

Problem I. Statistics

Input file: *standard input*
Output file: *standard output*
Time limit: 1.5 seconds
Memory limit: 256 mebibytes

It is time to select courses for your last semester of university. There are N courses available, numbered from 1 through N . Course i is worth v_i units, and you need at least V units to graduate. Because you want more time to train for ACM ICPC, you want to choose a subset of courses that gives exactly V units. Also, you want to choose the least number of courses possible to minimize the amount of time spent walking around campus. You call such a subset a **good schedule**.

You are having trouble choosing among all possible good schedules, so you turn to statistics for help. For each good schedule, viewing it as a list of the units of its courses, you calculate:

- a , the average value.
- b , the median value. (In case the list's length is even, use the smaller of the two middle values.)
- c , the maximum number of times a single value appears.
- d , the difference between the maximum value and the minimum value.

For each of a , b , c , and d , find its minimum over all good schedules.

Input

The first line contains two integers, N and V : the number of courses and the number of units you need to graduate ($1 \leq N, V \leq 5000$).

The next line contains N integers v_1, v_2, \dots, v_N , the number of units in each of the available courses ($1 \leq v_i \leq V$).

Output

Print out four space-separated real numbers: the minimum a , b , c , and d over all good schedules, in that order. If there are no good schedules, print a single integer -1 instead. Your answer must have an absolute or relative error less than 10^{-6} .

Examples

standard input	standard output
6 15 6 1 13 5 4 1	5.000000000 1 1 2
3 7 3 1 2	-1