

E. Candies Game

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

lahub is playing an uncommon game. Initially, he has n boxes, numbered $1, 2, 3, \dots, n$. Each box has some number of candies in it, described by a sequence a_1, a_2, \dots, a_n . The number a_k represents the number of candies in box k .

The goal of the game is to move all candies into **exactly** two boxes. The rest of $n - 2$ boxes must contain **zero** candies. lahub is allowed to do several (possible zero) moves. At each move he chooses two different boxes i and j , such that $a_i \leq a_j$. Then, lahub moves from box j to box i exactly a_i candies. Obviously, when two boxes have equal number of candies, box number j becomes empty.

Your task is to give him a set of moves such as lahub to archive the goal of the game. If lahub can't win the game for the given configuration of boxes, output -1. Please note that in case there exist a solution, you don't need to print the solution using minimal number of moves.

Input

The first line of the input contains integer n ($3 \leq n \leq 1000$). The next line contains n non-negative integers: a_1, a_2, \dots, a_n — sequence elements. It is guaranteed that sum of all numbers in sequence a is up to 10^6 .

Output

In case there exists no solution, output -1. Otherwise, in the first line output integer c ($0 \leq c \leq 10^6$), representing number of moves in your solution. Each of the next c lines should contain two integers i and j ($1 \leq i, j \leq n, i \neq j$): integers i, j in the k th line mean that at the k -th move you will move candies from the j -th box to the i -th one.

Examples

input
3 3 6 9
output
2 2 3 1 3

input
3 0 1 0
output
-1

input
4 0 1 1 0
output
0

Note

For the first sample, after the first move the boxes will contain 3, 12 and 3 candies. After the second move, the boxes will contain 6, 12 and 0 candies. Now all candies are in exactly 2 boxes.

For the second sample, you can observe that the given configuration is not valid, as all candies are in a single box and they should be in two boxes. Also, any move won't change the configuration, so there exists no solution.

For the third sample, all candies are already in 2 boxes. Hence, no move is needed.