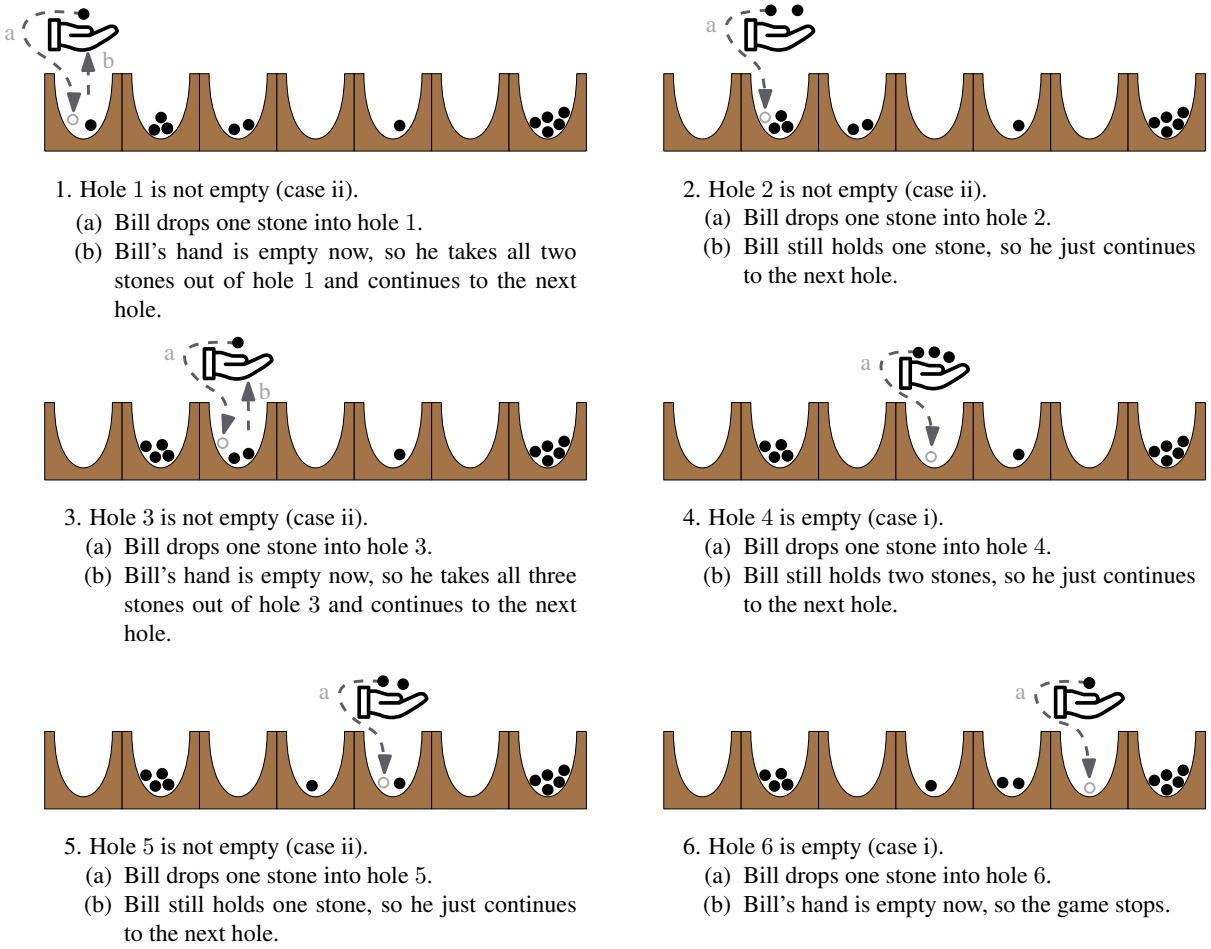
Sample Input 1	Sample Output 1
7 1 1 3 2 0 1 0 5	0 4 0 1 2 1 5

In the first sample, Bill plays exactly one game. The figure below visualizes the steps performed during this game.

Sample Input 2	Sample Output 2
4 4 1000000000000 1 2 3	1 3 0 5

In the second sample, the initial number of stones per hole is $[1000000000000, 1, 2, 3]$. The number of stones per hole after each game is:

1. $[0, 2, 3, 4]$
2. $[1, 2, 3, 4]$
3. $[0, 3, 0, 5]$
4. $[1, 3, 0, 5]$



1. Hole 1 is not empty (case ii).
   (a) Bill drops one stone into hole 1.
   (b) Bill's hand is empty now, so he takes all two stones out of hole 1 and continues to the next hole.

2. Hole 2 is not empty (case ii).
   (a) Bill drops one stone into hole 2.
   (b) Bill still holds one stone, so he just continues to the next hole.

3. Hole 3 is not empty (case ii).
   (a) Bill drops one stone into hole 3.
   (b) Bill's hand is empty now, so he takes all three stones out of hole 3 and continues to the next hole.

4. Hole 4 is empty (case i).
   (a) Bill drops one stone into hole 4.
   (b) Bill still holds two stones, so he just continues to the next hole.

5. Hole 5 is not empty (case ii).
   (a) Bill drops one stone into hole 5.
   (b) Bill still holds one stone, so he just continues to the next hole.

6. Hole 6 is empty (case i).
   (a) Bill drops one stone into hole 6.
   (b) Bill's hand is empty now, so the game stops.

Figure C.1: Visualization of the only game which Bill plays in the first sample.

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