Problem A. Liquid X

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

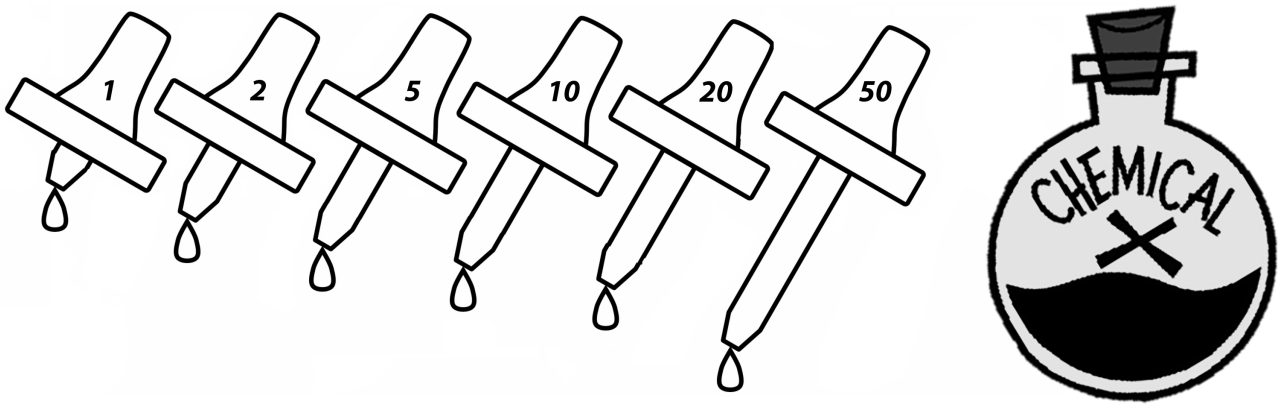
This is an interactive problem

The summer break has just started in the UNAL. Normally at this time students would take a rest, but Mr. Potato Head really wants to learn more things, for this reason he will take a chemistry summer course.

In this course he has a very simple project, in which he has to mix some chemical liquids to get a particular solution. At the beginning of the course Mr. Potato Head knows the quantity of all liquids he needs except for liquid X.

Luckily, he knows the solution becomes *yellow* when the quantity of X is right, when it is too little the solution becomes *green* and if it is too much the solution gets *red*. Unluckily, the solution will show its color only one day after it is mixed and it cannot be modified, i.e. it is not possible to add or remove liquid X from the solution after it showed its color, in other words, the components have to be mixed all over again.

In the chemistry laboratory there is unlimited quantity of liquid X, only one container to mix the components, and n droppers of different capacities.



Mr. Potato Head asked you to help him to pass successfully this course within the *30 days* of the summer break or say if it is impossible to do so.

It is guaranteed that the right quantity of liquid X to get the solution is a positive integer lower or equal than 10^6.

Interaction Protocol

The interaction starts with a line containing an integer n ($1 \leq n \leq 100$) − The number of droppers.

The following line contains n integers $a_1, ..., a_n$ ($1 \leq a_i \leq 10^6$) − The capacities of the droppers.

Then you can make daily experiments on chemical liquid X.

For each day, print a line with 1 and then another line with n integers $x_1, ..., x_n$, x_i is the number of times the i-th dropper with liquid X was used in the solution. If for some i x_i is not a non-negative integer or if the total quantity of liquid X used in the experiment is greater than 10^6 the system will terminate the program with a *Wrong Answer* veredict.

After each experiment you have to read a single string c, the color of the resulting solution: 'green', 'yellow', or 'red' (without quotes).

When you are done with the experiments print a line with 2 and then another line with the answer, if there is no way of knowing the answer print -1 instead.

Examples

standard input	standard output
6 1 2 5 10 20 50 red green yellow	1 0 1 0 1 0 0 1 2 3 0 0 0 0 1 1 2 1 0 0 0 2 10
2 4 8 green green red	1 1 0 1 2 0 1 3 0 2 -1
2 2 3 red red	1 0 1 1 1 0 2 1

Note

Remember to flush after printing each experiment.

To flush you need to do the following right after printing a query and a line end:

- fflush(stdout) or cout.flush() in C++;
- System.out.flush() in Java;
- stdout.flush() in Python;