

Problem H: Hungry Hunting

Time limit: 1 second

Hannah participates in the NWERC and after the practice session, several presentations and the boat tour she is very hungry. Luckily the organisers of the NWERC expected people to be hungry in the evening. For dinner there are several food booths offering different dishes. Hannah can go to every booth as often as she likes. But unsurprisingly everyone else is also very hungry, so in front of every booth there is a big line that cannot be avoided. Thus, every time she wants to get more food she has to queue.



A bowl of peanuts. Image by floriana_t, Pixabay

Hannah is quite experienced in being hungry, so she learned to estimate her hunger in *peanut equivalents* (*PE*). She also knows how many PE one serving of some dish will give her. One of her friends, Herbert, is a volunteer at the NWERC and responsible for handing out one of the dishes. Herbert knows that Hannah is very hungry, so he will always give Hannah a double serving, even if she would prefer a normal one. Of course, Hannah does not like to queue for food and she definitely does not want to waste food. How often does she have to queue until she gets the exact amount of food she needs to be full?

Input

The input consists of:

- One line containing two integers n and w ($1 \leq n \leq 10^3, 1 \leq w \leq 10^4$), the number of dishes and Hannahs hunger in PE, respectively.
- One line containing n integers c_1, \dots, c_n ($1 \leq c_1, \dots, c_n \leq w$), where c_i is the number of PE Hannah gets if she eats one serving of dish i .

Output

Print n integers s_1, \dots, s_n , where s_i is the minimum number of times Hannah has to queue if her friend Herbert is serving dish i . If it is not possible to get full without wasting food if Herbert is serving dish i , print “impossible” instead.

Sample Input 1

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2 20
7 3
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Sample Output 1

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3 3
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Sample Input 2

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3 5
2 3 2
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Sample Output 2

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2 impossible 2
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