6244 What do I need to get on the Final Exam?

One typical question that students ask professors right before the final exam in a course is what score they need on the final exam in order to get a grade that they want. Your task is to write a program that automates the answer to this question.

Input

The input will consist of multiple cases. The input for each will consist of nonnegative integers that are all at most 100 since we are assuming any test score will be at least 0 and at most 100. The first integer will be the desired average, d, which will be assumed to be greater than zero and less than 100. The next integer will be the number of tests (including the final exam), k. You may assume that k is at least 2 and at most 10. Then, there will be k integers giving the percentage weights for the tests. You may assume that the sum of the weights is 100. Finally, the scores on the $k - 1$ tests before the final are given as input. Assuming, again, that a final exam grade is at least 0 and at most 100, determine if there is a final exam grade that will achieve the desired result. If there is such a grade, the smallest such is the answer for the case. After the last valid case will be a line with a negative value.

Output

For each input case, print the minimum final exam grade to obtain the desired average. Be sure to print a valid grade, or, if there is no valid grade that will achieve the desired average, print 'impossible'. Follow the format below exactly, 'Case', one space, the case number, a colon and one space, and the answer for that case.

Sample Input

```
90
4
25 25 25 25
85 87 91

90
5
15 25 15 25 20
87 62 47 91

90
6
10 10 10 10 10 50
85 87 91 87 53

-1
```

Sample Output

```
Case 1: 97
Case 2: impossible
```

```
Case 3: 100
```